

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: INTERAGENCY BURNED AREA STABILIZATION AND REHABILITATION PLAN FOR THE FRENCH FIRE: CONTAMINANTS SAMPLING AND ANALYSES

Type of Project: Research

Discipline: Natural

Funding Agency: National Park Service

Other Partners/Cooperators: University of Montana, USGS-WRD

Effective Dates: 5/1/2005 - 6/30/09

Funding Amount: \$288,921

Investigators and Agency Representative:

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Project Abstract:

The overall objective of this project is to determine the potential impact of the French Fire, in terms of increased sedimentation and mobilization of metal laden sediments, to Upper Clear Creek and Whiskeytown National Recreation Area. This objective will be accomplished by characterizing metals concentrations in fine grain sediments and water samples from several areas in Upper Clear Creek that are downstream of abandoned mines and waste areas in the Upper Clear Creek watershed that experienced moderate to severe burn effects from the French Fire. The University of Montana will analyze: fine grain sediment samples for trace metals analysis and water samples for trace metals analysis and major ions. Samples will be collected from nine sampling stations in the Upper Clear Creek watershed that were subjected to varying degrees of fire severity associated with the French Fire. Whiskeytown NRA will collaborate with the University of Montana to characterize the metal concentrations in fine grain stream sediments and metal concentrations and major ions in water samples from sites within upper Clear Creek affected by the French Fire. These assessments will provide an understanding of the relative impacts of the French Fire on localized and distal landscape perturbations on episodic run-off events on the distribution and potential remobilization of metal laden sediments and the potential risk of such sediments to the biota of Upper Clear Creek and Whiskeytown Lake. Samples will be collected and shipped to the University of Montana for analysis.

All data will be deposited and maintained at Whiskeytown NRA.

1. Data in standard spreadsheet format (e.g., MS Excel) will be provided for all water and sediment samples analyzed at the EBL, within eight weeks after receipt of the samples.
2. Water samples will be analyzed by Inductively-coupled Argon Plasma Mass Spectrometry (ICP-MS) using EPA Method 200.8.
3. Sediment samples will be acid digested using EPA Method 3050B and analyzed by ICP-Emission Spectrometry or ICP-MS using EPA methods 6010 or 6020, respectively. Potential contaminant elements of concern are: As, Cd, Cr, Cu, Ni, Pb, Se and Zn. Other elements will be included to examine potential geochemical relationships (e.g., Ca, Fe, Mn, Sr) or other potential contaminants, even though EPA quality requirements may not be met for these analytes. Mercury concentrations will be determined using Cold Vapor Atomic Fluorescence Spectrometry (EPA 245.7).
4. All quality assurance data will be included in the data files sent to NPS to establish the precision and accuracy of all the water and sediment data produced at EBL. This will be presented in standard spreadsheet format (e.g., MS Excel). Both sample data and quality assurance/quality control reports will be made available to the NPS.
5. University of Montana personnel will work with NPS and USGS personnel to complete an integrated analysis of the water, sediment and biologic samples collected and work towards a joint publication on all the data when all data (e.g. biologic samples) are available.

Samples of sediments and water will be collected and analyzed in 2005, 2006 and 2007. The PI and four graduate students will be collecting and analyzing additional sediment samples during 2006-2007.

Outcomes with Completion Dates:

Final Products include: 1) Chemical analysis data for water samples collected by NPS and USGS; 2) Chemical analysis data for sediment collected by NPS and USGS; and 3) All quality assurance data associated with analyses. Summary report of all analyses and interpretation is due 04-30-2006. Final report from multiple sampling years is due by December 30, 2008.

Keywords: sediment, trace metals, French Fire, Whiskeytown National Recreation Area, University of Montana, water quality, Whiskeytown Lake, Clear Creek

For Administrative Use Only:

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: