Developing an Interactive Database – Butler County Stream Team

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**Bob Lentz:** District Coordinator, Butler County Storm Water District

**Dr. Donna McCollum:** Environmental Monitoring Coordinator, IES - Miami University
Agenda

- Overview of Butler County Stream Team
- Introduction to Davey Resource Group
- Walkthrough of www.butlercountystreamteam.org’s data system
Butler County Stream Team – Goals

• **Provide compliance** for Butler County with the public education and outreach requirements of the NPDES Phase II Permit

• **Identification** of illicit discharge or stream impairments

• **Provide opportunities** for graduate students and undergraduates to gain experience

• **Link Stream Team** monitoring and outreach to focused research projects

• **Improve funding** opportunities

• **Use the data** and analysis results to form the basis of peer-reviewed publications and presentations at regional and national meetings.

• **Provide credible**, useful data to inform public officials and decision makers engaged in public planning.

• **Identification of sites** for future stream restoration or implementation of storm water BMPs
Butler County Stream Team – A partnership

Butler County Storm Water District
- Aids in sampling events
- Maintains Project Study Plan and Quality Assurance Plan
- Liaison between Ohio EPA and Credible Data program

Butler Soil and Water Conservation District
- Aids in sampling events
- Coordination of volunteers
- Provide outreach programs for children and adults

Miami University, Institute for Environment and Sustainability (IES)
- Provides support staff person and graduate assistant for Stream Team and Center for Aquatic and Watershed Sciences CAWS labs
- Stream Team Laboratory for water quality analysis
- Data entry into the database
Butler County Stream Team Volunteer Data Collection
Lab tests samples and keys results into spreadsheet

Samples Sent to Lab

Lab shares results with interested parties

Volunteers want to see the results of their efforts!
Data challenges

Sample data was keyed into an Excel Spreadsheet

Data Version Control

How to analyze the results?

How to share the information with the volunteers to maintain their dedication to the program?

There is no spatial element to the data

Illustration credit: Ainsley Seago.

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Davey Resource Group

Providing a full range of urban and utility forestry and natural resource consulting services.

- **Utility Services**
  Vegetation management and asset management services for the right of way.

- **Natural Resource Consulting**
  Complete ecological services and urban forestry services.

- **Specialized Consulting / Project Management**
  Comprehensive project management services for complex and distinct projects.

- **GIS and IT Custom Solutions**
  Innovative solutions and services featuring the latest technology.

- **Work for DRG**

- **Contact Us**
  Use this form to contact our team.
Davey Resource Group

Experience building similar data entry and analysis systems for …

Currently building one for

www.secchidipin.org
Butler County Stream Team
Volunteer Water Quality Monitoring

Explore Your Watershed

You never know it, until you row it!
User Levels

There are 2 types of users on the database:

**Guest** –
- Read only access to the system
- Run/View Reports and Graphs

**Administrator** -
- Can add new samples
- Edit any existing sample
- Run/View Reports and Graphs
- Add New Users
- Quality Control Data

Photo credit: Brian Kerrigan
[WikiMedia Commons]
Using the Map

Clicking on a site record will automatically zoom the map to that feature. Or you can choose features in the map to zoom to the record in the table.
Use the spatial selection tool to select multiple sites on the map.
Using the Map

Selected sites show up as green points, and the site listing on left reduced to what is in the map selected set. Reports will automatically feed off this subset of data!
Reports specific to the sample information tied to the site itself are available under the “details” button.
Within each site, sample information can be graphed on the following measurements: Conductivity, pH, TDS, Phosphate, Nitrate, Turbidity, Coliform, E. coli. These measurements can be graphed comprehensively or within date ranges.
### Site Summary

<table>
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<tr>
<th>Sample</th>
<th>Volunteer</th>
<th>Cond (uS/cm)</th>
<th>pH</th>
<th>TDS (mg/L)</th>
<th>Phos (mg/L)</th>
<th>Nitrate (mg/L)</th>
<th>Turbidity (NTU)</th>
<th>COLI (CFU/100 ml)</th>
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Comprehensive sample listing reports can also be generated
Comparison Graphs

**Phosphate** occurs in water in an organic form (needed for animal life) and an inorganic form (needed for plant life). Phosphate is more limited in fresh water than nitrate, so increases in phosphate can lead to more extreme plant growth than increases in nitrate. Excess phosphates can lead to algae blooms, which increase turbidity and water temperature. These increases can result in a habitat that is unsuitable for plant and/or animals. Sources of phosphate include sewage treatment plants, failing septic systems, runoff from fertilized lawns and fields, industrial discharges, and animal waste. According to the EPA, measurements between 0.1 and 0.25 mg/L are acceptable; however, measurements greater than 0.06 mg/L can result in problems, such as algal blooms.

Conductivity, pH, TDS, Phosphate, Nitrate, Turbidity, Coliform, E. coli can each be graphed and compared to other watersheds or streams.
The lab results of each sample can be reviewed.
Adding new samples

Grid based data entry system

Samples are entered as a “bundle”, and results are keyed into the grid as they come in.
Quality Control of Samples

Quick reporting options to show gaps in the sample records.

<table>
<thead>
<tr>
<th>ID</th>
<th>Vol #</th>
<th>Description</th>
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<td>200605.001</td>
<td>Boardman's Stream</td>
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<td>HW Dam</td>
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Conclusion

Butler County Stream Team
Volunteer Data Collection

Davey Resource Group

Online Data Entry System

www.butlercountystreamteam.org

Sunset Maple.....

The end! Thanks for your time