

## **EPA March ¼ end Report as to Date**

### **Water Quality Monitoring Program**

#### *Monitoring Sites*

Water quality funding from the EPA started on July 1, 2003. Friends of the Teton River had funded water quality sampling for two years prior to July. Water quality data was collected from 12 sites in the upper Teton Watershed 6 times since May 2003. No sampling has been done between January 1, 2004 and March 31, 2004. The next sampling round will performed in April.

### **OTHER PERTINENT INFORMATION**

#### **Nitrogen Upper Teton Watershed (UTW)**

The Teton Subbasin Assessment says “wetlands serve as sources, sinks, or transformers of chemicals, depending on the wetland type, hydrologic conditions, and the length of time the wetland has been subjected to chemical loading” (DEQ 2003). It’s possible for the wetlands along the Teton River to function as sinks and sources of nitrogen, depending on hydrologic conditions.

FTR’s 2003 data shows nitrogen levels increased from May to September, with the headwaters of the Teton River having the highest concentrations for the main river sites. As for the tributaries Six Springs Creek had the highest nitrogen levels at 2-3 mg/L throughout the summer. Lower Fox Creek also had levels above 2mg/L. Warm creek generally had the lowest levels of nitrate along with Fish Creek and Woods Creek. All three forest service sites had very similar nitrogen levels, starting at about 0.90 mg/L in May and then dropped to 0.80 mg/L in June and July and then rose to 1.18 in September.

Idaho State University (Bowman, Relyea, Minshall 2000) collected samples in 1999 from several streams on the western edge of the Greater Yellowstone area, extending from Teton pass to the Montana border, South Fork Leigh, Moose, Moose (Island Park) Rock and Conant Creeks. Nitrates in the streams ranged from <0.002 to a maximum of 0.11 mg/L, in the Teton streams, nitrate ranged from 0.038 mg/L at Trail Creek to 1.192 mg/L at Fox Creek above the confluence with the Teton River. FTR 2003 data shows that nitrate/nitrite values range from 0.77 mg/L in Warm creek to 3.89 mg/L in Six Springs Creek.

#### ***E.coli* Background**

Bacteria called *E.coli* (Escherichia coli) are found in the intestines of all vertebrates where they are actively breaking down food. The bacteria thrive in dark, warm, damp, low-oxygen environments. E.coli will not thrive for long in aerobic environments, they prefer living without oxygen (Merriam 2004).

*E. coli* are not normally found in rivers or streams. When *E. coli* is found in streams or rivers it indicates that there is pollution from human or animal waste. So, *E. coli* are used as an indicator organisms for other dangerous pathogens like cholera, typhoid or hepatitis which are hard to detect in water. Merriam (2004) points out that if feces from a single person with typhoid fever find their way into a lake used for drinking water, hundreds of cases of typhoid fever may follow.

The most dangerous strain of *E. coli* is 0157:H7, it produces a poisonous toxin in the body which can cause symptoms such as mild diarrhea or even death. This strain is generally found in contaminated hamburger and other meats as well as unpasteurized milk, but it is rarely found in open water (Merriam 2004).

### ***E. coli* in the Upper Teton Watershed**

FTR 2004 data *E. coli* bacteria counts range from 0 cfu/100 mL at several sites to 1334 cfu/100 mL at Woods Creek. Woods Creek bacteria counts started high at 1162 cfu/100 mL in June and continued throughout the summer until September, when counts were down to 110 cfu/100 mL. *E. coli* counts have remained low in December (See Figure 1). The Teton River (headwaters) site has generally had measurements of around 200 cfu/100 mL, but in December it had an exceedance measuring at 660 cfu/100 mL FTR will continue to watch the *E. coli* levels at this site. The Teton River is protected for Secondary Contact Recreation in the Idaho Water Quality Standards (IDAPA 58.01.02.101.01a). *E. coli* levels cannot exceed an instantaneous measurement of 576 cfu/100 mL or a monthly geometric mean of 126 cfu/100 mL.

### **References**

- Bowman, K.E., C.D. Relyea, G.W. Minshall. 2000. Effects of Water Quality on Ecosystem Structure and Function in the Teton River Basin. Idaho State University. Pocatello, Idaho.
- [DEQ] Department of Environmental Quality. 2003. Teton River Subbasin Assessment and TMDL. Idaho Falls ID.
- Merriam, Aileen. 2003. Demystifying *E. coli*. *A Tale of E. coli and the Company They Keep*. Kennebec Lake Association.  
<http://www.foca.on.ca/Infobase/Archives/ecoli.htm>