

**FROM** Ted Walsh, Water Quality Planning Section, NHDES Watershed Management Bureau

**TO** Steve Couture, Rivers Management Protection Program, NHDES Watershed Management Bureau

**DATE** June 5, 2006

**SUBJECT** Water quality data above and below new channel in the Suncook River

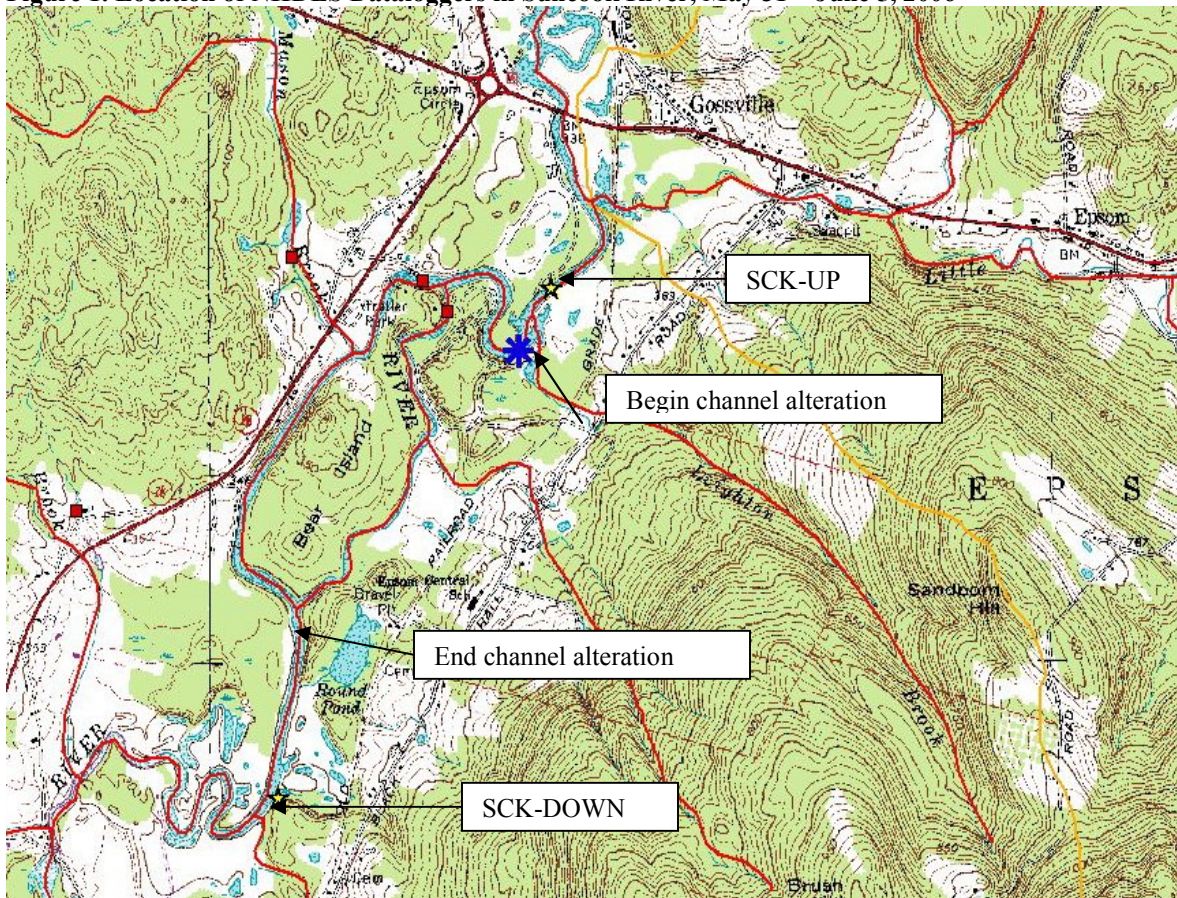
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On May 31, 2006 two YSI 600XLM water quality data loggers were deployed in the Suncook River. All equipment was calibrated and checked with handheld meters as per the EPA approved Quality Assurance Project Plan for the Volunteer River Assessment Program. The purpose of deploying the data loggers was to determine if changes were occurring in water quality as the Suncook River flowed through its newly formed channel.

