

Developing an Interactive Database – Butler County Stream Team

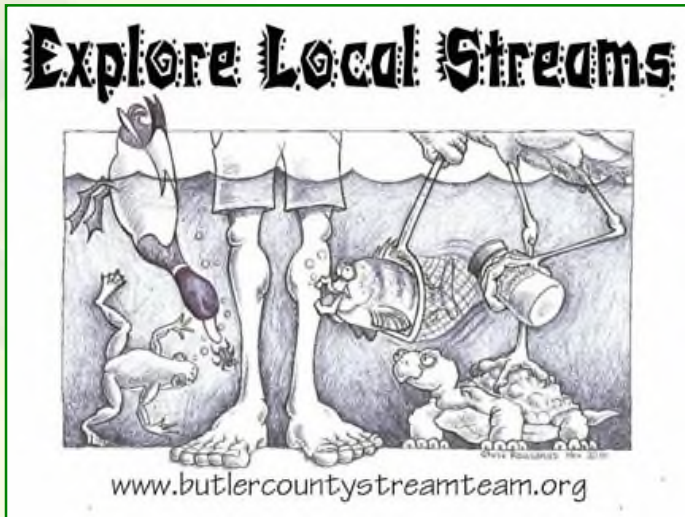


Justin Stratton: Supervisor – IT, Davey Resource Group

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

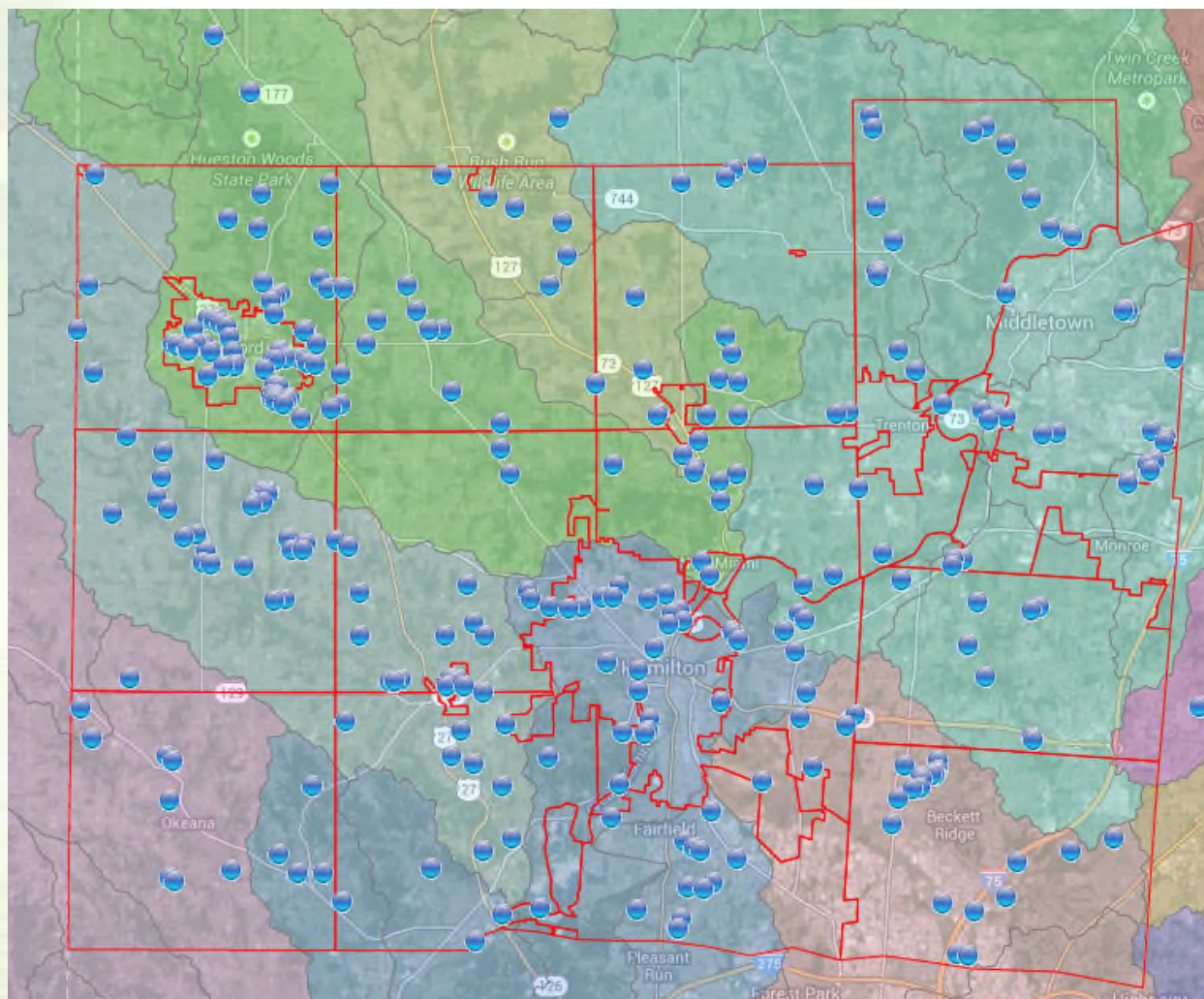
- Aids in sampling events
- Coordination of volunteers
- Provide outreach programs for children and adults



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

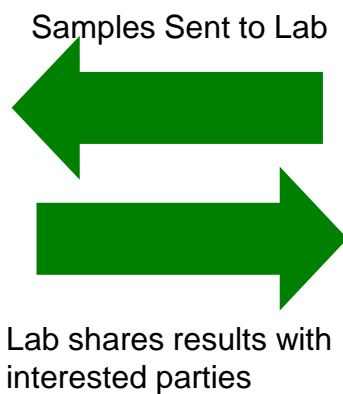
Butler County Stream Team Volunteer Data Collection



Sample Data Handling – Prior to web system



Lab tests samples and
keys results into
spreadsheet



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

Davey Resource Group



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.

More info

- ▷ [Meet Our Team](#)
- ▷ [Submit an RFP](#)

▷ **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**

Current job listings for the Davey Resource Group.

▷ **Contact Us**

Use this form to contact our team.

