

# Narrative Water Quality Standard Benthic Sampling & Reporting Requirements



# Topics

- NPDES Permit Requirements for Benthic Sampling
- Expectations for Benthic Sampling Reports
- Benthic Sampling Methodology & Comparability
- Report Submittal Requirements & Procedure

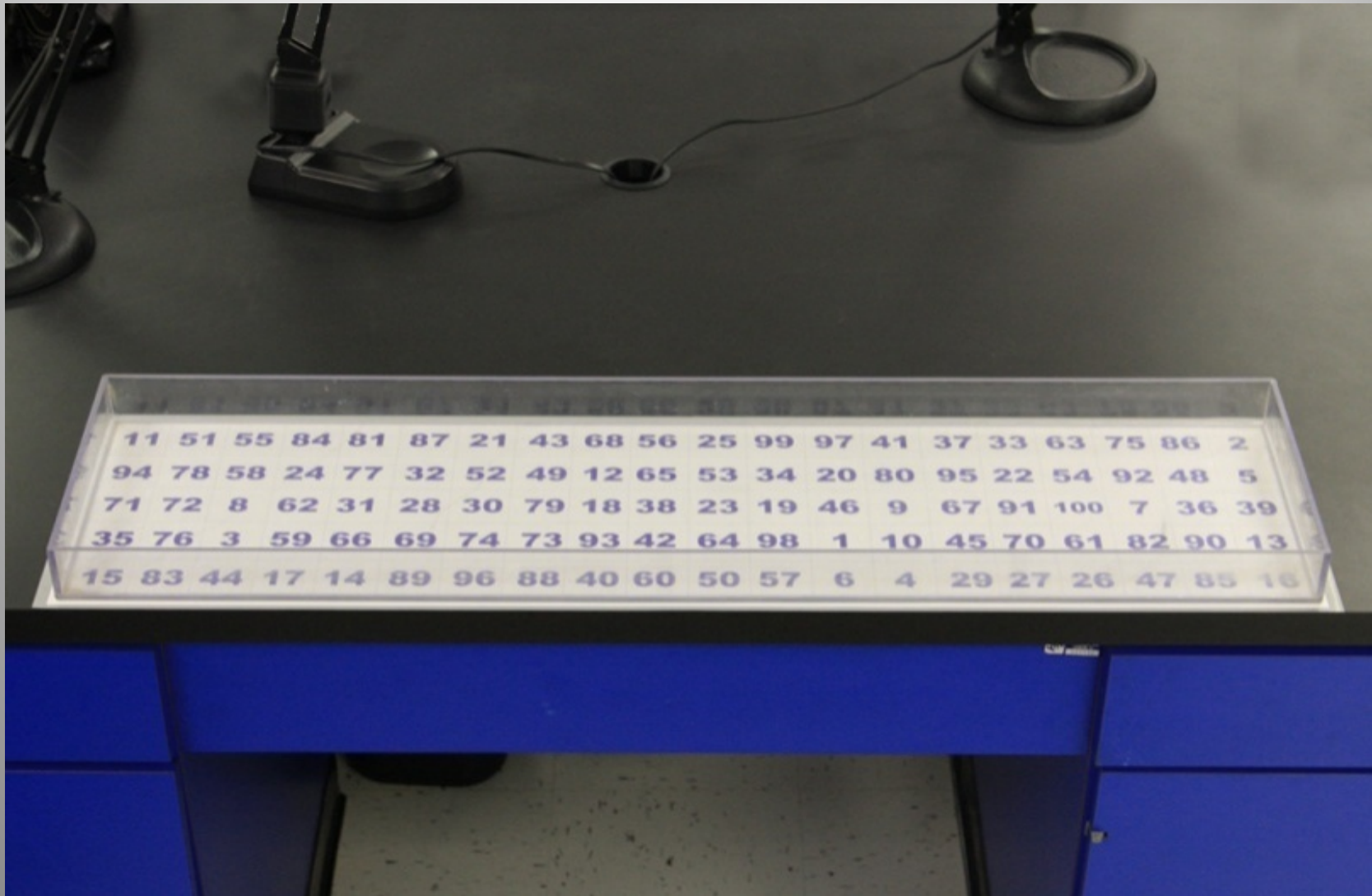
# NPDES Permit Language for Bio Monitoring

