

## **Project Summary**

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

**Project Title:** Hydrologic and Sediment Transport Monitoring: Planning for Channel Restoration along Lulu Creek and Colorado River, Rocky Mountain National Park

**Discipline:** Natural  
**Type of Project:** Research  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** Colorado State University  
**Effective Dates:** 4/15/2010 to 6/30/2011  
Funding Amount: \$6,505

Investigators and Agency Representative:

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**Project Abstract:** Continued flow and sediment transport monitoring over the 2010 snow melt hydrograph is proposed using existing equipment and infrastructure. Currently, permanent staff gauges are installed at eight sites (Figure 1), four of which comprise sample cross sections where data on discharge and sediment transport have been collected since 2004. Four additional cross sections with staff gauges represent reference sites (Upper Lulu Creek, Sawmill Creek, Shipler Park, and Lost Creek). The addition of pressure transducers at each site in 2009 or 2010 provides continuous stage and discharge measurements from late spring until early fall. Additional hydrologic and sediment transport monitoring during snow melt of 2010 will provide substantial data on discharge and sediment transport to further inform channel restoration planning.

#### Methods

Specific field work proposed during 2010 includes:

- 1) Water discharge will be monitored during snowmelt at all eight gauges (Figure 1) including four sample cross sections (Lulu Creek, Little Yellowstone, Crooked Tree, and Gravel Beach), and four reference sites (Upper Lulu, Sawmill Creek, Shipler Park, Lost Creek). During monitoring, suspended and bedload sediment will be collected at the sample cross sections over snowmelt runoff. All sediment samples will be processed and analyzed at CSU's Sedimentology Laboratory for sediment concentration and grain size.
- 2) Repeat pebble counts will be conducted at all eight gauges to monitor changes in bed material grain size. Pebble count data at the sample cross sections has been collected since 2004, and is used to track sediment mobility and armoring of the channel bed.
- 3) Additional surveys of reference reaches will be completed to quantify channel width, depth, and slope, and step-pool or pool-riffle spacing at newly installed (2009) gauges.
- 4) Assist Covey Potter, MS student of D. Cooper, with well measurements within the study site, and other field work related to restoration planning.

**Keywords:** Rocky Mountain National Park, Colorado State University, Upper Colorado River, Lulu Creek, snow melt, hydrology, sediment transport, channel restoration