Monitored Resource: Eagle Creek at Hwy 101

Purpose:

The purpose of this monitoring project was to determine the stream temperature patterns of Eagle Creek, a Minnesota DNR designated trout stream, upstream and downstream of Hwy 101.

Monitoring Description:

Two temperature loggers (Hobo® Water Temp ProV2 Data Logger, U22-001) were installed upstream and downstream of Hwy 101, in June 2006, to track the thermal characteristics of the stream and determine the potential thermal impact of drainage from the highway and rail road right-of-ways. See the project map for locations of the monitoring stations. The loggers were located such that direct exposure to sunlight was limited. The loggers sampled at a 15 minutes per measurement interval for the entire monitoring period. Temperature data was collected from June 2006 through February 2007

Monitoring Results Summary:

- Stream temperature tracked well with air temperature following a diurnal pattern (Graph 1)
- Temperature was below the optimal limit for Brown Trout (66 ^{o}F) in the creek for all of 2006
- Stream temperature downstream of Hwy 101 tended to have larger variability which suggests more direct exposure to the sun. However, the upstream logger is also located in an area of active sediment transport and becomes periodically buried in sand, causing a muted temperature measurement.
- During the period from 7/1/06 to 8/30/06 the upstream sensor was buried beneath sand and shows a muted signal
- Runoff from a 1.4-inch event on June 16 and other smaller events caused an approximate 6-7 ^{o}F spike in temperature above the normal diurnal trend at the downstream station (Graph 2)
- Future monitoring efforts should include periodic inspection to determine whether the upstream logger is at risk of being buried and relocating it within the thalwag beneath the driveway bridge. This will ensure the logger measures stream temperature and not the water in the sediments.

