

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Establishing a Context for River Restoration along the Upper Colorado River in Rocky Mountain National Park

Discipline: Natural
Type of Project: Technical assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 4/5/2009 - 12/31/2010
Funding Amount: \$30,783

Investigators and Agency Representative:

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Project Abstract: CSU will develop a conceptual model of valley-bottom evolution since deglaciation in the Upper Colorado River Valley. The conceptual model will rest on imaging and interpretation of sediment filling the valley and on contemporary measurements of discharge and sediment transport. The proposed research seeks to distinguish glacial outwash deposits from subsequent fluvial and colluvial deposits, and thus infer long term trends and define equilibrium conditions present before recent human impacts. A series of debris flows caused by breaches in Grand Ditch, the most recent of which occurred in May 2003, raises the fundamental question of how these human-induced events compare to naturally occurring events. The proposed research supports the Lulu City wetland restoration design by providing a historical context in which to interpret the long-term effects of the 2003 debris flow. We will conduct this research using innovative geophysical techniques to image the subsurface (ground penetrating radar (GPR)), coring for field verification of imaging methods and stratigraphic sampling, and ¹⁴C dating to temporally constrain the depositional history. Stream gaging and sediment sampling will also continue in order to further assess potential responses of the channel and wetlands to human-induced sediment inputs.

Outcomes with Completion Dates: Work will begin during Spring 2009, accessing aerial photographs, historical documents, and planning for field work. May 2009 - Reinstall stream gages that were removed overwinter, test and repair equipment as necessary to capture the entire snowmelt period. June - October 2009- Conduct GPR surveys, cores, and collect material for radiocarbon dating. Continue flow monitoring. June 2010- Oral presentations of findings to the National Park Service and at a professional conference; final project report to the National Park Service; MS thesis at Colorado State University; peer-reviewed

Keywords: Rocky Mountain National Park, Colorado State University, Upper Colorado River, Grand Ditch, hydrology, restoration, sediment transport