Davey Resource Group

Experience building similar data entry and analysis systems for ...



Ohio Lake
Management Society



www.secchidipin.org

Currently building one for



<http://www.butlercountystreamteam.org>



Butler County Stream Team

Volunteer Water Quality Monitoring



Enter As Guest



Username:

Password:

Login




Return to Main Stream Team Page

Explore Your Watershed



You never know it, until you row it I

Website Development by Davey Resource Group. 

Main Menu



Butler County Stream Team
Peer Water Quality Monitoring

Sample Sites Listing

Map of all sample sites

Locations

Details Edit Site Sample Wizard Report Graphs Admin Tools Search

ID	Primary Watershed	Name
9032	Acton Lake Dam-Four Mile Creek	Kyger Run from vet parking lot on Lynn St, Oxford
9033	Acton Lake Dam-Four Mile Creek	Trib to Collins Run at Dana Dr. near 610 David Dr
9034	Acton Lake Dam-Four Mile Creek	Harker's Run at 6751 Oxford-Milford Rd
9035	Acton Lake Dam-Four Mile Creek	Bachelor Pond
9036	Acton Lake Dam-Four Mile Creek	Reagh's pond - by golf course Contreras/County
9037	Acton Lake Dam-Four Mile Creek	Bull Run at Sandra and Locust
9038	Acton Lake Dam-Four Mile Creek	Trib to Collins Run at Dana Dr just east of 732
9039	Acton Lake Dam-Four Mile Creek	trib to Bull Run at White Oak Dr.
9040	Acton Lake Dam-Four Mile Creek	Kyger Run at Sandra and Locust
9041	Acton Lake Dam-Four Mile Creek	Bull Run at Fairfield Road

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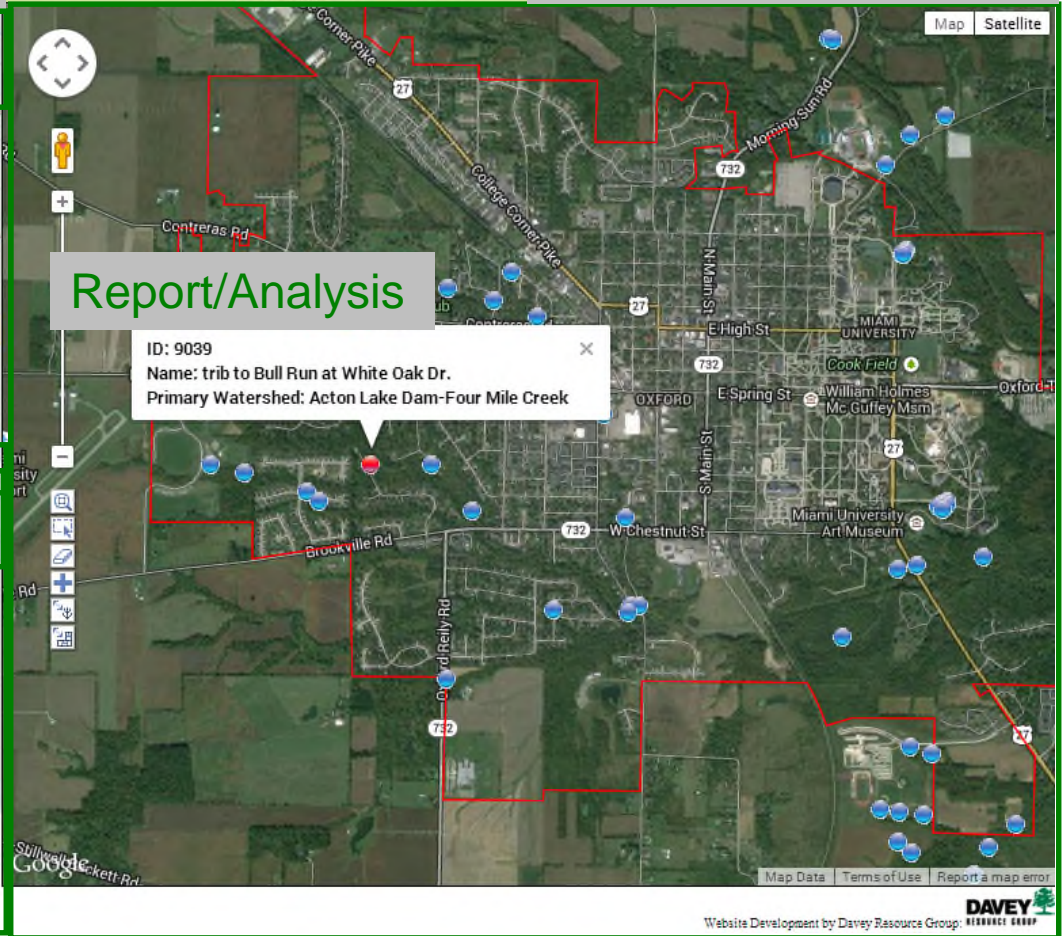
Samples

Details Add Sample Edit Sample Manage Bundles

ID	Vol #	Description
200810.064	V077	Bull Run, crosses White Oak Dr. (north crossing)
200811.052	V077	
200812.068	V077	
200812.087	V077	
200812.095	V077	White Oak, Bull Run Creek
200812.109	V077	White Oak Bull Run Creek
200812.117	V077	White Oak Bull Run Creek

Page 1 of 1 View 1 - 7 of 7

Sample Listing



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



Using the Map



Butler County Stream Team

Volunteer Water Quality Monitoring

[Logout](#)

Locations

Details Edit Site Sample Wizard Report Graphs Admin Tools Search

ID	Primary Watershed	Name
9032	Acton Lake Dam-Four Mile Creek	Kyger Run from vet parking lot on Lynn St, Oxford
9033	Acton Lake Dam-Four Mile Creek	Trib to Collins Run at Dana Dr. near 610 David Dr
9034	Acton Lake Dam-Four Mile Creek	Harker's Run at 6751 Oxford-Milford Rd
9035	Acton Lake Dam-Four Mile Creek	Bachelor Pond
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9040	Acton Lake Dam-Four Mile Creek	Kyger Run at Sandra and Locust
9041	Acton Lake Dam-Four Mile Creek	Bull Run at Fairfield Road