- Benthic survey must be conducted between April 15 & October 15
  - Data outside this window is not comparable
- Annual survey as close to baseline survey date as possible (rule of thumb - 30 day window)
  - 15 days on either side of baseline anniversary date
- Survey to be conducted in accordance with Standard Conditions for Environmental Assessments on Wadeable Streams provided with WVDNR Scientific Collection Permit and WVDEP's WVSCI protocol
  - Standard Conditions refers to EPA 1999 RBP Manual "in general" (good secondary reference)
  - **2009 or more recent WVDEP-WAB SOP** (WVSCI protocol & Narrative Guidance)
    - Provides specific details for producing comparable samples for WVSCI calculation
    - This is the primary reference

# NPDES Permit Language for Bio Monitoring (ctd.)

- Within 90 days provide:
  - RBP scores
  - Chemical data (Specific Conductance, TDS, pH, SO<sub>4</sub>, alkalinity, Ca, Mg, Na, K) from same time & locations as benthic macroinvertebrate samples
  - Benthic macroinvertebrate data:
    - **Must report the following:** WVSCI score & metrics, raw data (IDs and count), # of grids picked to reach 200 count subsample
    - Entered into WVDEP-DNR database and submitted via export queries (ensure you are using most recent version of database)
    - Submit habitat and WQ data by export queries
  - Representative legible photographs of survey sites
  - Narrative Executive Summary
  - Information sent to Regional NPDES Supervisor & ERA and Headquarters ERA

# Gridded Sorting Tray



# Gridded Sorting Tray with sample

**Report number of grids picked to get 200 organism subsample:**  
Minimum of 4 grids must be picked (randomly re-subsample if necessary)



# Generic Benthic Report Outline

- Introduction
- Methods and Procedures
- Site Locations and Descriptions
- Results
- Discussion and Conclusions
- References
- Figures
- Appendices

# Generic Benthic Report

- Introduction
  - Description of mining operation, large scale geographic location, etc.
- Methods & Procedures: What, How & Who
  - Bio: Net type & size, sieve size, # of kicks, sample area, reference texts, identification keys used, who collected & who identified
  - Chem: who collected, who analyzed, what suites analyzed (make sure MDLs below criteria; pH, Temp & SpCond need to be taken in the field; TDS needs to be lab analyzed)
  - Habitat: method & parameter description
- Site Locations & Descriptions
  - Table with BAS nomenclature, **coordinates**, & sample date
  - Physical description of BASs (**why is the site at that location** - include relationship to outlets, confluences, residential areas, & other BASs where applicable)
  - Document significant influences within 100 m reach of each BAS when they exist



# Generic Benthic Report (ctd.)

- Results
  - Tables and/or narrative with site by site summaries
- Discussion & Conclusions (Executive Summary)
  - tie ALL data together with influences, activities, geology, land use, etc. to develop big picture analysis of information
  - Should NOT be a wordy regurgitation of results
  - Site comparisons – where significant differences exist attempt to make sense of them with respect to natural cycles, sample variation, sample error, and surrounding impacts. Oddities and excursions should be examined.
  - Annual reports should have cumulative discussions of changes in impacts and results (gas well, residential construction, logging, mining construction, natural effects)

# Generic Benthic Report Outline (ctd.)

- Appendices, Figures, & References
  - **Photos:** upstream, downstream, & typical sample substrate
    - Should be from appropriate visit, in focus, & well lit
    - Should represent conditions at the time of the sample represented
  - **Field Forms:** field verified coordinates, field notes
    - Good for verification when data conflicts, is absent, or is nebulous
  - **Taxa Lists, Metric calculations, Database Screenshots**
  - **Maps**
  - **Chemical Analyses:** data verification, unit ?s
  - **Reference Text List**

