

Moshannon Creek Watershed Flow Measurement and Macroinvertebrate Sampling Training Clearfield County

Summary of Services Provided through the Trout Unlimited AMD Technical Assistance Program

May 2009

The Moshannon Creek Watershed Coalition (MCWC) is a watershed group that is working in Clearfield and Centre counties to restore Moshannon Creek from the effects of abandoned mine drainage (AMD) caused by unregulated coal mining practices of the past. Because it is considered one of the largest and most severely polluted tributaries in the West Branch Susquehanna River watershed, the assessment and development of a watershed restoration plan for Moshannon Creek is recognized as being instrumental in the overall restoration of the West Branch. Due to the size of the watershed and scope of the problem, this assessment has been quite an undertaking for such a small group of volunteers. Because they do not have the funds to hire a professional biologist to perform a biological assessment of the stream, the group requested technical assistance from Trout Unlimited to ensure that they are collecting flow data and sampling benthic macroinvertebrates according to DEP and EPA-established protocols.

On May 14, Rachel Kester accompanied volunteers from MCWC, along with the Watershed Specialist from the Clearfield County Conservation District who is helping with the Phase II assessment of Moshannon Creek, into the field as they performed their quarterly sampling at seven locations within the watershed. These locations, as well as, their coordinates are listed in Table 1 below.

Sample Site	Latitude	Longitude
Big Run	40.853226	78.284278
Goss Run	40.837185	78.348260
Beaver Run above	40.800046	78.391437
Beaver Run below	40.848044	78.292856
Little Beaver Run	40.854689	78.336868
Coal Run	40.852897	78.301275
Moshannon Creek at Osceola Mills	40.847815	78.272090

Table 1: Moshannon Creek Phase II Assessment Quarterly Sampling Locations

Flow measurements were recorded at each of these sites using a Price AA current meter and top-setting wading rod. The stream was divided into cross sections representing no greater than 1/10th of the flow in any given segment. Water depth was recorded for each segment, as well as, the velocity of the water. This information will be entered into a flow calculation workbook which uses Microsoft Excel to produce the total reach flow in gallons per minute. These flow measurements will then be used in conjunction with water

chemistry data collected at each site to produce loading values for acidity, iron, aluminum, and manganese.

At each of the seven sites listed in Table 1 above, a habitat assessment form was completed and 6 kicks of 45 seconds each were performed within a 100-meter reach in the best available habitat (riffles). Once all six kicks were completed, the net was emptied and washed into a bucket. Excess water was decanted, and any detritus, sediment and macroinvertebrates were placed into a 500-ml plastic bottle and preserved using 95% ethanol. Because there were so few macroinvertebrates found in each sample, a sub-sample was not necessary.

The macroinvertebrates found will be identified to at least the Family level, but to genus and/or species were possible and will then be applied to a series of metrics to calculate the Index of Biological Integrity (IBI) for wadeable freestone riffle-run stream ecosystems. The following are the metrics that will be used to calculate the IBI:

- Total Taxa Richness
- EPT Taxa Richness
- Beck's Index
- Shannon Diversity
- Hisenhoff Biotic Index
- Percent Sensitive Individuals

Results of the benthic macroinvertebrate sampling from May 14 were not available at the time this report was prepared; however, Trout Unlimited will remain in contact with MCWC and will provide assistance with applying the various metrics and calculating the IBI if necessary.