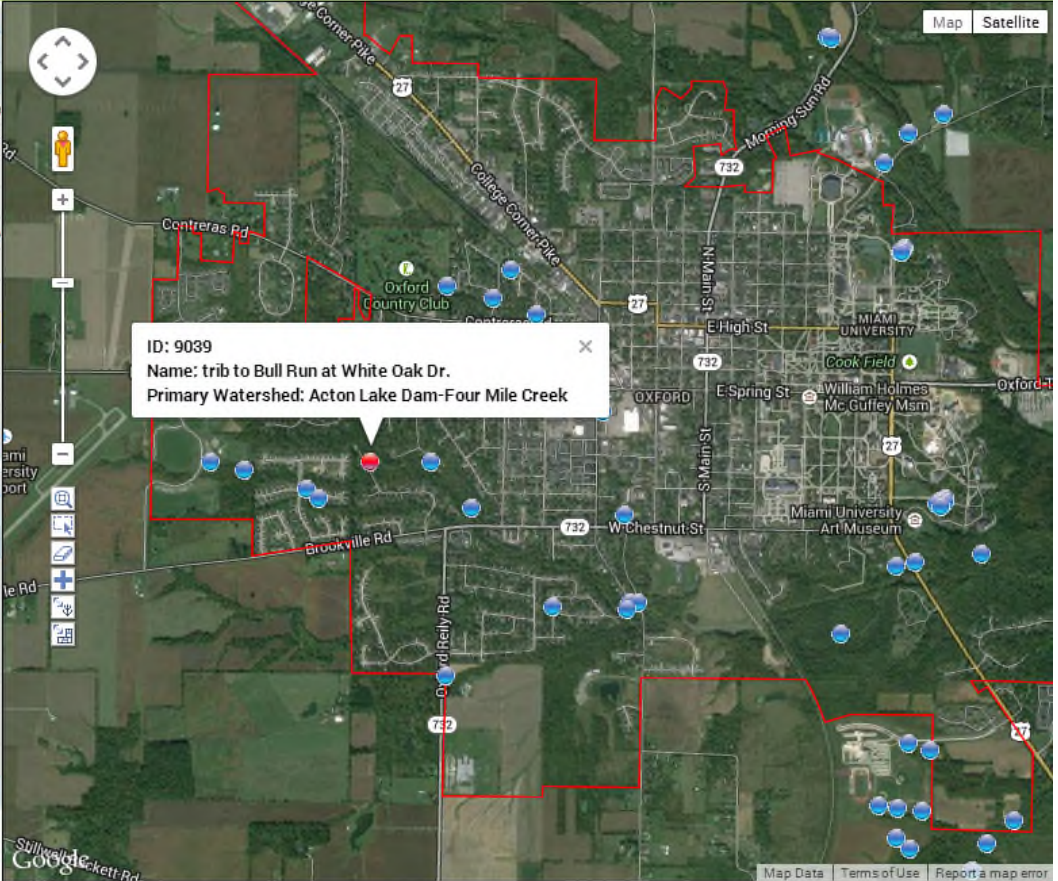
Page 31 of 35 10 View 301 - 310 of 341

Samples

Details Add Sample Edit Sample Manage Bundles

ID	Vol #	Description
200810.064	V077	Bull Run, crosses White Oak Dr. (north crossing)
200811.052	V077	Bull Run at White Oak Dr.
200812.068	V077	White Oak Bull Run
200812.087	V077	White Oak Bull Run
200812.095	V077	White Oak, Bull Run Creek
200812.109	V077	White Oak Bull Run Creek
200812.117	V077	White Oak Bull Run Creek

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ID: 9039

Name: trib to Bull Run at White Oak Dr.

Primary Watershed: Acton Lake Dam-Four Mile Creek


[Map Data](#) [Terms of Use](#) [Report a map error](#)



Website Development by Davey Resource Group

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.

Using the Map



Butler County Stream Team

Volunteer Water Quality Monitoring

[Logout](#)

Locations

[Details](#) | [Edit Site](#) | [Sample Wizard](#) | [Report](#) | [Graphs](#) | [Admin Tools](#) | [Search](#)

ID	Primary Watershed	Name
9032	Acton Lake Dam-Four Mile Creek	Kyger Run from vet parking lot on Lynn St, Oxford
9033	Acton Lake Dam-Four Mile Creek	Trib to Collins Run at Dana Dr. near 610 David Dr
9034	Acton Lake Dam-Four Mile Creek	Harker's Run at 6751 Oxford-Milford Rd
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9040	Acton Lake Dam-Four Mile Creek	Kyger Run at Sandra and Locust
9041	Acton Lake Dam-Four Mile Creek	Bull Run at Fairfield Road

