

**WRI47 – Biological Study in Mining Impacted Watershed**  
**PROGRESS REPORT**  
December 12, 2002

**TASK DESCRIPTION**

As of December 12, 2003 have initiated the following tasks:

1. Site selection (34 sites for regular water sampling and an additional 50 sites for instantaneous sweeps of water chemistry).
2. Regular sampling of surface water chemistry and discharge at 34 locations in the lower Cheat River basin was initiated May 2002. A regular sampling regime was continued until September 2003. Samples are taken over a 3-day period every 3 weeks (total of 3 samples at each station have been taken to date). Water samples are taken to Black Rock labs in Sabraton, WV for analysis. The following parameters are determined: pH, conductivity, dissolved oxygen, total Al, total Fe, total Mn, total Cd, total Cr, total Ni, acidity, sulfate. Occasionally we also determine selenium concentrations.
3. Sampling of surface water chemistry and discharge from an additional 50 sites distributed throughout the lower and upper Cheat River basin. These additional sites were sample only once in late October. This sample provided information on stream water chemistry during a period of moderate baseflow. Additional samples next year will provide comparable data for high and low baseflows.
4. Benthic invertebrate community samples from the 34 regularly sampled streams.
5. Statistical analysis of water quality data and lab processing of benthic invertebrate data.

**SUMMARY OF ACCOMPLISHMENTS**

The most significant accomplishments to date are as follows:

1. All field sampling of water chemistry and benthic communities has been completed.
2. Laboratory analysis of water chemistry samples has been completed.
3. Preliminary analysis of water chemistry data has been initiated.
4. Processing of benthic invertebrate samples has been initiated.

**TECHNICAL PROGRESS**

As an indication of technical progress to date, I have attached a data table that includes information on water chemistry composition of the 34 regularly sampled streams. Presented are

averages, minimum and maximum values, and the average coefficient of variation (Avg. CV) of various parameters measured in our study (Table 1).

Table 1. Summary statistics of selected water chemistry parameters measured at 34 regularly sampled streams in the lower Cheat River basin. Each site was measured every three weeks from May 2002 – May 2003.

Site Type	Unimpaired Reference			Moderately Impaired			Severely Impaired		
Number of Sites	5			25			4		
	Mean	Min - Max	Avg. CV	Mean	Min - Max	Avg. CV	Mean	Min - Max	Avg. CV
pH	7.2	7.0 - 7.4	2.2	6.3	4.1 - 7.0	13.0	3.30	2.74 - 3.86	15.7
Acidity	6.70	3.5 - 10.5	38.8	20.5	8.3 - 44.7	47.8	272.1	130.2 - 460.0	60.7
Iron	0.18	0.11 - 0.27	34.0	0.24	0.09 - 0.57	43.6	24.19	5.27 - 58.47	102.2
Aluminum	0.15	0.12 - 0.17	13.0	0.57	0.12 - 2.80	143.2	17.21	8.51 - 31.77	64.1
Manganese	0.027	0.015 - 0.035	29.5	0.352	0.045 - 1.645	96.1	3.689	1.564 - 7.981	78.8
Nickel	0.009	0.008 - 0.010	7.8	0.023	0.009 - 0.083	69.1	0.237	0.147 - 0.380	47.6
Cadmium	0.0014	0.0012 - 0.0016	10.5	0.0020	0.0010 - 0.0052	55.3	0.0029	0.0024 - 0.0038	21.4
Chromium	0.0009	0.0006 - 0.0012	22.1	0.0017	0.0006 - 0.0064	69.0	0.0073	0.0036 - 0.0146	69.5

### PLANS FOR THE NEXT UPCOMING 3 MONTHS

We will continue to process benthic invertebrate samples and conduct statistical analyses on water chemistry data.