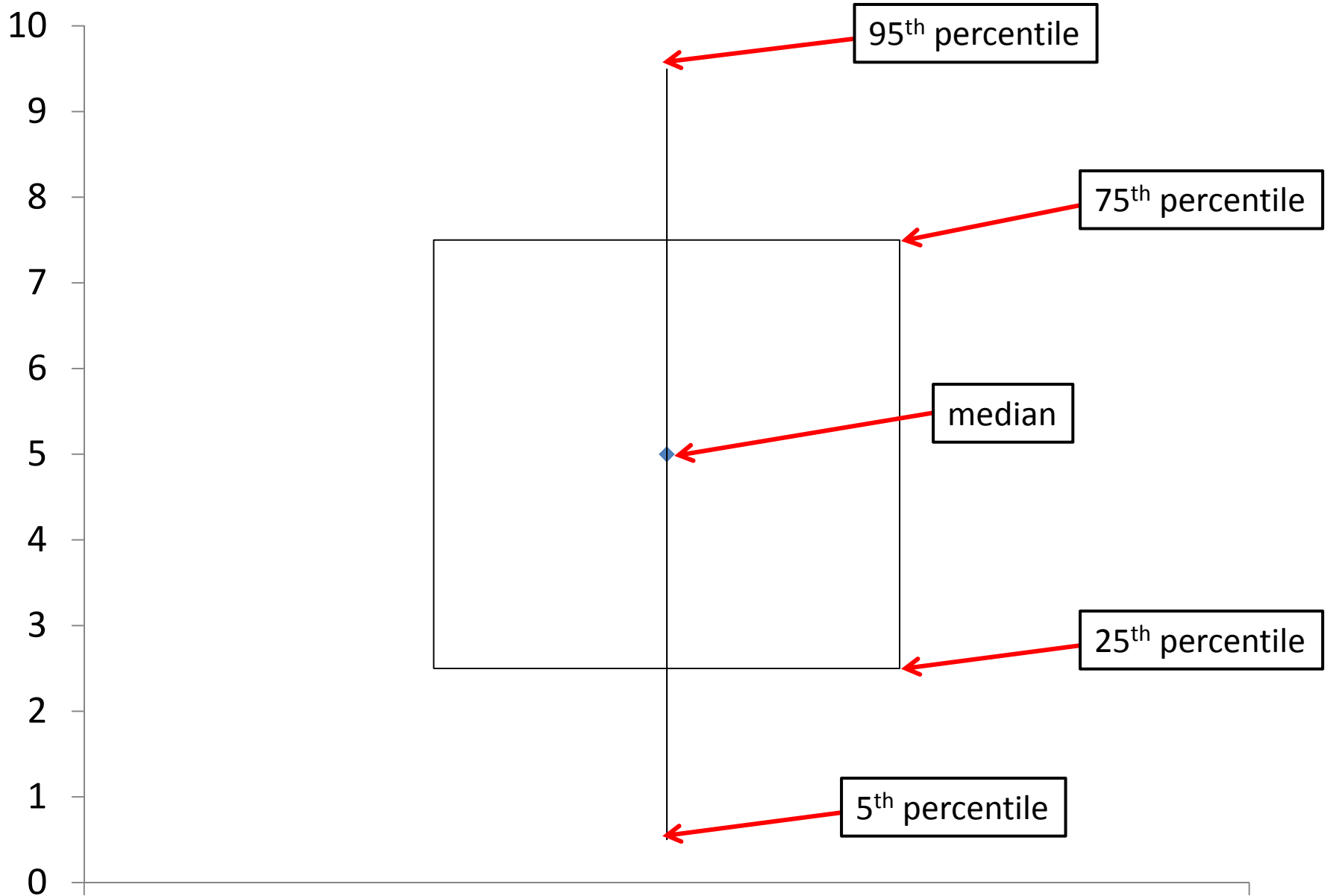
Typical sample substrate picture example