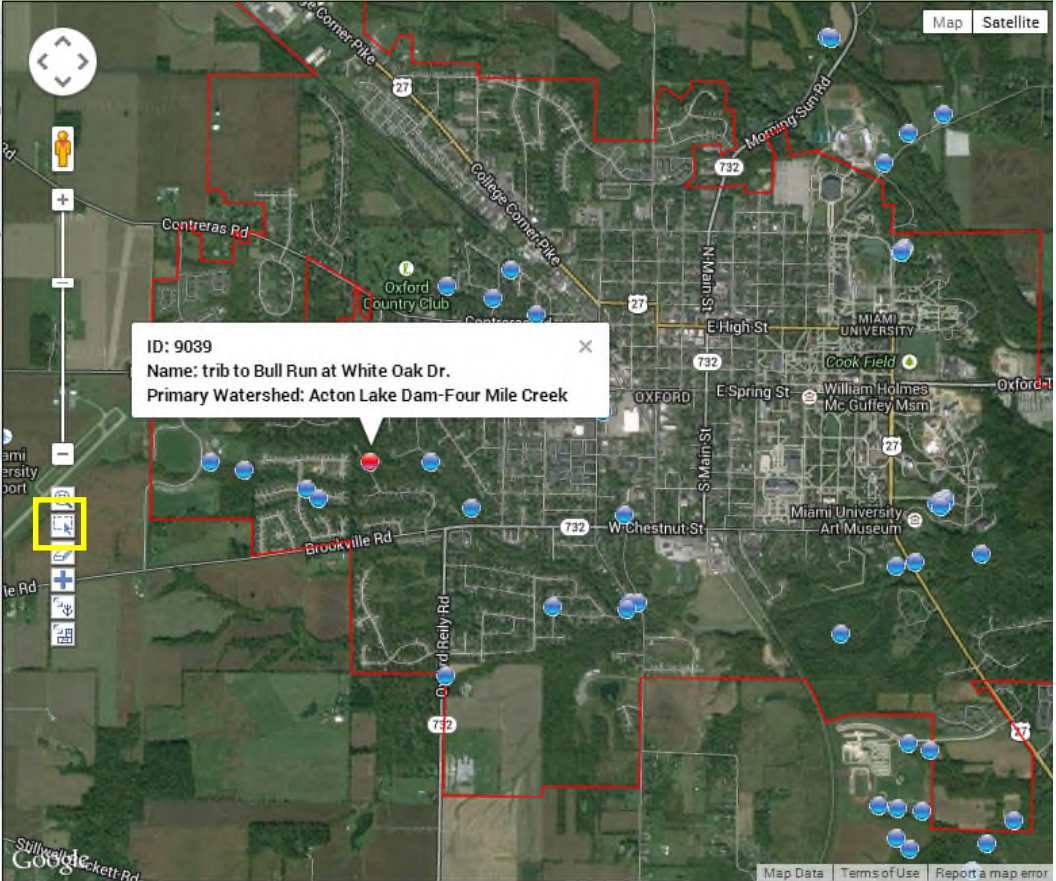
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Samples

[Details](#) | [Add Sample](#) | [Edit Sample](#) | [Manage Bundles](#)

ID	Vol #	Description
200810.064	V077	Bull Run, crosses White Oak Dr. (north crossing)
200811.052	V077	Bull Run at White Oak Dr.
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200812.087	V077	White Oak Bull Run
200812.095	V077	White Oak, Bull Run Creek
200812.109	V077	White Oak Bull Run Creek
200812.117	V077	White Oak Bull Run Creek

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ID: 9039

Name: trib to Bull Run at White Oak Dr.


Primary Watershed: Acton Lake Dam-Four Mile Creek

Map Data | Terms of Use | Report a map error



Use the spatial selection tool to select multiple sites on the map.

Using the Map



Butler County Stream Team

Volunteer Water Quality Monitoring

[Logout](#)

Locations

Details Edit Site Sample Wizard Report Graphs Admin Tools Search

ID	Primary Watershed	Name
0		
9017	Acton Lake Dam-Four Mile Creek	Kyger Run at Chestnut near Kehr
9019	Acton Lake Dam-Four Mile Creek	Collins Run at Locust and Sandra
9020	Acton Lake Dam-Four Mile Creek	Bull Run beside 720 W. Chestnut St.
9030	Acton Lake Dam-Four Mile Creek	Kyger Run ditch at former Walmart on Locust
9037	Acton Lake Dam-Four Mile Creek	Bull Run at Sandra and Locust
9039	Acton Lake Dam-Four Mile Creek	trib to Bull Run at White Oak Dr.
9040	Acton Lake Dam-Four Mile Creek	Kyger Run at Sandra and Locust
9041	Acton Lake Dam-Four Mile Creek	Bull Run at Fairfield Road
9044	Acton Lake Dam-Four Mile Creek	Collins Run from bridge on Sandra Dr.

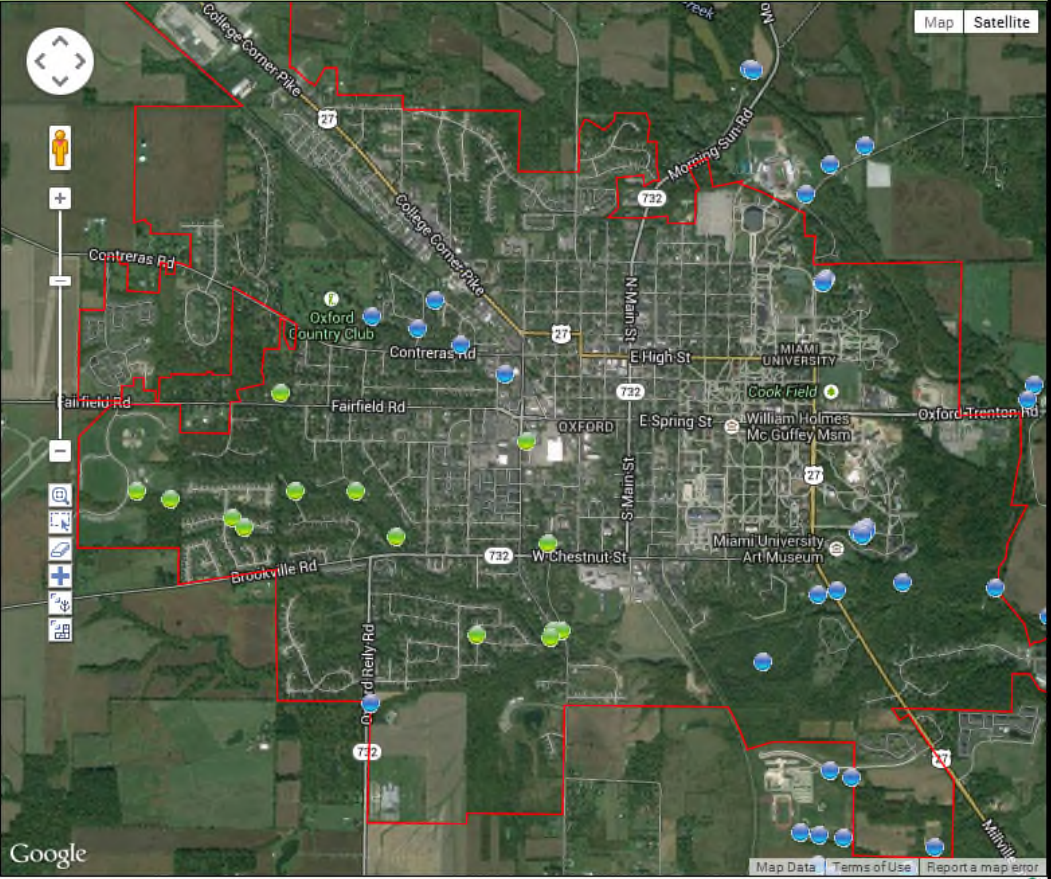
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Samples

