

# **Animas Watershed Partnership Quarterly Meeting Durango, Colorado - June 02, 2016**

## **Notes by Norman R. Norvelle - June 21, 2016**

The meeting had two presentations: A Study of Potentially Pathogenic E.coli Bacteria Found in the Animas River – An Update, and Levels of E. coli and Nutrients Measured in the Lower Florida and Animas Rivers in 2014 and 2015. The Durango area is facing the same problems as we are in the Farmington area: aging wastewater treatment systems for mobile home and RV parks and aging residential septic or aerobic treatment systems. Both are only marginally functional and no longer meet existing performance requirements. Farmington is downstream of all of this. The following summary of the meeting from the AWP Quarterly Newsletter is attached.

- Norman R. Norvelle

1. Dr. Steven Fenster from Fort Lewis College Department of Biology

### **A Study of Potentially Pathogenic E.coli Bacteria Found in the Animas River: An Update.**

There are many threats and flows to water quality. One example is fecal coliform and E.coli which are tested by governmental agencies. Fecal Coliform is in all water systems, but its source is still being studied. High levels of E.coli can indicate transmission or increase in pathogens in the water. All animals have E.coli in their gut, but it's not pathogenic. E.coli doesn't come from one source, but can come from agriculture waste, human waste, animals, etc. The unappreciated source is animals such as water fowl. Water fowl are one of the major contributors. Fort Lewis Professors include sampling in their curriculum creating youth awareness.

There are 3 sites in the Durango Animas area. The preliminary analysis identifies fecal coliform using a .45 micron filter. E.coli grows on the filter to establish colonies to test using blue positive dye. E.coli colonies grown at 45 degrees determine when the E.coli had been released into the water. Growth at 45 degrees indicates likeliness that E.coli was released into the water stream a short time ago. While resident E.coli is more used to the natural, cooler water temperature. Preliminary chain reaction using purified DNA identifies 2 different genes specifically found in E.coli. This indicated potential for more extensive testing to verify E.coli.

Antibiotics were tested to determine E.coli resistance. Rings form around the antibiotic in different sizes. The smaller the ring the higher resistance to an antibiotic, as inside the ring there is no E.coli. .

Summary: Preliminary study of E.coli in the Animas river. Further looking at genes in E.coli and resistance to antibiotics. Source of fecal coliform unknown. Melissa May with SJSWCD has done study using bacteroides to determine more specifically where the E.coli is from on the lower Animas and two sites in Colorado.

## 2. Ann Oliver with Animas Watershed Partnership

### **Levels of E.coli and Nutrients Measured in the Lower Florida and Animas Rivers in 2014 and 2015.**

In 2014 and 2015, the AWP volunteers sampled nutrients, E. coli, and turbidity at several sites on the Florida River and on the Animas just upstream and downstream of the Florida River. The 2014 sampling was part of the larger Microbial Source Tracking and Nutrients Study lead by the San Juan Watershed Group in New Mexico. The purpose of the both the 2014 and 2015 sampling was to improve understanding of the sources of E.coli, phosphorus, and nitrogen in the Florida River and in the Animas downstream.

The data showed the following:

1. E. coli levels on the Florida River near Bondad consistently exceeded the Colorado state standard for full contact recreation in the water, and were also in exceedance a few times on the Animas River near the state line, contributing to the high levels founds downstream in New Mexico.
2. In 2014, most samples on the Animas River near the state line tested positive for bacteria from human waste.
3. In 2015, every site sampled had at least one phosphorus reading high enough to exceed the new standard taking effect in Colorado in 2022.

The E. coli levels near the mouth of the Florida River raised concern around recreational use of the Florida Rivers. The levels of nutrients may contribute to algae growth during warm weather and could also play a role in reducing oxygen available to support aquatic life. Both the E. coli levels and the nutrient levels sampled likely contributed to the current water quality issues on the Animas River in New Mexico.