

# 2008 Grand Ditch Report

Rocky Mountain National Park, CO

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Dr. David Cooper and Covey Potter

## Background

In 2003 the Grand Ditch, located on the east-facing slope of the Never Summer Range within Rocky Mountain National Park, breached in a reach above Lulu Creek; inundating the creek, several km of the Colorado River and its floodplains, and the Lulu City wetland with more than 45,000 m<sup>3</sup> of sediment and debris (RMNP Fact Sheet 2010). Sediment deposits from this event have altered stream channels, flood plains, streamside water table, and riparian vegetation. Riparian vegetation is sensitive to alterations in groundwater, limiting the establishment of critical plant species, shifting species composition, affecting ecosystem functions, and causing die back and mortality (Rood and Mahoney 1990, Smith *et al.* 1991, Dixon and Johnson 1999). Riparian vegetation composition is determined in part by available shallow groundwater (Brinson *et al.* 1985, Van Coller *et al.* 2000) that may be linked to stream water (Rood *et al.* 2003, Cooper and Merritt in press).

## 2008 Field Season

In the summer of 2008 we continued to monitor 50 groundwater monitoring wells and stream staff gauges installed along Lulu Creek, the Colorado River and the Lulu City wetland in 2005. We began the selection process of four reference reaches along Sawmill Creek and the Colorado River below Lulu City Wetland. Though still affected by erratic water releases from the Grand Ditch and continued sediment transport from the 2003 breach; these reference reaches will provide data to assist in the restoration design of a more pristine and functional riparian corridor and floodplain somewhat analogous to Lulu Creek and the Colorado River before the breach. We were unable to excavate sediment stratigraphy pits in Lulu City Wetland due to National Park Service delays. Pit excavations will occur summer 2009 along with continued groundwater monitoring, final selection of comparable reference reaches, and further groundwater monitoring well installation.