The dataloggers were programmed to record dissolved oxygen, pH, specific conductance, and water temperature every 15 minutes. Turbidity measurements were taken with a handheld meter at both the time of deployment (5/31/06) and when the dataloggers were removed from the water (6/5/06).

The upstream datalogger was placed approximately 300 yards upstream of the location where the new channel was formed. This station was called SCK-UP. The downstream datalogger was placed approximately 400 yards downstream from where the river returns to its original channel. This station was called SCK-DOWN. Figure 1 depicts the locations of the dataloggers.

**Figure 1. Location of NHDES Dataloggers in Suncook River, May 31 – June 5, 2006**



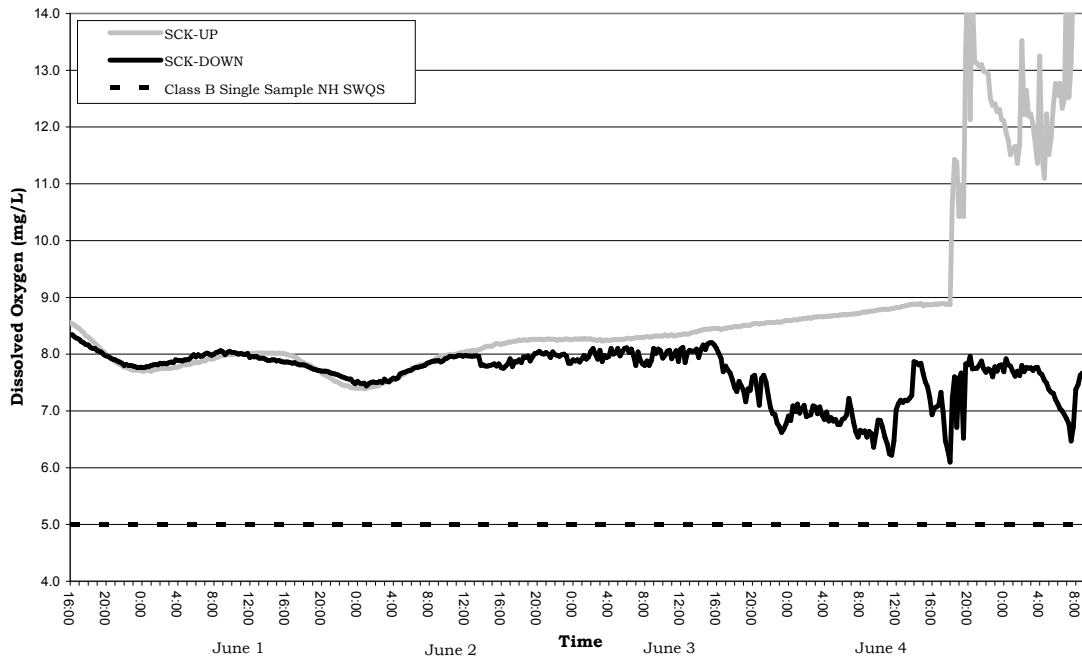
## RESULTS

During the period the dataloggers were deployed in the Soucook River a significant amount of precipitation fell in a short period of time causing an increase in discharge. At some point the increased flow dislodged both dataloggers from their moorings. Data collected after the dataloggers were disrupted is not considered reliable. All data logged prior to this disturbance is qualified as valid data. The approximate time of the disruption was 2:00 PM on June 3<sup>rd</sup>.

### Dissolved Oxygen

Figure 2 depicts the results of the dissolved oxygen levels recorded in the Suncook River from May 31 to June 5. The data indicate that there was no significant variation in dissolved oxygen levels above and below the new channel. At both locations dissolved oxygen levels were well above the New Hampshire Class B standard of 5.0 mg/L.