RICE LAKE

Minnesota River

Eagle Creek

Sta. 2

Sta. 1

State Hwy 801B

CHICAGO NORTHWESTERN

State Hwy 13

125th St

Boone Ave

Zinran Ave

Rhode Island Ave S

Pennsylvania Ave

128th St

Creek Way

Shakopee

Lower Minnesota Watershed District

Monitoring Station Locations

Eagle Creek

2005 Aerial Photo

June 2006

Bonestroo

1,000 500 0 1,000

Feet

I:1460\146006109\Cad\Gis\avprojects\EagleCk.mxd

Photos taken: May 19, 2006

View downstream at Hwy 101

View upstream at Hwy 101

View of upstream end of culvert under Hwy 101

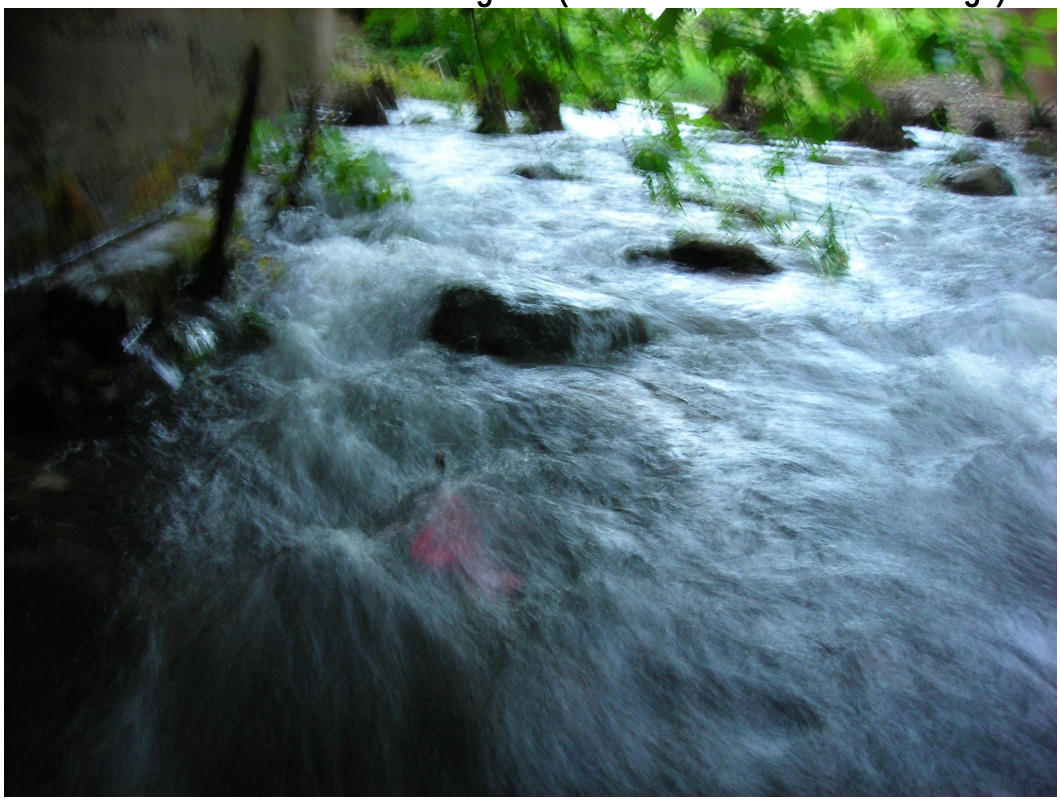
Photos taken: May 19, 2006

View of upstream monitoring site (Logger marked with red ribbon)