Details Add Sample Edit Sample Manage Bundles

ID	Vol #	Description
200605.015		Lane's Mill
200607.015		Four Mile at Lanes Mill Bridge
200608.009		Four Mile at Lane's mill
200709.027		4 Mile Creek at Lanes Mill, Shollenbarger Rd
200811.042	V077	Lanes Mill Rd 4 mile creek
200812.03	V077	Lanes Mill Rd. 4 mile creek
200812.085	V077	Lanes Mill Rd. 4 mile creek
200812.091	V077	4 mile creek, Lanes Mill Rd.
200812.099	V077	4 mile creek Lanes Mill Rd.
200812.11	V077	4 mile creek, Lanes Mill Rd.

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Map Satellite


Map Data Terms of Use Report a map error

DAVEY RESOURCE GROUP

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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!

Site Details



Butler County Stream Team

Volunteer Water Quality Monitoring

[Logout](#)

Locations

Details | Edit Site | Sample Wizard | Report | Graphs | Admin Tools | Search

ID	Primary Watershed	Name
0		
9017	Acton Lake Dam-Four Mile Creek	Kyger Run at Chestnut near Kehr
9019	Acton Lake Dam-Four Mile Creek	Collins Run at Locust and Sandra
9020	Acton Lake Dam-Four Mile Creek	Bull Run beside 720 W. Chestnut St.
9030	Acton Lake Dam-Four Mile Creek	Kyger Run ditch at former Walmart on Locust
9037	Acton Lake Dam-Four Mile Creek	Bull Run at Sandra and Locust
9039	Acton Lake Dam-Four Mile Creek	trib to Bull Run at White Oak Dr.
9040	Acton Lake Dam-Four Mile Creek	Kyger Run at Sandra and Locust
9041	Acton Lake Dam-Four Mile Creek	Bull Run at Fairfield Road
9044	Acton Lake Dam-Four Mile Creek	Collins Run from bridge on Sandra Dr.

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Samples

Details | Add Sample | Edit Sample | Manage Bundles

ID	Vol #	Description
200701.008		Bull Run at Chestnut and Kehr
200703.02		Bull Run at Kehr and Chestnut intersection
200705.002		Chestnut and Kehr
200705.038		Kehr and Chestnut
200706.032		Chestnut and Kehr Rd, under north side of bridge
200707.018		Kehr and Chestnut
200709.03		Collins Run between bottom of Locust & Kehr Rd. bridge
200810.059	V077	Collins Run at bridge at Kehr Rd. and Chestnut
200811.048	V077	Collins Run at Chestnut and Kehr
200811.056	V077	Collins Run at Chestnut and Kehr

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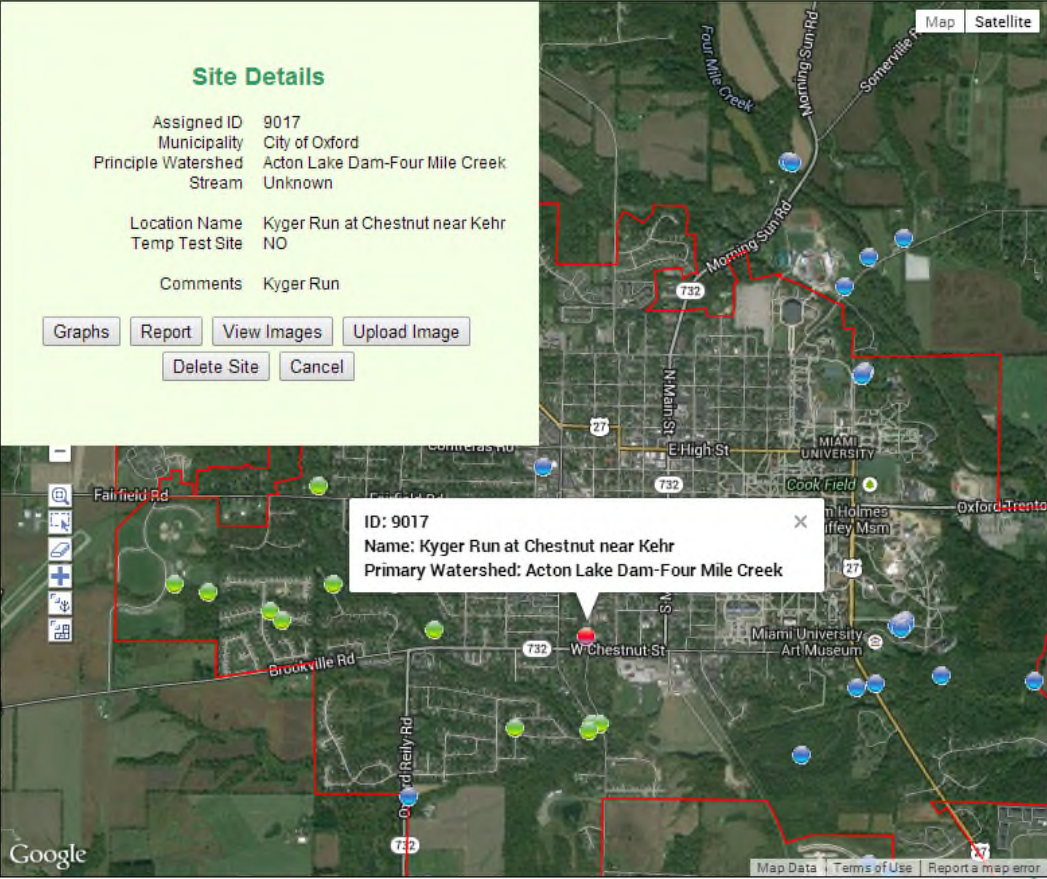
Site Details

Assigned ID: 9017
 Municipality: City of Oxford
 Principle Watershed: Acton Lake Dam-Four Mile Creek
 Stream: Unknown

