

Development of an Internet Database for West Virginia Save Our Streams Volunteer Monitors

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In the summer of 2004 planning began for a new tool to further refine data handling, reporting and quality control. The coordinator envisioned the structure and in part the platform; but it was not until DEP's Nonpoint Section was able to employ a full-time summer intern in 2005 that the idea was realized.

The intern, a sophomore at Georgetown University, is an expert in writing code for web based applications. At the end of the summer, the result of his and others work was an Internet database called the **Volunteer Assessment Database (VAD)**.

The Language

ColdFusion lets you create dynamic applications to access and modify data stored in a database. You do not need a thorough knowledge of databases to develop ColdFusion applications, but you must know some basic concepts and techniques.

Each database server (such as **Oracle**, DB2, Microsoft Access etc.) has unique capabilities and properties. ColdFusion uses unique codes to communicate across a wide variety of platforms and is more versatile than a web server alone. A web server simply locates information and returns it to a web browser. ColdFusion can:

1. Interact with the database, other resources and applications
2. Save information based upon user preferences and inputs
3. Validate user information

This is the end of the technical portion of this presentation. The remaining slides provides visuals mostly from the data-entry pages of the Volunteer Assessment Database (VAD).



WV Save Our Streams VAD

Volunteer Assessment Database

What would you like to do?

[Learn How to use the VAD](#)

[View stream assessment reports](#)
(registration is not necessary to view reports)

[Register a new user account](#)

[Log in to an existing user account](#)

[Administrator Log In](#)

A volunteer user account is required to enter new stream assessment data. If you have not already done so, please register a new user account.

[Stream Survey Data Summary](#)



WVSOS VAD Registration

If you already have an account, log in [here](#).

Registration will enable you to view, enter, and edit the survey data you collect.

First Name	<input type="text"/>
Last Name	<input type="text"/>
Email Address	<input type="text"/>
Password	<input type="text"/>
Address	<input type="text"/>
	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip	<input type="text"/>
	<input type="button" value="Register"/>

[Administrator Log In](#)

Log In

If you need to create a new account, register [here](#).

Please log in to access the WVSOS Volunteer Assessment Database (VAD).

Email Address

Password

Log In

Creating a Survey Code

[Welcome](#) to the West Virginia Department of Environmental Protection's *Save Our Streams* Volunteer Assessment Database (VAD). To begin entering new survey data, please define a unique Survey Code below that will identify this assessment.

Survey Code

Basin: [Help](#) Three letters of the stream name: [Help](#)

Date of Assessment:

For Multiple Assessments

If more than one stream survey was completed for the same stream on the same day (at different locations, for example), you must append an additional *and* unique character to the Survey Code for all surveys after the first. You may use a **lower case** letter; however, **do not** append additional numbers to the Survey Code.

Describing Your Location

» Edit

Stream:

Topo Quad:

County:

Monitor(s):

Level: [Help](#)

Latitude (DMS): DD MM SS

Longitude (DMS): DD MM SS

RR miles: [Help](#)

Station: [Help](#)

Directions:

Latitude: 38.4163888889

Longitude: -80.1297222222

Note: In order to view the map of your survey location, you must enter Latitude/Longitude in degrees, minutes, and seconds on the Edit page. After you have entered this information, you must [click here](#) to convert DMS to degrees decimal.

Mapping Tools

» [View Survey WVEKOFF-06162005](#) » [Return to Full List](#) » [View Basin List](#) » [Log Out](#)

