

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Geophysical characterization of the Sand Creek site in Colorado

**Discipline:** Interdisciplinary  
**Type of Project:** Technical Assistance  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** Colorado State University  
**Effective Dates:** 8/15/2013 - 6/30/2015  
**Funding Amount:** \$20,000

**Investigators and Agency Representative:**

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**Project Abstract:** Sand Creek Massacre NHS and an expert at NPS-Water Resources Division will work with the Colorado State University cooperators to collect data that will allow us to estimate the current location of the Big Sandy Creek primary drainage. The geophysical dating of the creek will help to identify the historical location of the Cheyenne and Arapaho camp at the time of the massacre, November 29, 1864. Mike Martin, NPS Water Resource Division, has completed some preliminary studies that will be provided to the cooperator, that attempts to locate the historic site of the Creek drainage. The NPS also has detailed LiDAR maps showing 8" contours of the area.

The goal of this project is to determine if Big Sandy Creek was in its current location at or before 1864.

*Tasks*

- Cooperator will take 2-3 cores of ponds at the park site,
- Cooperator, with assistance from NPS-WRD and SAND, will perform 8-10 Ground Penetrating Radar (GPR) transects of channel and pond environment - the measurements will be taken along a 2d-grid (transects perpendicular and parallel to channel trend). GPR does not penetrate clay very well, so if clay lenses are abundant on site, we would use seismic reflection to image the subsurface.
- NPS and CSU cooperators will analyze historical air photos & tree cores already collected.

**Outcomes with Completion Dates:** Final Report - June 30, 2015

*Products*

- 3d image of subsurface environment that will constrain channel location and behavior (i.e., channel geometry & type of deposits) through time;
- radiocarbon dates from pond sediments;
- Using the air photos and age of riparian trees (assuming these are present in suitable locations and of useful age) to further constrain channel location changes through time.
- report summarizing and interpreting data.

**Keywords:** Colorado State University, Sand Creek Massacre NHS, Big Sandy Creek, geophysical data, historical locations