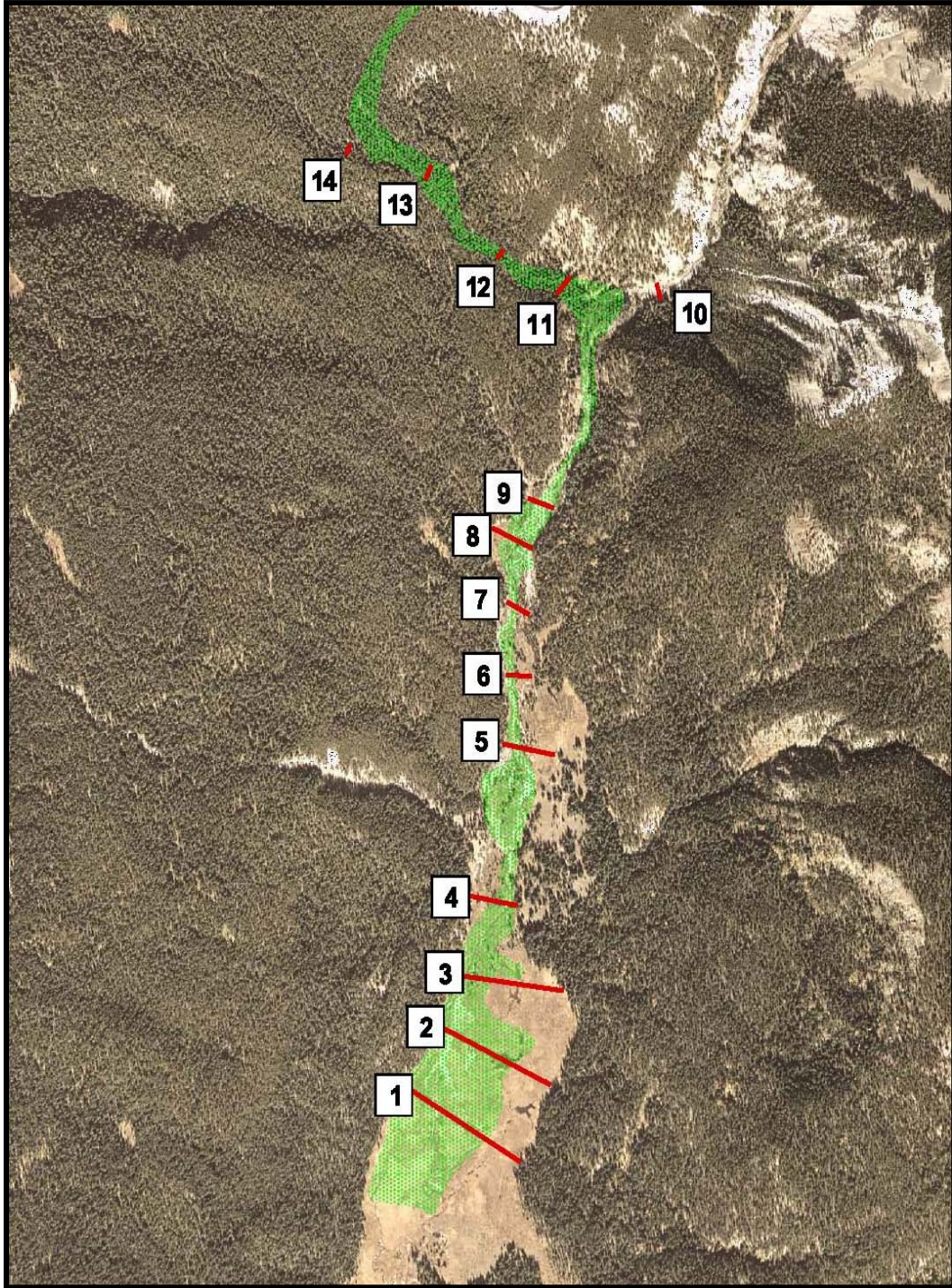
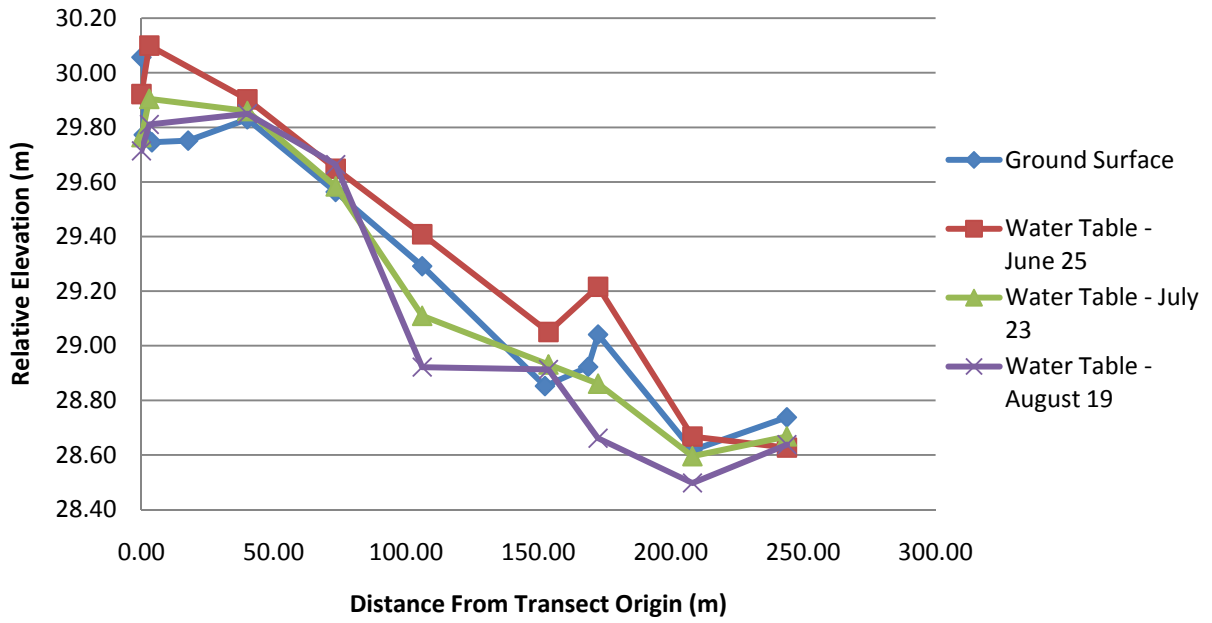