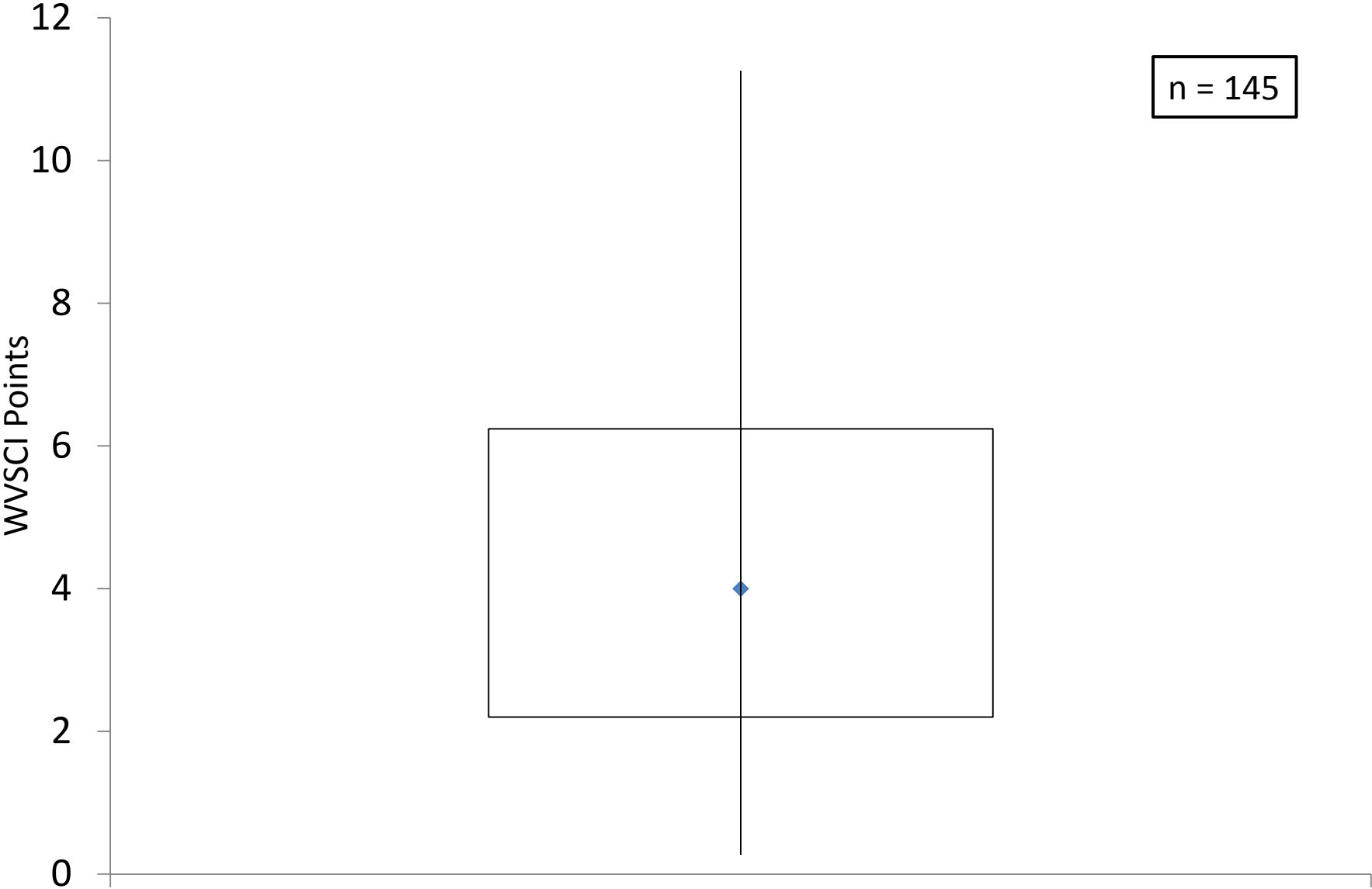
# WVDEP - WAB Sample Methodology



# Box And Whisker Plot Example



# Difference in WVSCI for Same Day WAB Duplicates (1997 – 2010)

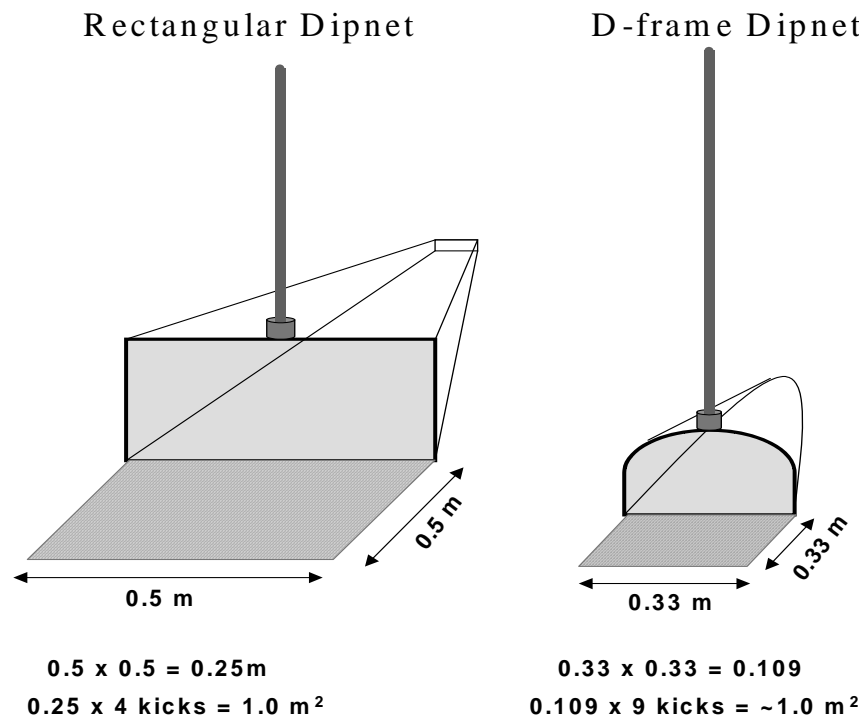


# Methodology & Comparability

- Follow methods to ensure repeatable, comparable benthic samples
  - Annual surveys for years into the future
- Reference pgs. 190-192 in 2011 WAB SOP for restrictions on calculating WVSCI
- Reference pgs. 159-164 in 2011 WAB SOP for Benthic Sampling Protocols
- Reference pgs. 169-175 in 2011 WAB SOP for Sample Processing Protocols

# Methodology and Comparability

- 595-600  $\mu\text{m}$  mesh net and #30 (600  $\mu\text{m}$ ) sieve for all new baseline surveys
  - 500  $\mu\text{m}$  mesh net and #30 (600  $\mu\text{m}$ ) sieve acceptable on projects that have already used this equipment for baseline
- Rectangular kicknet (0.5 m)  $\rightarrow$  4 kicks  $\times$  0.25  $\text{m}^2$  = 1.0  $\text{m}^2$
- D-frame kicknet (0.33 m)  $\rightarrow$  9 kicks  $\times$  0.109  $\text{m}^2$  = 1.0  $\text{m}^2$