Location Name: Kyger Run at Chestnut near Kehr
 Temp Test Site: NO

Comments: Kyger Run

[Graphs](#) | [Report](#) | [View Images](#) | [Upload Image](#)
[Delete Site](#) | [Cancel](#)



Map | Satellite

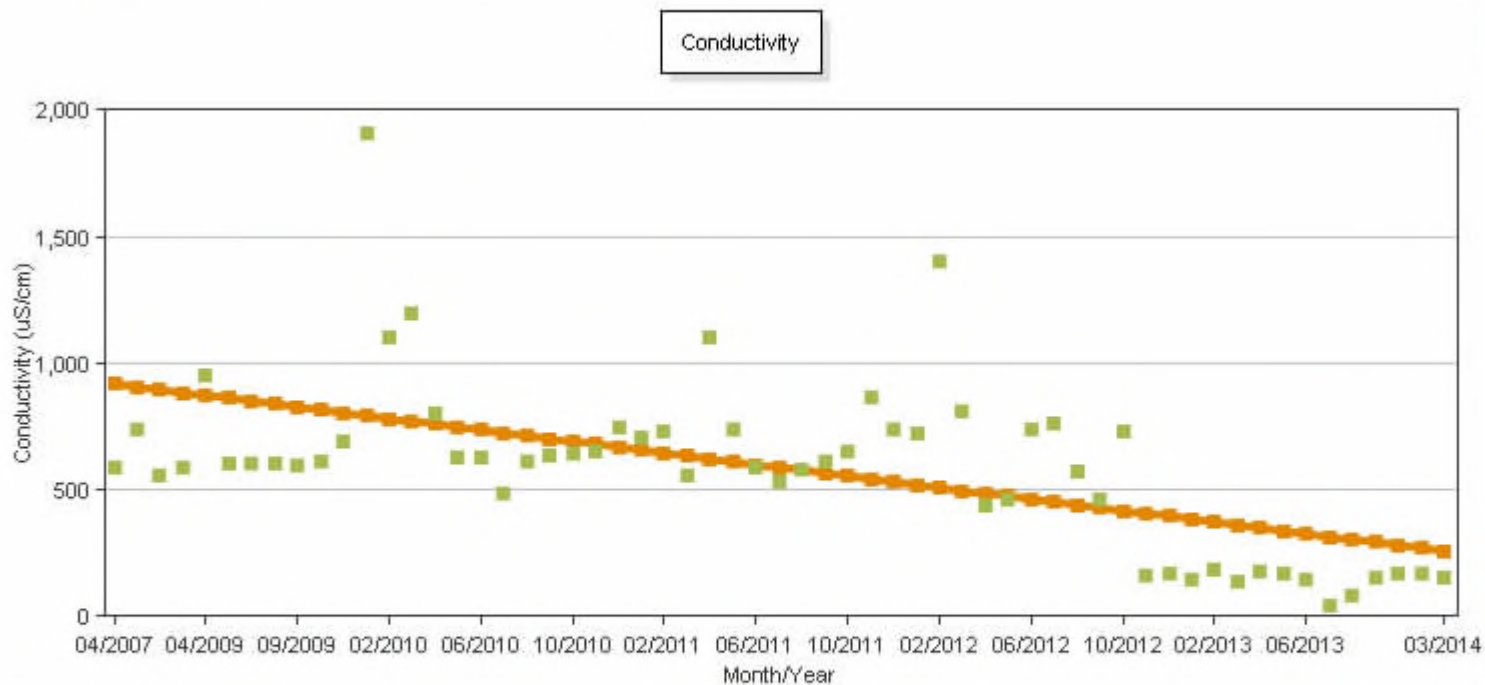
Map Data | Terms of Use | Report a map error

Website Development by Davey Resource Group

Reports specific to the sample information tied to the site itself are available under the “details” button.

Site Details – Sample Graphs

Stream Data: Elk Creek at Howe Road



Conductivity is a measurement of how well the water can carry an electric current. Conductivity is influenced by the amount of negatively charged ions (such as phosphate and nitrate) and positively charged ions (such as sodium and calcium) found in the water. Conductivity can be influenced by the geology of the water channel, surrounding watershed, temperature, and industrial and wastewater discharges. Conductivity usually ranges from 50 - 1500 umhos/cm, but is best for plant and animal life between 150-500 umhos/cm.