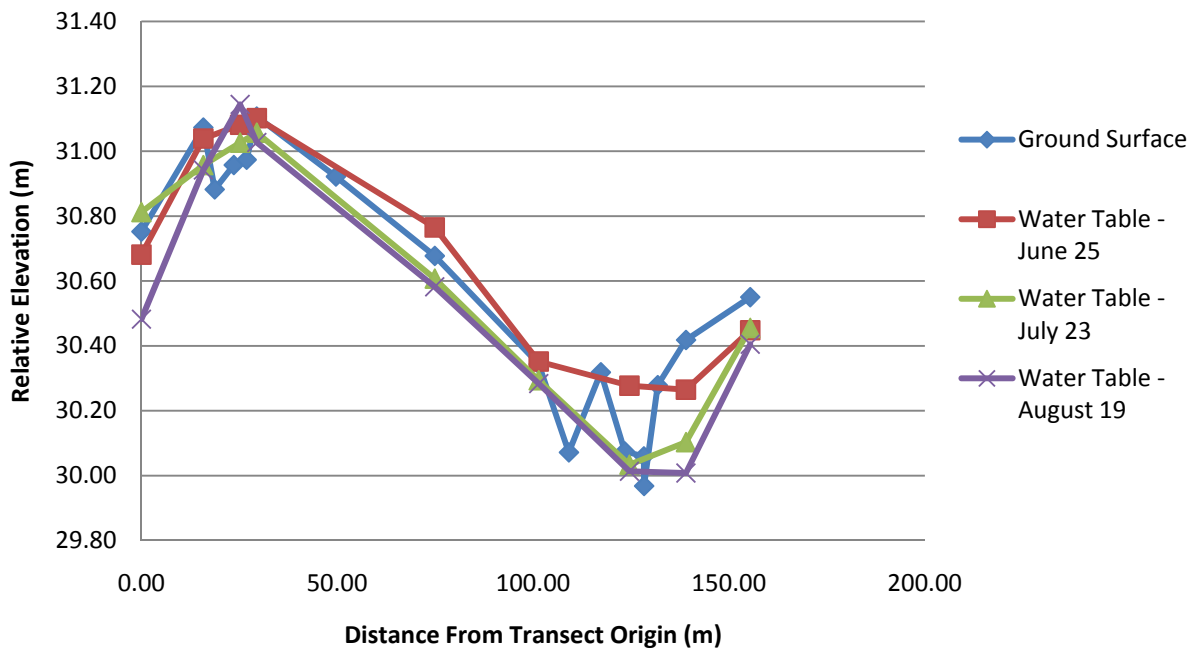
Figure 1. Groundwater monitoring well transects along the affected reaches of Lulu Creek and the Colorado River.

Figures 2 – 7. The following charts are 2-dimensional cross sections of each transect. These cross sections describe a somewhat stable ground surface combined with monthly variations in 2008 depth to groundwater collected from the groundwater monitoring wells.