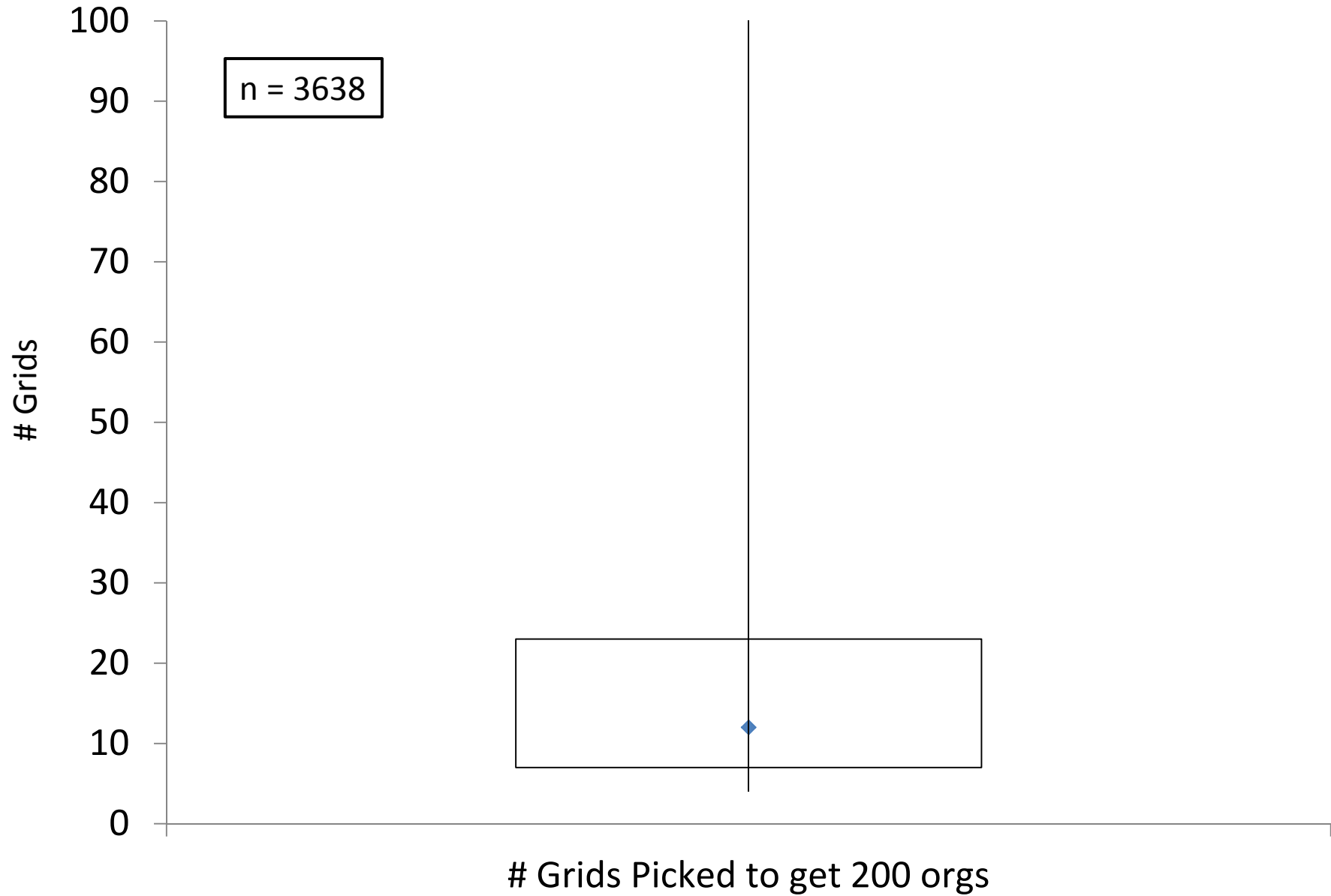




# Methodology and Comparability (ctd.)

- Taxonomic resolution for the WVSCI is family level except for Nematoda & Collembola. However, all taxa should be identified to the genus level or lowest practical taxon. (2011 WAB SOP p. 176)
  - Chironomids to family
- WVSCI on properly subsampled, riffle/run samples only
  - Inappropriate to calculate WVSCI on multihabitat or total picks >240 organisms
  - Inappropriate to calculate WVSCI on samples taken in non-flowing conditions
- Total # organisms:  $200 \pm 20\%$  ( $160 \leq x \leq 240$ )
  - If there are > 240 organisms a manual random re-subsample or WVDEP performed electronic re-subsample must be performed in order to maintain comparability. This is NOT rarefaction, which is inappropriate for this use.
  - If there are < 100 organisms, the samples will be scrutinized for comparability

# WVDEP WAB grid counts to get 200 organism subsample



## Methodology and Comparability (ctd.)

- Take care when sampling:
  - After high water events (scour)
  - After periods of drought or very low flows (areas that were recently dry)
  - During very high flows (bugs washed over/around or out of net)
  - During very low flows (bugs not washed into net efficiently)
- Do not sample during turbid conditions
  - If you can't see the bottom, don't sample
  - Unrepresentative chemical samples (high TSS & total metals)
  - Cannot effectively perform several important RBP measures
    - Epifaunal Substrate, Embeddedness, Sediment Deposition
  - Cannot effectively select best available habitat for benthic sample

File Home

Cut Copy Paste Filter

Ascending Descending Selection Advanced Toggle Filter

Refresh All Delete More

Find Replace Go To Select

Text Formatting

Main Menu Org In... Stations Samples **Benthic Collection and Comparability**

Sample ID 1 **Benthic Subsample Collection Info and Comparability** ORG ID WVDEP

Enter the Benthic Collection Info

Benthic Collection Device Kicknet-Rectangular Frame Is this device comparable?