Summary Data Sheet

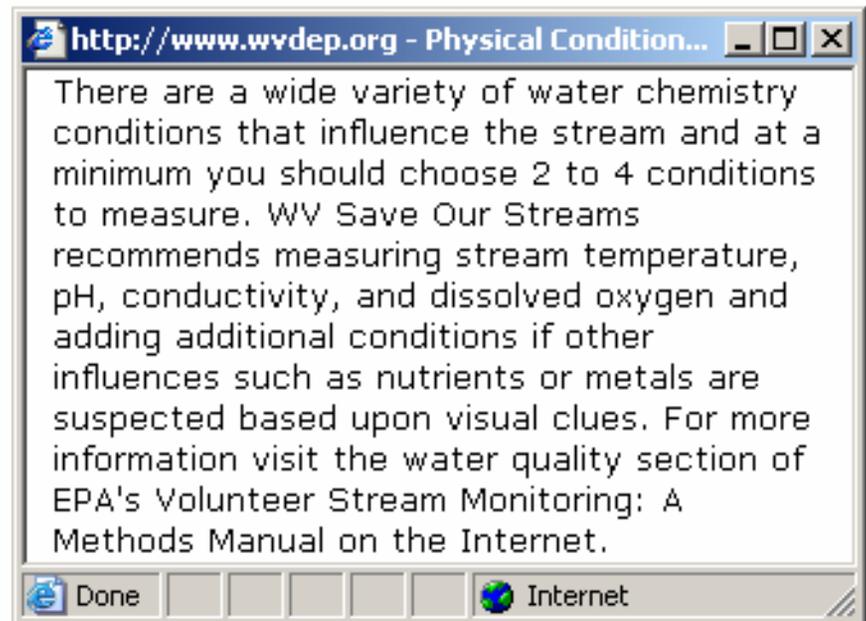
[Location](#) | [Water Quality](#) | [Physical Conditions](#) | [Habitat Conditions](#) | [Biological Conditions](#)
[Flow and Weather/Land Use Conditions](#) | [Macroinvertebrates](#) | [Overall Assessment](#) | [Map](#)



Water Quality

» Edit [Help](#)

pH:	<input type="text" value="7.9"/>
Conductivity:	<input type="text" value="123"/>
Dissolved Oxygen:	<input type="text" value="10.2"/>
Temperature (Celsius):	<input type="text" value="15.2"/>
Iron:	<input type="text"/>
Aluminum:	<input type="text"/>
Manganese:	<input type="text"/>
Nitrite-Nitrate:	<input type="text"/>
Phosphate:	<input type="text"/>
Other attributes (describe):	<input type="text"/>



Physical Conditions

» Edit [Help](#)

Water Clarity:

Water Color:

Water Odor:

Streambed Color:

Algae Color:

Algae Abundance:

Algae Texture:

Surface Foam:

Comments:

Riffle/Pool Width and Depth [Help](#)

Riffle Width: Pool Width:

Riffle Depth: Pool Depth:

STREAMBED COMPOSITION: Results are either an estimate of riffle composition or percentages from pebble count data; the riffle index is a calculation based upon the composition. [Help](#)

Silt/clay	Sand	Fine gravel	Coarse gravel	Cobble	Boulder	Bedrock
<input type="text"/>	<input type="text" value="3.5"/>	<input type="text" value="0.7"/>	<input type="text" value="9.9"/>	<input type="text" value="58.2"/>	<input type="text" value="27.7"/>	<input type="text"/>

RIFFLE INDEX

http://www.wvdep.org - Physical Conditions Help - Microsoft In...

Streambed Composition - An estimate or measurement (preferred) of streambed composition is an important component of your survey and should not be skipped. If you are estimating, then always select representative riffle habitats. If you are using a pebble count procedure you can choose representative riffles only, or your entire 100-meter survey reach. The particle index (also called riffle index) is a score based upon the estimated percentages or pebble count percentages of each size class. The bioassessment spreadsheet on the WV Save Our Streams web page has a section to help you calculate this index. If you are unsure, leave this blank and the coordinator will calculate the index score. The particle size ranges are: **silt/clay** is anything less than 0.062 mm with a smooth/slick texture (mud); **sand** has a grainy texture and is between 0.062 and 2 mm; **fine gravel** is the size of a pea (2 mm) to the size of a marble (24 mm); **coarse gravel** is slightly larger, between 24 and 64 mm, or approximately the size of a marble to the size of a tennis ball; **cobble** is anything larger than a tennisball, but smaller than a basketball (64-256 mm); particles larger than a basketball (>256 mm) are **boulders**; larger rock with a solid surface (>1096 mm) is **bedrock**.

Done Internet

Habitat Conditions

» Edit [Help](#)

Attachment Sites:	<input type="text" value="13"/>	Help
Riffle Frequency:	<input type="text" value="8"/>	Help
Velocity/Depth Combinations:	<input type="text" value="10"/>	Help
Channel Flow Status:	<input type="text" value="13"/>	Help
Channel Alterations:	<input type="text" value="18"/>	Help
Sediment Deposition:	<input type="text" value="19"/>	Help
Embeddedness:	<input type="text" value="14"/>	Help
Bank Protection:	<input type="text" value="10"/> (L)	<input type="text" value="9"/> (R) Help
Bank Stability:	<input type="text" value="10"/> (L)	<input type="text" value="8"/> (R) Help
Riparian Buffer Width:	<input type="text" value="10"/> (L)	<input type="text" value="8"/> (R) Help
Total Score:	<input type="text" value="150"/>	Help
Habitat Index:	<input type="text" value="75"/>	Help
Integrity:	<input type="text" value="Suboptimal"/>	
Comments:	<input type="text" value="Several invasive plants growing in the buffer"/>	

http://www.wvdep.org - Habitat Conditio...