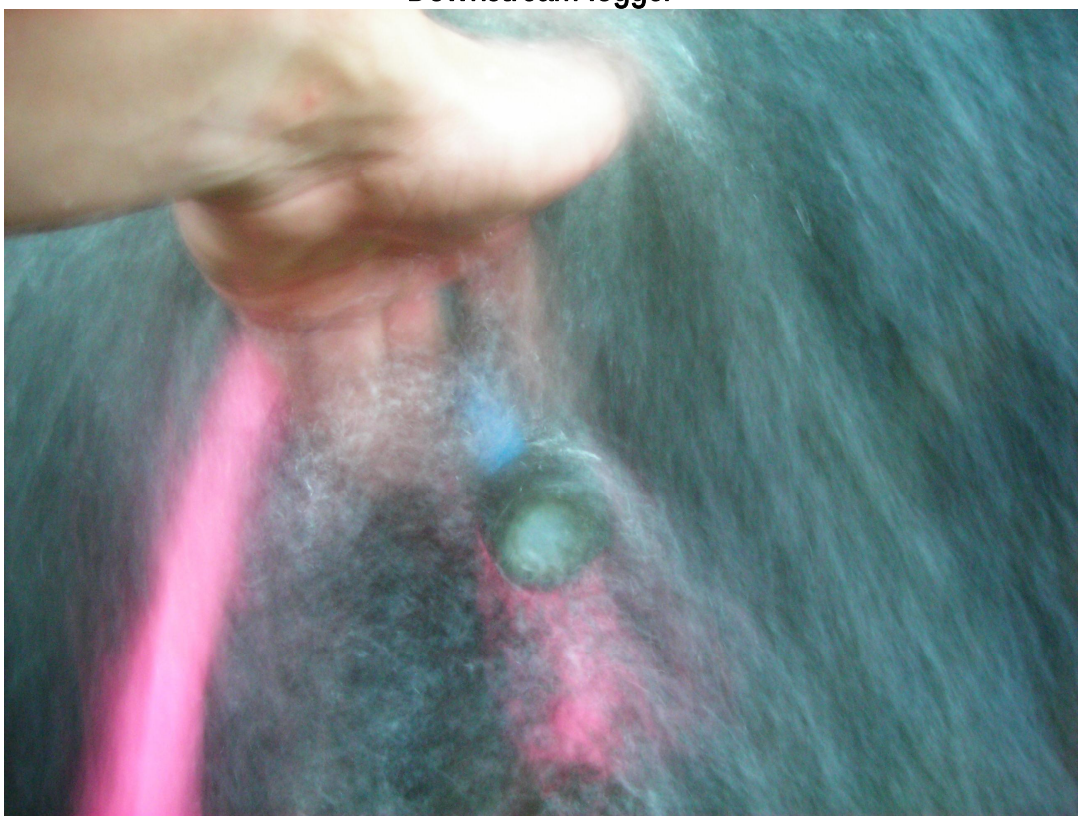
Upstream logger

Photos taken: May 19, 2006

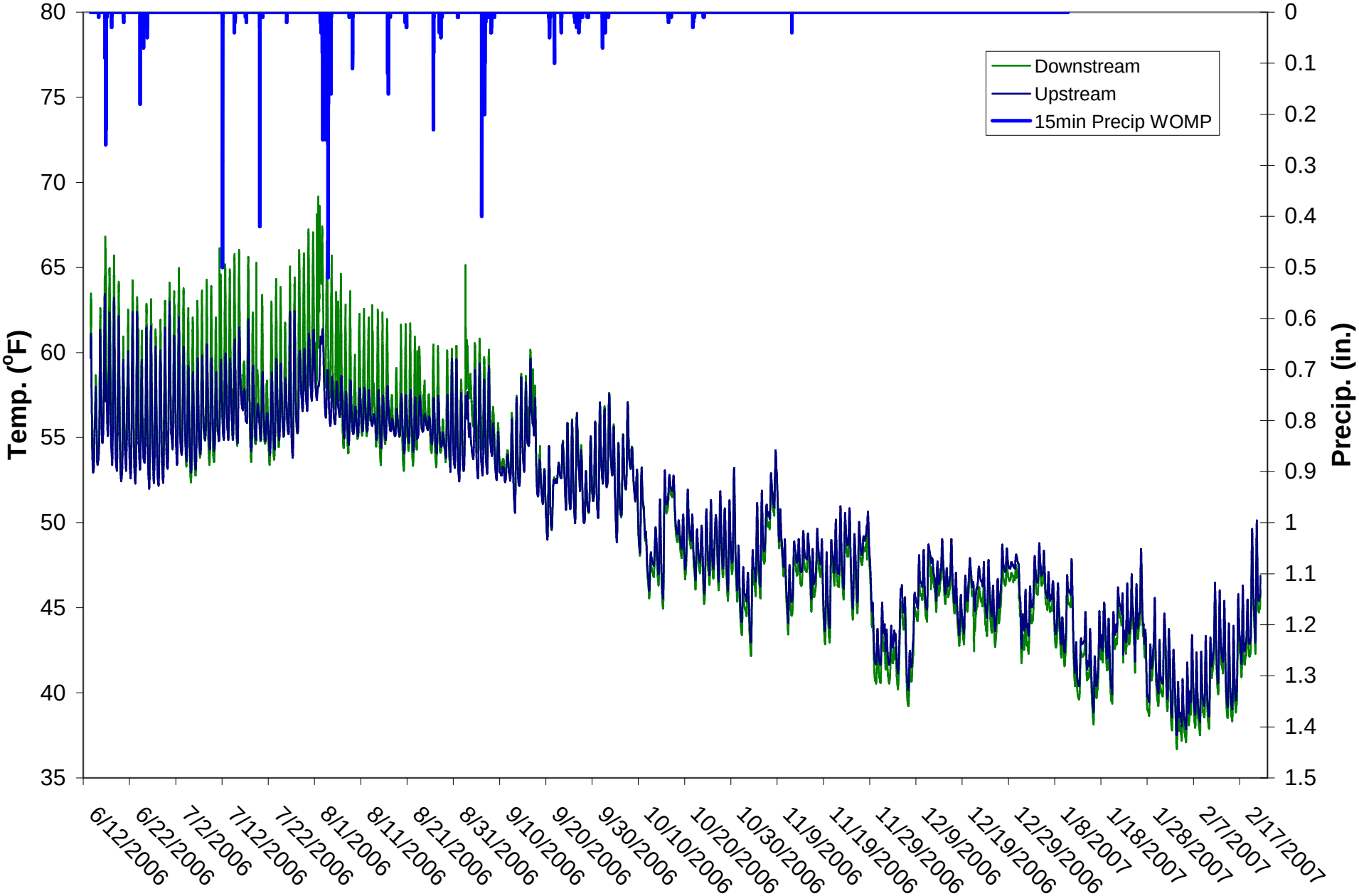
View of downstream monitoring site (located under a rail road bridge)



Downstream logger



Graph 1
Upstream and Downstream Stream Temp and Precip
6/12/06 - 2/21/07



Graph 2
Upstream and Downstream Stream Temp and Precip
6/13/06 - 6/29/06