**Figure 2. Dissolved Oxygen Concentration Statistics for the Suncook River  
Upstream and Downstream of New Channel  
May 31 - June 5, 2006, NHDES**



**pH**

Figure 3 depicts the results of pH recorded in the Suncook River from May 31 to June 5. The data indicates that there was no significant variation in pH above and below the new channel. On all occasions pH levels were below the Class B minimum standard of 6.5.

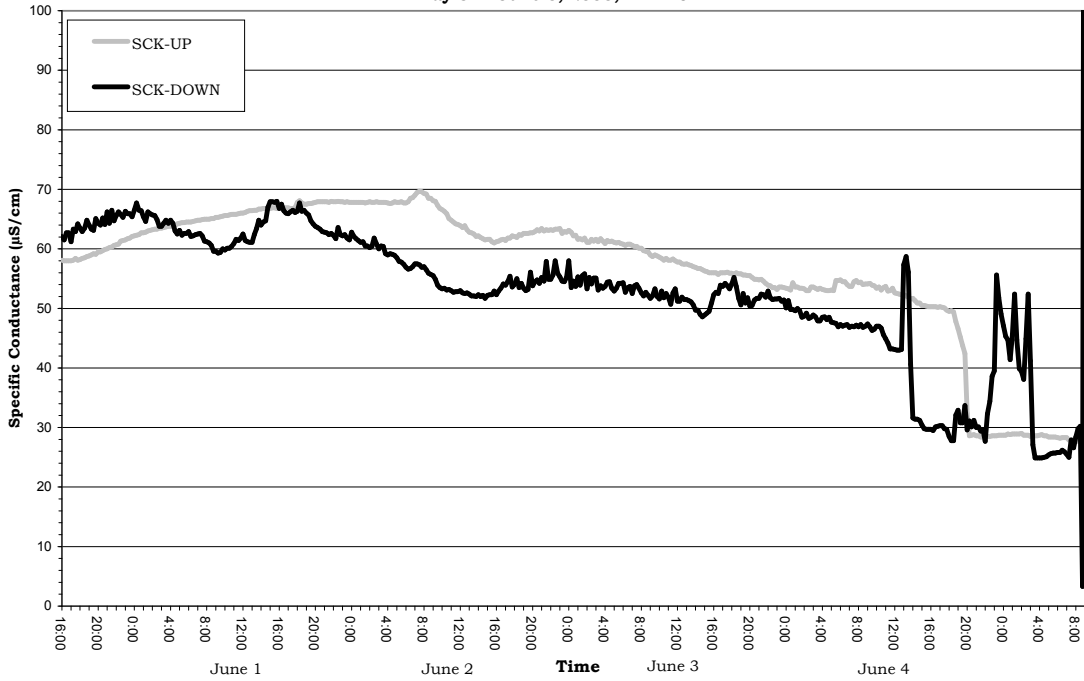
**Figure 3. pH Statistics for the Suncook River  
Upstream and Downstream of New Channel  
May 31 - June 5, 2006, NHDES**



**Specific Conductance**

Figure 4 depicts the results of specific conductance levels recorded in the Suncook River from May 31 to June 5. The data indicates that there was no significant variation in specific conductance above and below the new channel. There is no numerical water quality standard for specific conductance.