Embeddedness - Refers to the extent to which rocks (gravel, cobble, and boulders) and snags are covered or sunken into the silt, sand, or mud of the stream bottom. Generally, as rocks become embedded, the surface area available to macroinvertebrates and fish (shelter, spawning, and egg incubation) is decreased. Embeddedness is a result of large-scale sediment movement and deposition, and is a parameter evaluated in the riffles and runs of high-gradient streams. The rating of this parameter may be variable depending on where the observations are taken. To avoid confusion with sediment deposition (another habitat parameter), observations of embeddedness should be taken in the upstream and central portions of riffles.

Done Internet

Biological Conditions

» Edit [Help](#)

Total Taxa:

16 [Help](#)

EPT Taxa:

12 [Help](#)

Percent Sensitive Taxa:

75

Percent EPT Abundance:

92.2 [Help](#)

Percent Dominant Taxa:

71.3 [Help](#)

Hillsenhoff Biotic Index:

2.68 [Help](#)

Percent Chironomidae:

2.4 [Help](#)

Stream Index:

84.9 [Help](#)

Percent Tolerant:

[Help](#)

Integrity:

Optimal

Other organisms observed or collected (comments):

Observed darters, trout and salamanders

The screenshot shows two browser windows from the website <http://www.wvdep.org>. The top window is titled "http://www.wvdep.org - Biological Conditions H..." and contains the text: "Total Taxa - The total number of taxa (kinds or families) found in the sample." The bottom window is also titled "http://www.wvdep.org - Biological Conditions H..." and contains the text: "EPT Taxa - This index is the total number of Ephemeroptera, Plecoptera, and Trichoptera (mayflies, stoneflies and caddisflies) kinds in your sample. EPT Taxa Richness is calculated by adding the number of EPT kinds. A healthy stream has a high diversity represented from the EPT families." Both windows have a status bar at the bottom that says "Done" and "Internet".

Click [here](#) to download the Stream Index Calculation spreadsheet (Excel).

Macroinvertebrate List

» Edit [Help](#)

SENSITIVE		Help	Help	LESS SENSITIVE		Help	Help	TOLERANT		Help	Help
Ephemeroptera	85	6	Hydropsychidae	3	1	Chironomidae	10	1			
Plecoptera	300	3	Decapoda	5	1	Oligochaeta	13	1			
Trichoptera	4	2									
Psephenidae	1	1									
Sensitive Totals	390	12	Less Sensitive	8	2	Tolerant	23	2			
Total Collected	421	Help									

http://www.wvdep.org - Macr...

Macroinvertebrates - Refers to the actual kinds and numbers of macroinvertebrates collected at your station. List either the common or taxonomic names. For tolerance classification, click [here](#).

Internet

http://www.wvdep.org - Macr...

Count - Enter the number of each macroinvertebrate collected in this column. This may be an actual number, or an estimate (**A**bandant [>50]/**C**ommon [5-50]/**R**are [<5]). Total this column at the bottom (you may again use an estimate of A, C, or R).

Internet

http://www.wvdep.org - Macr...

Families - Record the number of kinds (families) of each macroinvertebrate collected in this column. Total this column at the bottom.

Internet

Flow, Weather and Land Uses

» [View Survey WVEKOFF-06162005](#) » [Edit](#) » [Return to Full List](#) » [View Basin List](#) » [Log Out](#)

Summary Data Sheet

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[Flow and Weather/Land Use Conditions](#) | [Macroinvertebrates](#) | [Overall Assessment](#) | [Photos](#) | [Map](#)

Discharge (cfs): 8.78
Water Level: Low
Current Weather Conditions:
Past 48-hours: Partly cloudy, light rain

Land Use Impacts	Impact	Location
Single Family Residences:	1	W
Suburban Developments:	2	W
Urban Areas:		
Industrial Areas:		
Parking Lots, Malls, Etc.:		
Bridges:	2	S
Paved Roads:	1	W
Unpaved Roads:	1	S
Active Construction:	2	S
Parks, Trails, Etc.:		
Other Recreation:	1	S
Intensive Feedlots:		
Pastureland:	1	W
Cropland:	1	W
Oil & Gas Wells:		
Logging:		
Mountaintop Mining:		
Abandoned Mining:		
Deep Mining:		
Quarries:		
Trash Dumps:		
Other (describe below):		