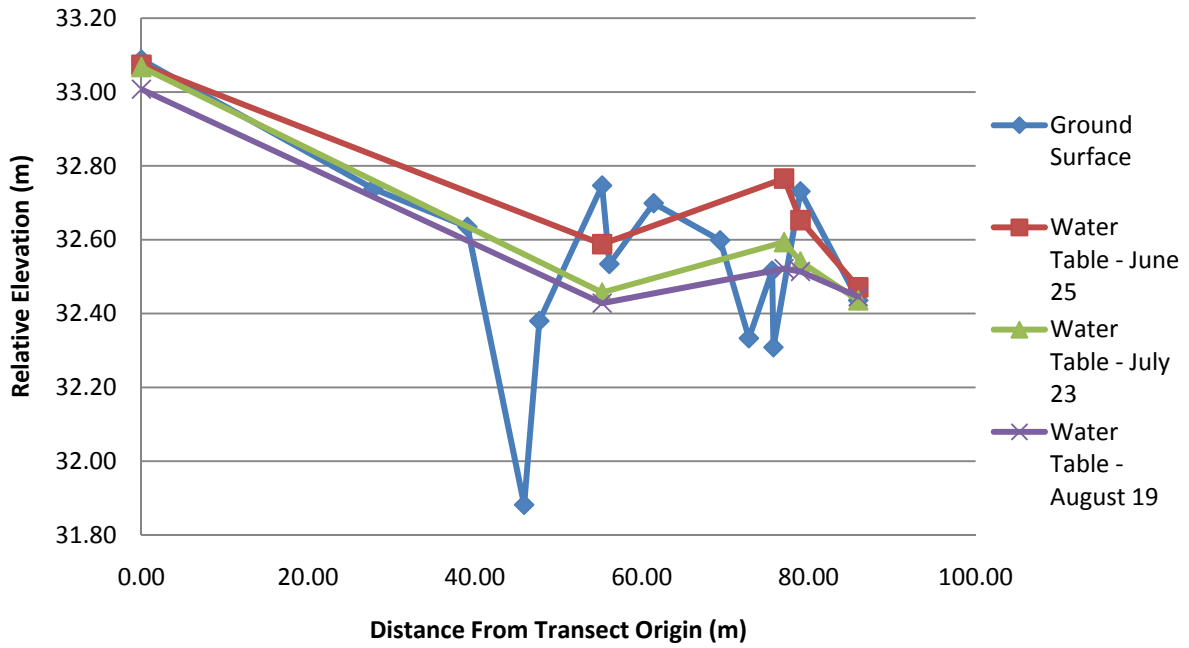
## Transect 2



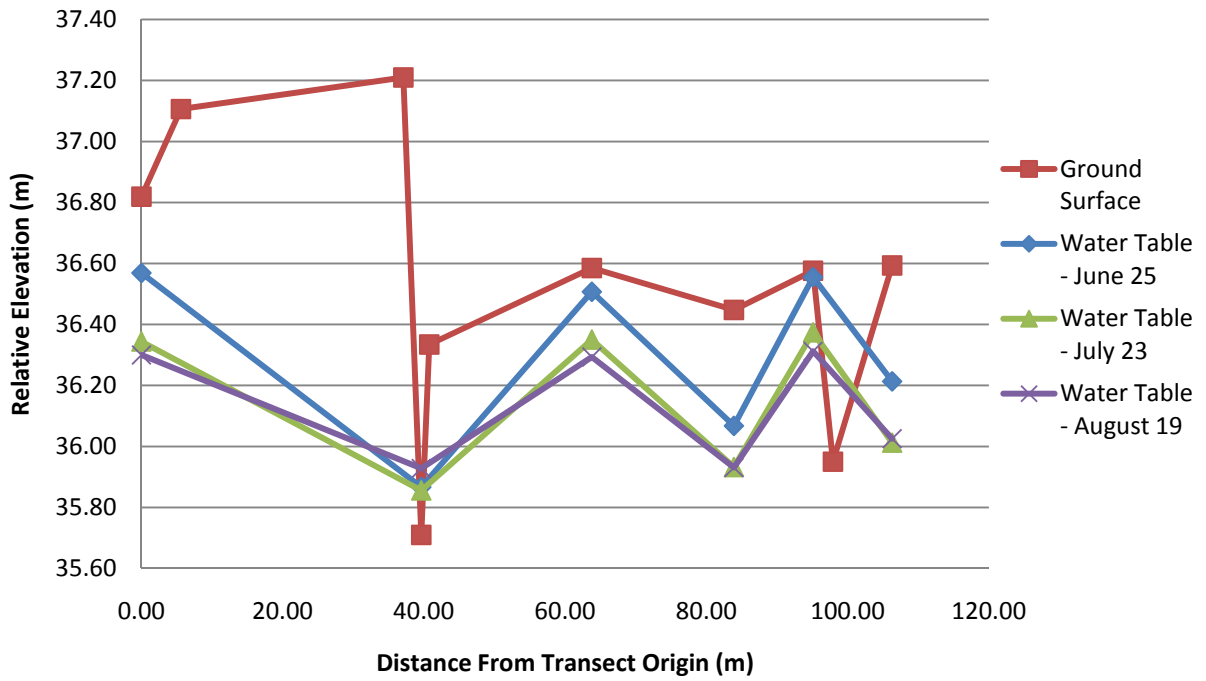
## Transect 3



### Transect 4

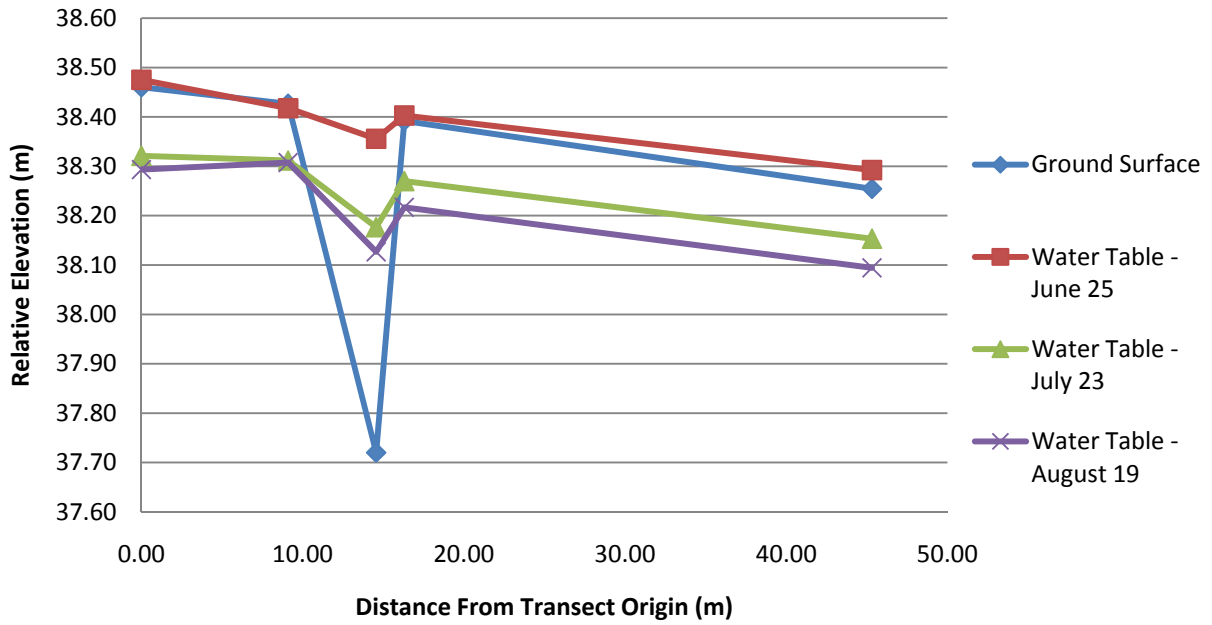


