

KY River Authority Grant
Montessori Middle School of Kentucky/Community Montessori School
Final Report – May 2008

Grant Activity Beginning Date: February 20, 2007

Background Information:

Students were exposed to fundamental concepts through lessons on Watershed & Water Cycle, Matter & Atoms, Elements/Period Table/Compounds, Water Chemistry & Pollutants, Classification of Living Organisms, Introduction to Stream Ecology, Surveying Techniques, and Characteristics of a Healthy Stream. These lessons were in conjunction with hands-on labs. Some of which required multiple observations over one or more weeks.

Upon completion of the lessons and introductory materials, students were placed in groups of 2-4 for project work on the stream at 727 Stone Road. The topics included Water Quality Testing (pH, D.O., hardness, alkalinity, turbidity), Aquatic Life/Aquaculture, Surveying, Bed Material Classification, Water Pollution, Overall Project Oversight/Documentation, Irrigation, Fecal Coliform, Urbanization, Water Level/Velocity/Discharge, Plant Life (in Riparian Zone), KY Watershed Watch, and Stream Restoration. At the completion of the project, all students developed a PowerPoint presentation as well as a teaching outline. They presented both to their peers at the Montessori Middle School and also to elementary students from other Montessori Schools as well as adult members of the community.

Agencies/Groups Involved:

- University of Kentucky, Biosystems & Agricultural Engineering Faculty, Dr. Richard Warner & Dr. Carmen Agouridis
- Lexington-Fayette Urban County Government, Sanitary Sewer Expert, Rod Chervus
- Lexington-Fayette Urban County Government & KY River Watch Primary Contact, Dave Gabbard
- KY Department of Forestry (donated Schumard Oaks for re-forestation in Spring 2007)
- Kentucky Utilities (donated Redbud trees for re-forestation in Spring 2008)

Accomplishments:

Baseline data has been collected for pH, Dissolved Oxygen, Velocity, Bed Material, and Macroinvertebrates. Two additional tests for Fecal Coliform have been completed (one by an outside lab, another by Fayette County.) In addition, we have joined the KY Watershed Watch and submitted our first sample in May 2007 to measure baseline herbicide/pesticide levels. Fecal Coliform sampling was completed in June & July of 2007 as part of the KY River Water Watch. In addition, students completed the Fall 2007 sampling for KY River Water Watch under the supervision of a trained teacher. A third teacher at MMSK was trained to be a sampler for the KY River Water Watch in April 2008. In addition, an Access Database has been created to store stream data for long-term trend analysis.

Step pools have been placed into established drainage trenches around our walking bridge. Riprap has been placed around a small section in the stream to try and preserve a native tree. Shumard Oak trees were planted in the riparian zone in an initial effort to replace invasive honeysuckle with native plants (April/May 2007). In addition, stakes have been placed in a section of the stream to try and prevent further bank erosion. If successful, this may be expanded to other sections of the stream. Additional trees were planted along the stream banks to

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incorporate more native plants and enable future removal of honeysuckle. Approximately 40 Redbud seedlings and 25 dogwood seedlings were planted along the stream in April 2008.

Two different gauges have been installed. The first monitors rain over time on the property that is divided by the stream. The second gauge monitors the level of the stream. Both have the ability to download data for analysis and presentation.

Approximately 150 people were educated by the students on May 9, 2007 in the project areas mentioned above. This education was held at 727 Stone Road in and around the stream. Participants rotated through 5-6 stations in order to get as much exposure as possible to the variety of topics. Participants included students from 3 different local elementary schools, parents, friends, and others.

Associated staff members (R. Self, B. Deville, and A. Sither) met with Dave Gabbard in late April to discuss opportunities for Fayette County to help determine the cause/source of fecal coliform in the stream. Follow-up e-mails have been sent to Mr. Gabbard and it is anticipated that this work will continue as part of the new grant received by the school.

Samples of Products (previously provided as part of interim report):

- Teaching Outlines (printed documents)
- PowerPoint Presentations (electronic files on compact discs)
- Attendance Record from Demonstration Day on May 9, 2007
- Photographs of Demonstration Day

Samples of Products (provided with this document at part of final report):

- Financial Summary (excel file)

Completion Date: May 23, 2008