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west virginia department of environmental protection

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Randy C. Huffman, Cabinet Secretary  
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**To:** Interested Parties

**From:** Michael Whitman, Environmental Resource Analyst  
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**CC:** Barbara Sargent

**Date:** 29 April 2015

**Re: WVDEP-DNR Scientific Collection Permit DB v4.1.1**

Enclosed is the revised & updated WVDEP-DNR Scientific Collection Permit DB v4.1.1. The database is similar to WABbase which is used by the Watershed Branch which requires a much more extensive data flow. This database will accept, Water Quality, RBP Habitat, Benthic, and Fish Info. It will also calculate the WVSCI benthic IBI. The database does require that you have Office 2000 with Microsoft Access or a higher version.

**Notes about Benthic Data, Metrics and WVSCI (WV Stream Condition Index):**

There are some very important things that need to be understood about the WVSCI before application:

- 1) It has an index period of April to October. This is because the data used to develop it was restricted to that period. At this time, it is not a proven index for impairment outside of that index period. We do use it outside of the index period in special studies and surveys as a relative index (i.e., we sample a control site and compare the impaired sites to the control, but we do not use the threshold provided in the WVSCI document).

- 2) The WVSCI is a family level index. If the specimens are not identified with enough taxonomic resolution, the index will not work right. There are a few exceptions: Oligochaeta & Collembola are allowed at their respective higher taxonomic levels. The index will not count insect individuals identified just to the Orders level. The index will exclude these individuals as they are often just damaged individuals of taxa already counted. The calculation program does allow you to enter these types of individuals for record keeping and density estimates. The program also allows for higher resolution identifications all the way down to genus and sometimes species. The calculations built in will convert those individuals into the appropriate family. The program has a drop down list which includes all taxa we have collected in the past and some taxa we could collect in the future based on distribution lists and adjoining states taxa lists. A few sample sets for you to observe are already populated in the database.
- 3) The following table is used to interpret the WVSCI score as to the general stream condition and health. Keep in mind that this is only one of many components that are considered for official listings and assessments.

WSCI Scoring Criteria	
Not-Impaired	78.01-100 = Very Good
	68.01-78.00 = Good
Impaired	60.61-68.00 = Formerly the “Gray Zone”, this is now considered Impaired by WVDEP
	45.01-60.60 = Slightly Impaired
	22.01-45.00 = Moderately Impaired
	0-22.00 = Severely Impaired

More information on the WVSCI can be found in the following document:

Gerritson, J., J. Burton, and M.T. Barbour. 2000. A stream condition index for West Virginia wadeable streams. Tetra Tech, Inc. Owings Mills, MD.

This document is available as a free downloadable Adobe Acrobat (pdf) file at:

[http://www.dep.wv.gov/WWE/watershed/bio\\_fish/Documents/WVSCI.pdf](http://www.dep.wv.gov/WWE/watershed/bio_fish/Documents/WVSCI.pdf)

A WVSCI addendum document (.doc) with revised Best Standard Values is located at:

[http://www.dep.wv.gov/WWE/watershed/bio\\_fish/Documents/WVSCI Addendum.doc](http://www.dep.wv.gov/WWE/watershed/bio_fish/Documents/WVSCI Addendum.doc)

In addition, enclosed are our most recent benthic sampling SOP's. They are very similar to what is found in RBP second edition & EMAP SOPs except we target optimal riffle/run habitats when available rather than sample random locations on pre-selected transects. We also use a 595 µm mesh size on the nets and sieve.

The 2014 (or newer) WVDEP Watershed Branch SOP can be downloaded at:

<http://www.dep.wv.gov/WWE/watershed/Pages/WBSOPs.aspx>

More information about RBP sampling methodology and modified RBP sampling methodologies can be found in the following EPA documents (listed in chronological order):

Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross and R.M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. United States Environmental Protection Agency. EPA/444/4-89-00.

Klemm, D.J., P.A. Lewis, F. Fulk, and J.M. Lazorchak. 1990. Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters. EPA 600-4-90-030. U.S. Environmental Protection Agency; Office of Research and Development; Washington, D.C.

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1997. Revision to Rapid Bioassessment Protocols for Use in Streams and Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Draft. EPA 841-D-97-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Lazorchak, J.M., Klemm, D.J., and D.V. Peck (editors) 1998. Environmental Monitoring and Assessment Program – Surface Waters: Field Operations and Methods for Measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004F. U.S. Environmental Protection Agency, Washington, D.C.

Barbour, M.T., J. Gerritsen, B.D. Snyder, J.B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: Periphyton, benthic macroinvertebrates, and fish. Second Edition. United States Environmental Protection Agency. EPA/841/B-99-002.

Davis, W, and J. Scott (editors). 2000. Mid-Atlantic Highlands Streams Assessment: Technical Support Document. EPA 903-B-00-004. U.S. Environmental Protection Agency Region 3; Philadelphia, PA.

The RBP second edition is available for download at:

<http://water.epa.gov/scitech/monitoring/rsi/bioassessment/download.cfm>

The other documents should be available for download at:

<http://www.epa.gov/ncepihom/index.html>

Finally, instructions on how to enter data are enclosed in a word document. This version of the database has not been tested thoroughly, so if you have a problem with it, email me and I should be able to fix it quickly. If you have anymore questions, feel free to contact me via email.

Regards,

Michael Whitman, Environmental Resource Analyst

Enclosures:

WVDEP-DNR Scientific Collection Permit DB Instructions v4.1.doc

Transfer from 4.x to 4.x.mdb

WVDEP-DNR Scientific Collection Permit DB v4.1.mdb

WVDEP-DNR Scientific Collection Permit DB v4.1 Demo.mdb

Excerpts from WVDEP Watershed Branch benthic sampling SOP's:

**2014 BENTHIC MACROINVERTEBRATE COLLECTION PROTOCOLS**