### Transect 5

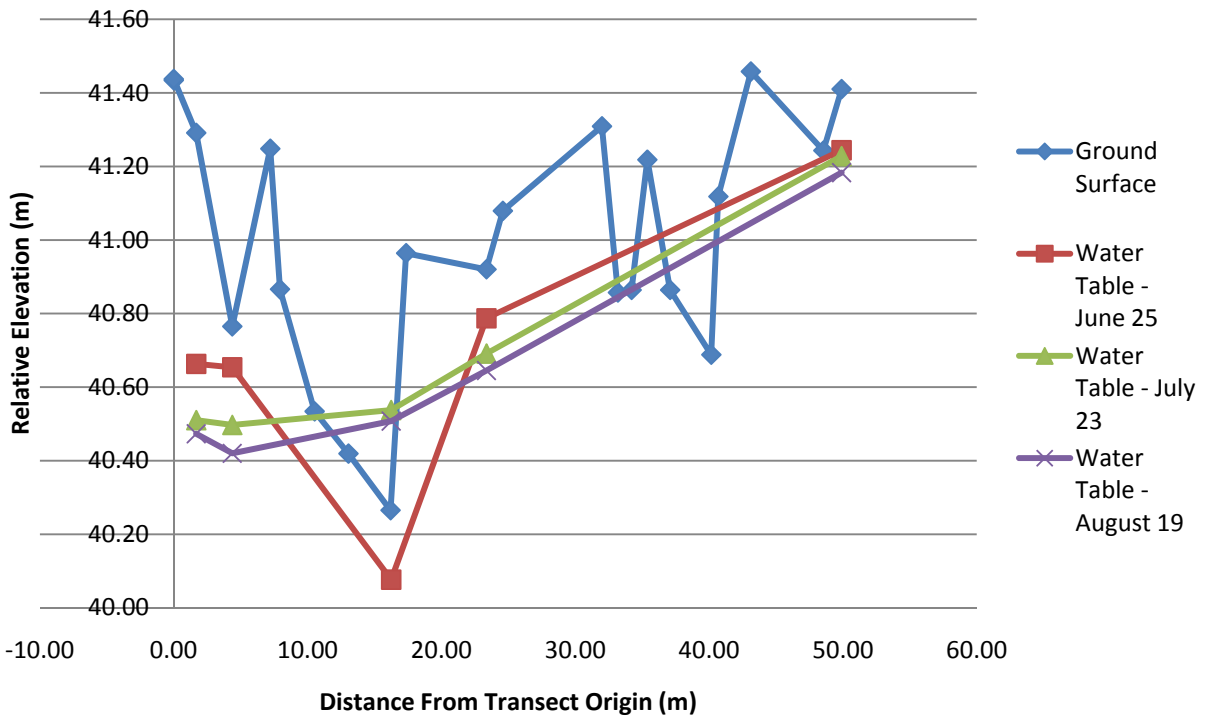




### Transect 6



### Transect 7



## References

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