

COLORADO RIVER RECOVERY PROGRAM
FY 2005 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: C-6 HYD

I. Project Title: Site surveys, floodability assessments, design and engineering, construction oversight and evaluation for habitat restoration in the Green River, Utah; Colorado River, Colorado; and Gunnison River, Colorado.

II. Principal Investigator(s):
Peggy Bailey, P.E.
Tetra Tech, Inc.
410 South French Street
Breckenridge, CO 80424
(970) 453-6394
(970) 453-4579 FAX
peggy.bailey@tetrattech.com

III. Project Summary:

Goal: To restore floodplain nursery habitats to assist in recovery of the endangered fishes, and to ensure that the habitats function as designed and constructed, and to take remedial measures as necessary.

Objectives:

1. To determine overbank flows, with and without habitat restoration;
2. To determine area of inundation as a function of flow, with and without habitat restoration;
3. To compare historical versus existing bottomland hydrology with and without habitat restoration;
4. To characterize pre-restoration baseline channel and site morphology, and post-restoration morphology;
5. To develop design options for habitat restoration.
6. To oversee habitat enhancement (i.e., construction) activities.
7. To monitor restored habitat sites and recommend future maintenance and monitoring

IV. Study Schedule: Initial Year - FY 1995
 Final Year – Unknown

V. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN
ACTIVITY II. RESTORE HABITAT

- II.A.2. Screen high-priority sites for potential restoration/acquisition.
- II.A.3. Conduct NEPA for floodplain restoration program.

GREEN RIVER ACTION PLAN: MAINSTEM

ACTIVITY II. RESTORE HABITAT

II.A. Restore and manage flooded bottomland habitat.

II.A.1. Conduct site restoration.

II.A.3. Implement levee removal strategy at high-priority sites.

II.A.3.a. Preconstruction (floodability assessments, design, and engineering).

II.A.3.c. Evaluation.

COLORADO RIVER ACTION PLAN: MAINSTEM

ACTIVITY II. RESTORE HABITAT

II.A. Restore and manage flooded bottomland habitat.

II.A.4. Implement levee removal strategy at high-priority sites.

II.A.4.a. Preconstruction (floodability assessments, design, and engineering).

II.A.4.d. Evaluation.

COLORADO RIVER ACTION PLAN: GUNNISON RIVER

ACTIVITY II. RESTORE HABITAT

II.A. Restore and manage flooded bottomland habitat.

II.A.2. Implement levee removal strategy at high-priority sites.

II.A.2.a. Preconstruction (floodability assessments, design, and engineering).

II.A.2.d. Evaluation.

VI. Accomplishment of FY 2005 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1. Levee-breach evaluation (Thunder Ranch, Bonanza Bridge, Stirrup, Baeser Bend, Above Brennan)

Pre-runoff site reconnaissance was performed prior to flooding of the five sites including Thunder Ranch (TR), Bonanza Bridge (BB), Stirrup(ST), Baeser (BA), and Above Brennan (AB) including cross section surveys through the levee breaches, and setting of monuments. Pre-runoff cross section surveys were performed in May of 2005. In addition, water surface elevations were surveyed. Pre-runoff cross section data for the inlets and outlets was plotted against as-built topography and previous years' data (if available) for comparing erosion and sedimentation at the levee openings. Missing cross section endpoints were reestablished where needed.

Discharge measurements were conducted at each inlet/outlet during three flow stages in the Green River as reported at the Jensen Gage. Measurements were conducted once on the ascending limb of the hydrograph at approximately 14,000 cfs between May 19th and May 20th, once at the peak at approximately 20,000 cfs between May 24th and May 25th, and once on the descending limb at approximately 17,000 cfs between May 30th and May 31st.

A report was prepared titled Floodplain Habitat Restoration 2005 Monitoring Final Report, Green River, Utah, which included relationships of flow into the five bottomland sites with flows at the Jensen Gage and qualitative recommendations for improvement of connections. Flows at the bottomland sites, however, were not directly equivalent to the flows reported at the Jensen Gage due to the travel time needed for flows at the gage to reach the bottomland sites, and due to flows from Ashley Creek. Ashley Creek confluences with the Green River approximately 17.5 miles downstream of the Jensen Gage. The creek was observed to have significant flows at the time of data collection. Discharges from Ashley Creek were added to the Jensen Gage discharges at the appropriate time intervals and a composite discharge obtained. The added discharge from Ashley Creek affects the bottomland sites downstream of the confluence, namely Bonanza Bridge, Stirrup, Baeser, and Above Brennan.

Task 2. Post-runoff monitoring

At Thunder Ranch cross sections were surveyed through the levee breaches. Visual observations were performed of the site with regard to aggradation and degradation, and shots surveyed to locate areas where notable scour or deposition has occurred. This information was compared to survey information from as-built data, and included in the report. At the remaining four sites visual observations were performed of the site with regard to aggradation and degradation. This information was also included in the report.

Task 3. Construction oversight (Hot-Spot Complex)

Construction oversight was scheduled at Hot Spot Complex for FY 2005 but was postponed. Oversight activities were to include refining and finalizing design drawings; preparing construction drawings and technical specifications; attend and conduct pre-construction meeting; coordinating with contractor(s) prior to and during construction; and performing site stakeout and construction observation.

- VII. Recommendations: In general, monitoring of water surfaces, erosion and sedimentation at all reconfigured sites should continue in 2006 and beyond. Sites that receive significant flows during spring runoff should be monitored during peak flow. Monitoring the Green River and bottomlands to various flows will provide valuable data that can be referenced in refining engineering design for future bottomlands restoration. Other potential sites should be surveyed, analyzed and assessed similar to those bottomlands that have been evaluated this year. Site specific recommendations are discussed in detail in "Floodplain Habitat Restoration 2005 Monitoring Final Report, Green River, Utah" October 2005.

Specific recommendations for site surveys, floodability assessments, design and engineering, construction oversight and evaluation for habitat restoration in FY 06 are noted as follows:

1. Prepare final design and construction drawings and perform construction services for Hot Spot Complex.
2. Perform levee-breach evaluation at Hot Spot, Audubon, and Unaweep. Perform pre-runoff site reconnaissance prior to flooding of the three sites including surveys of cross sections through the levee breaches, and set monuments. Survey water surface elevations; compare topography to as-built cross sections.
3. During spring runoff perform discharge measurements through levee breaches on the ascending, peak, and descending limbs of the hydrograph. Survey all inlets for all flow conditions. Develop relationship to main-stem flows. Make qualitative recommendations for improvement of connections. Prepare summary report.
4. Perform post-runoff monitoring at Hot Spot, Audubon, Unaweep, GJ Pipe, and Walter Walker. Survey cross sections through the levee breaches. Perform visual observation of the site with regard to aggradation and degradation, and survey shots to locate areas where notable scour or deposition has occurred. Compare survey information to as-built data, modify as-built topographic maps, and complete report with site flooding connectivity.

VIII. Project Status: The project should be considered on-track and ongoing. Funding needs may be increased for increased civil design, review of design and assessment of additional sites as they are identified.

IX. FY 2005 Budget Status

- A. Funds \$69,870 provided in FY 2005
- B. Funds Expended: \$48,504
- C. Difference: \$ 21,366
- D. Percent of the FY 2005 work completed, and projected costs to complete: 69% completed, \$21,366 projected to complete (contract modified to June 2006).
- E. Recovery Program funds spent for publication charges: \$0.00

X. Status of Data Submission (Where applicable): N/A

XI. Signed: _____

Peggy Bailey, P.E.

Date 11/01/05