Flow and Weather Help - Microsoft Internet Explorer

Land Use Assessment - If you feel that there is a disturbance to your stream station from land uses in your watershed then use the rating scale provided as your method of assessing these impacts. The rating scale is as follows: slight (**1**), moderate (**2**), and high (**3**); the proximity of the activity is also noted as streamside (**S**), within ¼ mile (**M**) or somewhere within the watershed (**W**). If there is no impact from a land use, do not give it a rating; however you can note its presence in the watershed by assigning a location. You are also provided with an option to give an **overall impact rating**, which is the same rating scale as the above, except that you should keep in mind this is a cumulative impact. For example, if there were five disturbances relatively close to the station all rated as slight, your overall impact should probably be rated as moderate or even high due simply to the number of impacts and their location (use your best judgment). To rate the disturbance from each activity use the drop-down boxes. Take care when using this category; the only way the ratings can be changed is by deleting the entire survey and starting over.

Photo Album

» [View Survey WVEKOFF-06162005](#) » [Edit](#) » [Return to Full List](#) » [View Basin List](#) » [Log Out](#)

Summary Data Sheet

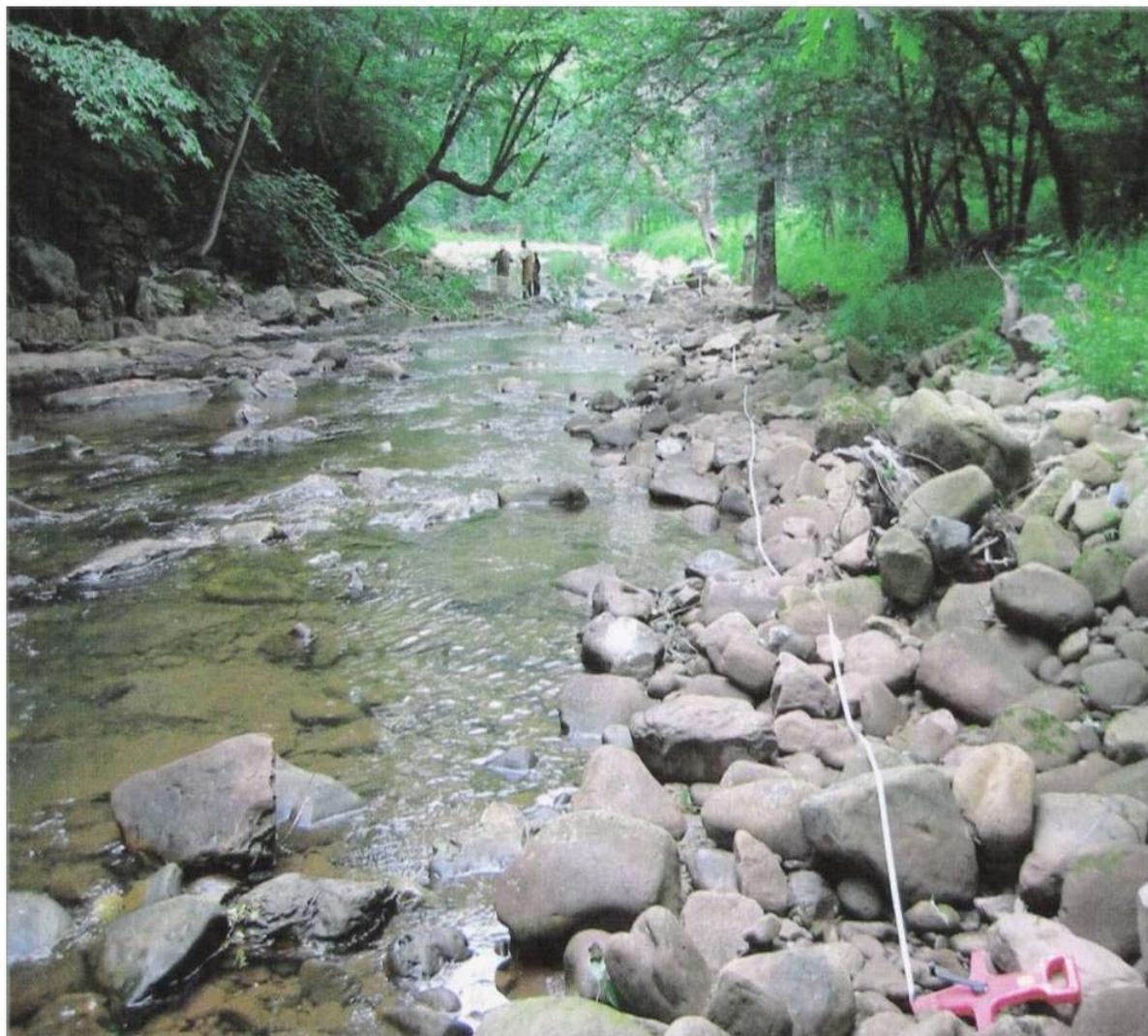
[Location](#) | [Water Quality](#) | [Physical Conditions](#) | [Habitat Conditions](#) | [Photos](#) | [Biological Conditions](#)
[Flow and Weather/Land Use Conditions](#) | [Macroinvertebrates](#) | [Overall Assessment](#) | [Map](#)