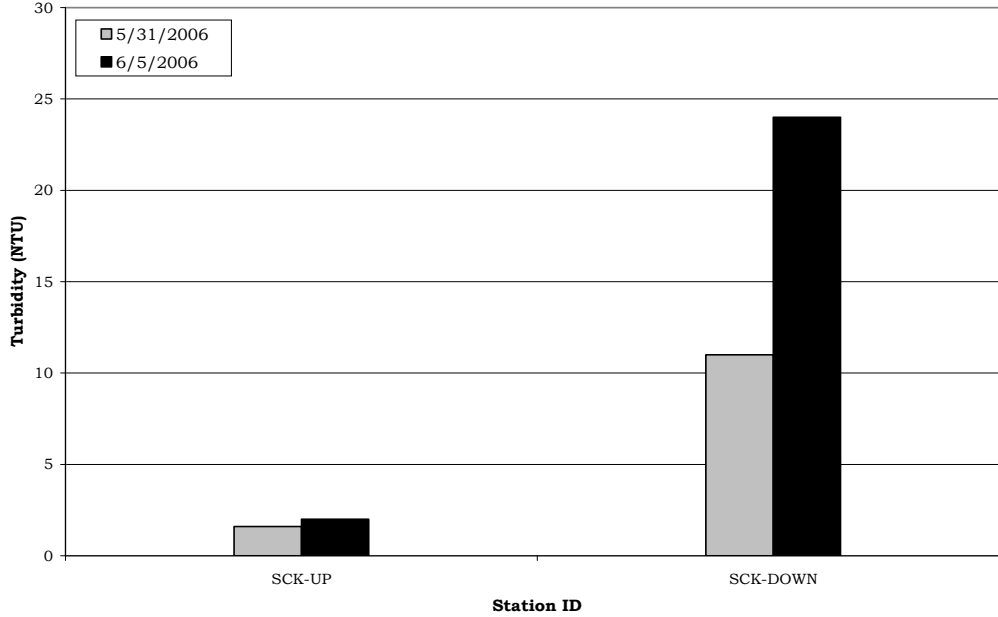
**Figure 4. Specific Conductance Statistics for the Suncook River  
Upstream and Downstream of New Channel  
May 31 - June 5, 2006, NHDES**



### Turbidity

Figure 5 depicts the results of instantaneous turbidity levels recorded in the Suncook River on May 31 and June 5. The data indicates that turbidity levels are significantly higher in the station downstream of the new channel. Field observations confirm that the water is visibly more turbid at the downstream station. Turbidity levels were higher on June 5 than May 31 and this is likely due to the significant rainfall that occurred during that period.

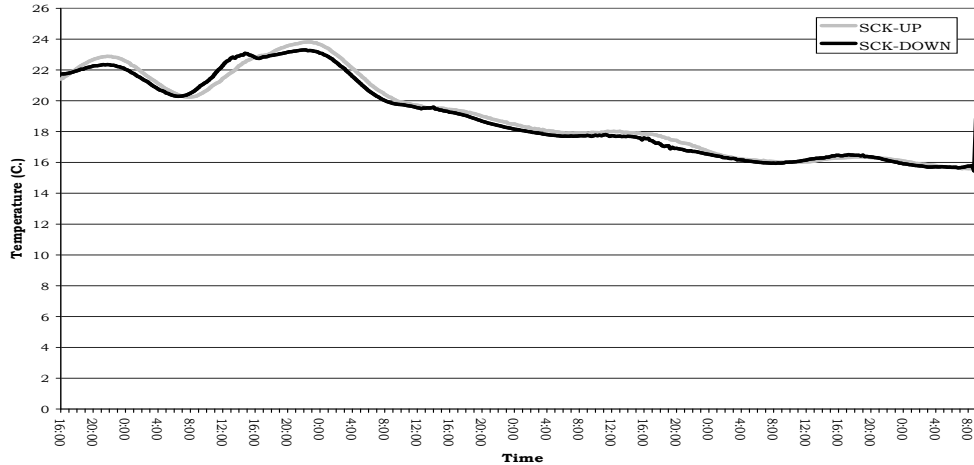
**Figure 5. Turbidity Statistics for the Suncook River  
Upstream and Downstream of New Channel  
May 31 and June 5, 2006, NHDES**



### Water Temperature

Figure 6 depicts the results of water temperature recorded in the Suncook River from May 31 to June 5. The data indicate that there was no significant difference in water temperature above and below the new channel.

**Figure 6. Water Temperature Statistics for the Suncook River  
Upstream and Downstream of New Channel  
May 31 - June 5, 2006, NHDES**



## **Conclusions**

The dataset collected from May 31 to June 5, 2006 in the Suncook River indicate that turbidity is the only water quality parameter of those measured that significantly varied from above the new channel to below.

Perhaps the most significant impact to the Suncook River is the alteration of biological habitat. The substrate and vegetation that comprises the new channel is significantly different than what existed in the old channel. It is likely that in the short term species which existed in the old channel may not find suitable habitat in the new channel.