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 Details – Sample Listing



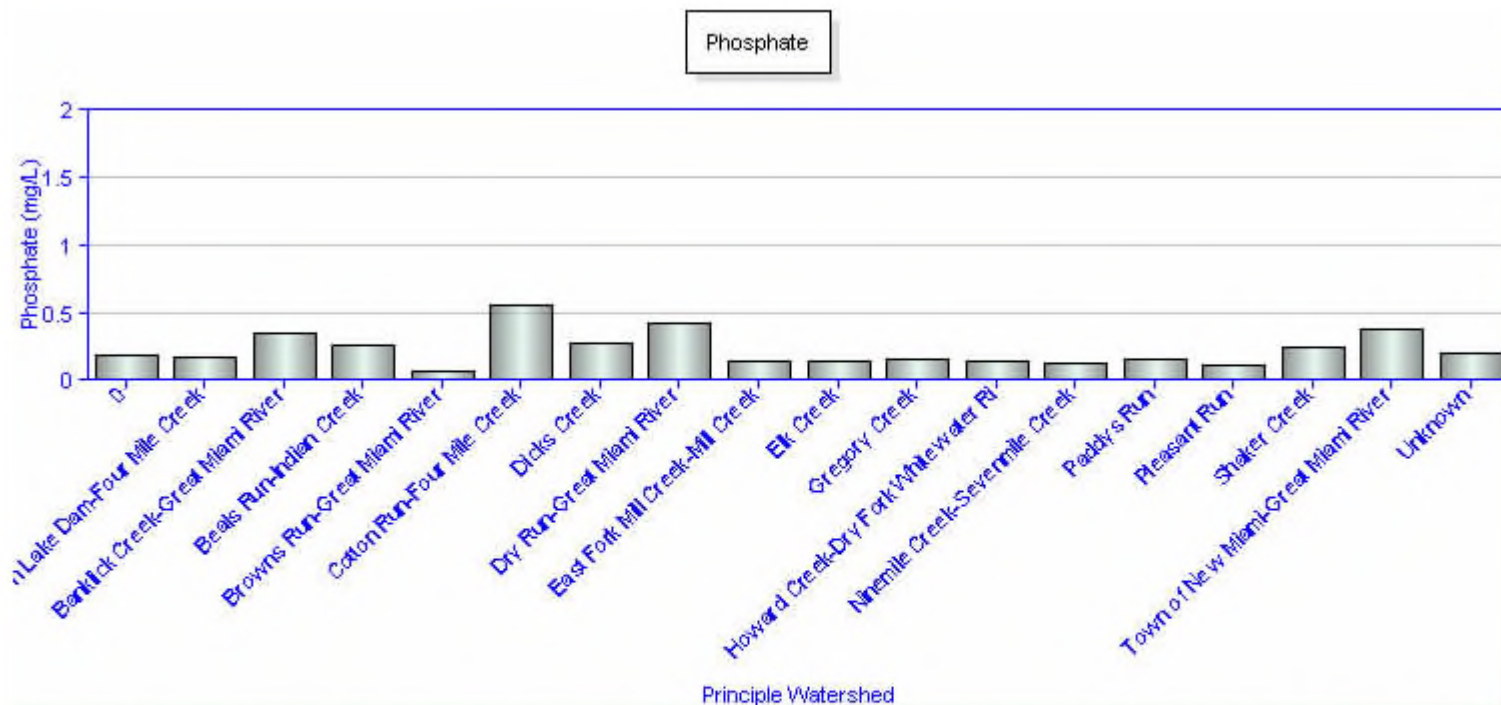
Butler County Site Summary Report

10 April 2014

Site Summary		Elk Creek at Howe Road							
Sample	Volunteer	Cond (uS/cm)	pH	TDS (mg/L)	Phos (mg/L)	Nitrate (mg/L)	Turbidity (NTU)	COLI (CFU/100 ml)	E. coli
2007									
200704.010		586.00	8.60	288.50	0.15	0.50	3.51	4890.	110.0
Averages for 2007		586.00	8.60	288.50	0.15	0.50	3.51	4890.0	110.00
2009									
200901.012	Colin Pettit	743.00	7.48	362.00	1.98	0.70	-0.07	185.0	0.00
200902.055	Scott Brown	555.00	8.33	269.00	0.35	2.80	4.23	525.0	0.00
200904.092	Scott Brown	954.00	8.30	468.00	0.59	0.20	3.64	1250.	20.00
200905.037	Carol Jones	603.00	8.27	293.00	0.47	1.30	0.76	75.00	665.0
200907.054	Carol Jones	604.00	8.21	293.00	0.12	0.90	0.52	505.0	110.0
200908.026	Carol Jones	601.00	8.29	292.00	0.18	-0.10	1.46	1795.	150.0
200909.013	Carl Jones	599.00	7.24	291.00	0.11	0.30	2.10	585.0	5.00
200911.012	Carol Jones	616.00	8.28	293.00	1.04	0.20	1.77	415.0	10.00
Averages for 2009		659.38	8.05	320.13	0.61	0.79	1.80	666.88	120.00
2010									
201001.040	Carol Jones	1911.00	8.45	958.00	0.02	0.50	25.30	10.00	0.00
201002.009	Barb Reisenhauer	1450.00	6.88	727.00	0.32	0.60	0.28	50.00	0.00
201002.034	Carol Jones	750.00	5.99	366.00	0.18	1.00	1.04	0.00	0.00
201006.053	Carol Jones	629.00	8.20	305.00	0.23	0.10	10.34	8680.	1385.
201007.017	Carol Jones	483.00	7.80	234.00	0.54	-0.20	13.60	9479.	1883.
201008.073	Jones C.	616.00	8.20	299.00	0.20	0.40	3.14	6750.	305.0
201009.003	Carol Jones	633.00	8.10	307.00	0.11	0.80	1.88	6265.	80.00
201010.025	Carol Jones	642.00	8.00	312.00	0.24	0.50	0.92	2330.	130.0
201011.047	Donna McCollum	650.00	8.20	316.00	0.07	0.30	0.66	1265.	50.00
201012.067	Carol Jones	747.00	8.20	364.00	0.08	1.00	-0.36	190.0	5.00
Averages for 2010		851.10	7.80	418.80	0.20	0.50	5.68	3501.9	383.80

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 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.

Sample Details



Butler County Stream Team

Volunteer Water Quality Monitoring

[Logout](#)

Locations

Details Edit Site Sample Wizard Report Graphs Admin Tools Search

ID	Primary Watershed	Name
16001	Town of New Miami-Great Miami Riv	Great Miami R. at Rt. 73 E of Trenton
16020	Elk Creek	Elk Creek at Howe Road
16026	Elk Creek	Elk Creek behind 114 Dartmouth Street. Trenton