There is currently one image for this survey.

Click [here](#) to view it.

To upload new images:

NOTE: All files must be in .JPG format.



The Overall Assessment

» [View Survey WVEKOFF-06162005](#) » [Edit](#) » [Return to Full List](#) » [View Basin List](#) » [Log Out](#)

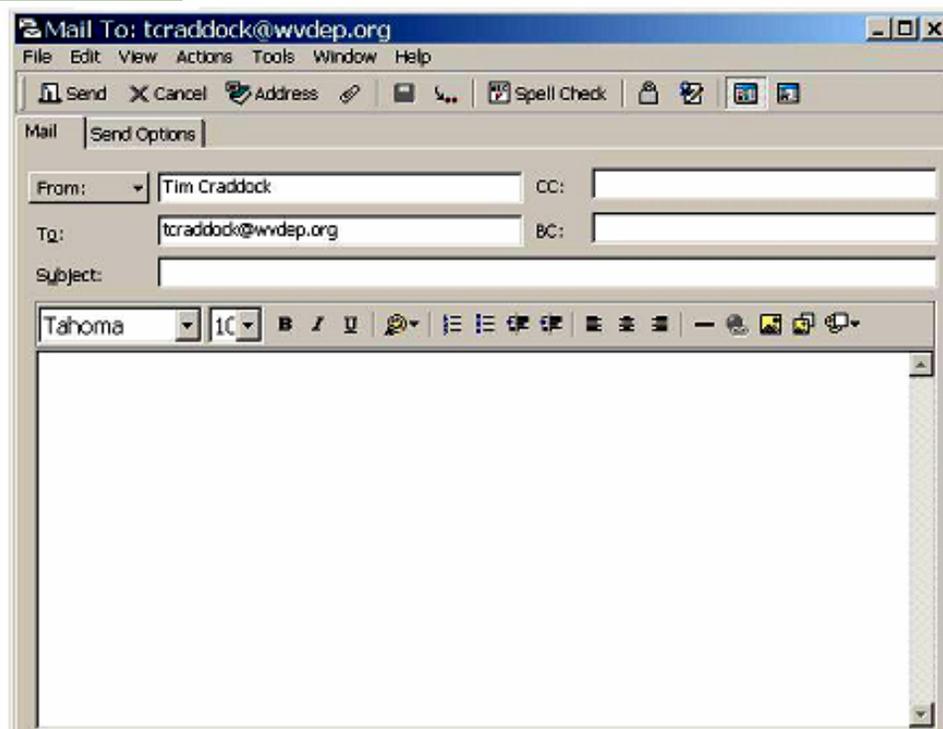
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Comments: Overall Score 80; Integrity: Suboptimal; Threats include increased subdivision development, single family home construction and future regional sewage treatment plant.

Overall Assessment: Fully Supporting

The data contained in this survey has been reviewed by the [WVSOS Coordinator](#).



What's happening now and what's planned for the near future

Currently there are more than 850 surveys in the database, some dating back as far as 1996. Many of these surveys have been entered by a contracted employee, whom initially was volunteering her time to help with the data entry process.

Robert is returning from Georgetown this summer and will be working on upgrades to the system. Some of these upgrades include trend analysis, graphical representation of selected data and the ability of the user to create summary reports. The ability to upload data will be added, as well as additional administrative features for data control and specialized reports.