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Samples

Details Add Sample Edit Sample Manage Bundles

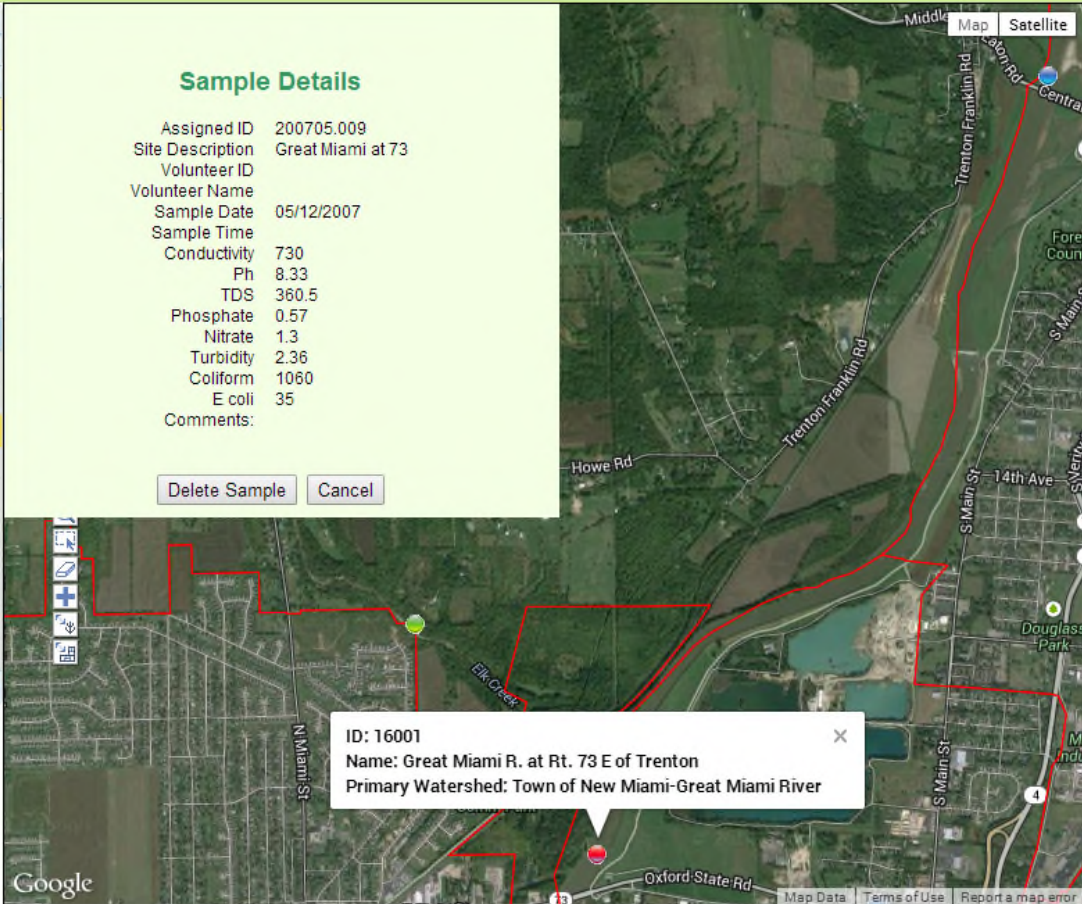
ID	Vol #	Description
200701.007		Great Miami at 73, State Route 73
200703.004		Great Miami River, State Route 73
200705.009		Great Miami at 73
200706.023		Great Miami at St. Rt. 73, east of Trenton
200707.008		Great Miami at St. Rt 73; east of Trenton
200708.017		Great Miami River at 73
200710.003		Great miami River at state route 73
200711.019	V014	Great Miami @73
200712.002	V082	Great Miami at Rt. 73
200712.043	V014	Great Miami at Rt. 73

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Sample Details

Assigned ID	200705.009
Site Description	Great Miami at 73
Volunteer ID	
Volunteer Name	
Sample Date	05/12/2007
Sample Time	
Conductivity	730
Ph	8.33
TDS	360.5
Phosphate	0.57
Nitrate	1.3
Turbidity	2.36
Coliform	1060
E coli	35
Comments:	

Delete Sample Cancel



ID: 16001

Name: Great Miami R. at Rt. 73 E of Trenton

Primary Watershed: Town of New Miami-Great Miami River

The lab results of each sample can be reviewed

Adding new samples



Butler County Stream Team Volunteer Water Quality Monitoring

Samples

Sample ID	Site ID	Description	Vol #	Vol Name	Date	Time	Conductivity	Ph	TDS	Phosphate	Nitrate	Turbidity	Coliform	E coli
201307.021	9001	4 Mile Creek at bridge on Buckley Rd, near 732	V029	Dave Christma	07/13/2013	10:00	65	8.31	30.7	0.2	2.03	4.06	2960	0
201307.022	9020	Bull Run beside 720 W. Chestnut St.		Anne Vascik	07/13/2013	07:00	152.5	7.94	72.9	0.083	0.053	2.3	4915	65
201307.023	4003	Beckett WQ Basin South Inflow (BCSWD)	V134	Butler SWCD, Ly	07/13/2013	09:25	123.4	8.14	58.3	0.026	1.71	0.3	2740	70
201307.024	4005	Beckett WQ Basin North inflow (BCSWD)	V134	Butler SWCD, Ly	07/13/2013	09:33	106.6	8.18	49.8	0.013	1.01	0.43	12725	2325
201307.025	7021	Mutton Run at Fear Not Mills Rd	V171	Amy Cameron	07/13/2013	10:42	101.3	8.2	47.3	0.123	3.63	1.09	4040	280
201307.026	7021	Mutton Run at Fear Not Mills Rd; FD	V171	Amy Cameron	07/13/2013	10:42	99.6	8.13	47.3	0.136	3.28	1.09	4270	620
201307.027	4008	A downstream, Beckett WQ Basin downstream (BCSWD)	V134	Butler SWCD, Ly	07/13/2013	09:52	130.8	7.81	62.4	0.281	2.33	0.64	1385	225
201307.028	4004	Beckett WQ Basin Middle Inflow (BCSWD)	V134	Butler SWCD, Ly	07/13/2013	09:29	128	7.85	61.4	0.167	0.975	2.26	6240	360
201307.029	4006	B outflow, Beckett WQ Basin outflow (BCSWD) ; low water, di	V134	Butler SWCD, Ly	07/13/2013	09:43	2.9	7.86	0.7	2.36	2.08	71.7	0	0
201307.030	4006	B outflow, Beckett WQ Basin outflow (BCSWD) ; low water, di	V134	Butler SWCD, Ly	07/13/2013	09:43	2.8	7.93	0.8	1.92	0.951	73.3	0	0

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Cancel

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

QC Tools

QC Options Missing Nitrate ▼

Samples ⬆

Details Edit Sample

ID	Vol #	Description
200605.001		Boardman's Stream
200605.002		Covered Bridge
200605.003		HW Dam
200605.004		Renwick's Station
200605.005		Indian Creek Head
200605.006		Wastewater Downstream
200605.007		Wastewater Upstream
200605.008		
200605.009		Renwick Indian Creek
200605.01		Indian Creek Preserve Metropark

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Back

Quick reporting options to show gaps in the sample records.

Conclusion



Sunset Maple.....

Butler County Stream Team
Volunteer Data Collection

Davey Resource Group

Online Data Entry System

www.butlercountystreamteam.org

The end! Thanks for your time