# Riffle	# Run	Total # of Riffle/Run	Total Area Sampled (sq. m)
4	0	4	1.0000

Are the kick velocity regimes, area, and depths adequate to get a comparable sample?

Enter the Benthic Comparability Info

Was benthic sample comparable with respect to riffle/run depth and velocity? Yes

Is there evidence that the stream channel was scoured by recent flooding or high flows? No

Is it possible that sample areas were dry or partially dry for an extended period before sample was taken? No

Is there evidence that the stream is "wet-weather" and flowing only in response to recent rainfall? No

Date Collected 9/12/2051 Is this date outside of the recommended index period?

Did the benthic collector have any major concerns about the comparability of the sample?

Benthic Comparability Notes

Water level was low, but adequate to effectively push organisms into kicknet

Sample Comparability Information

Enter the Benthic Picking and Identification Info

Benthic Lab Sample ID WVDEP1234 Benthic Identification Level Genus (Except Chironomidae)

# of grids Picked 8 Total # of grids 100 # organisms picked 212

IMPORTANT: You must enter the Benthic Collection Info above before entering the Benthic Identification data below!

Enter Family Level Benthic IDs Enter Genus Level Benthic IDs View Benthic Life Histories View WVSCI Score and Data

Then move on to other data types Go to Fish Go to RBP Habitat Go to Water Quality

or Go Back to Samples

or Go Back to Stations

or Go Back to MAIN MENU

# Methodology and Comparability (ctd.)

- RBP done independently at each site for each visit and over the entire 100m reach
- Do not calculate total RBP for dry streams
  - Cannot realistically evaluate Epifaunal Substrate/Available Fish Cover, Velocity/Depth Regimes, Riffle Frequency, Channel Flow Status
- BASs must be sampled within days of each other to maintain ability to compare sites

# Recommendations

- Sampling at very end of index period not recommended (<1% WVDEP samples, egg hatches, recently dry streams = short colonization, fresh leaf fall)
- Sample watershed reference when available (yearly variation control sites)
- Perform duplicate benthic sampling (WVDEP-WAB does 2.5%)
- Get duplicate identifications (WVDEP-WAB gets 5%)
- Perform duplicate chemical sampling and field blank analyses

# Field Training

- No large-scale field training as in the past
- Available by appointment by organization
- WAB representative will lead
- $\leq 10$  active participants per training
- Manager must be present
- Will cover field-based assessments & sampling techniques in interactive format

# WVDEP-DNR Scientific Collection

## Permit Database

- Format 2 fields as outlined to standardize submittal and streamline import & export of data
- **New Station Code** = Permit# + BASname with no spaces or punctuation (ensures unique identifier)
  - Example: WV10xxxxxBASUS001
- **Project Name** = Permit# (WV10xxxxx)
- Submit export queries by project (permit#) with digital copy of report to WVDEP headquarters ERA via email
  - [kevin.d.seagle@wv.gov](mailto:kevin.d.seagle@wv.gov)
- Submit written copies to Region and HQ for review and archival
- Submission of these queries to WVDEP does **NOT** satisfy Scientific Collection Permit requirements to submit data to WVDNR at the end of sample year



**Station Code** WV9009121BASUS001 **Station Record ID** 2

**Stream Name** Laurel Branch

**Map Location** East of Charleston, WV immediately upstream of outlet 001 **ORG ID** WVDEP

**AN-Code** WVK-23 **Mile Point** 99.5 **Watershed** Lower Kanawha **County** Kanawha, WV **Quad** Charleston East

## Station Data Entry Form

These Fields are to be used to sort and search the data only! All Data Entry should occur below this header!

### Enter the Station Info First

**New Station Code** WV9009121BASUS001

**Date Added** 3/7/2012

**WARNING!** The data in this subform applies to multiple samples/records. Do not modify data on this form unless you are:  
 1) Adding new information  
 2) Expanding upon existing information  
 ALL FIELDS IN GREEN SHOULD BE FILLED IN IF KNOWN.

**Permit # + BASname with no spaces or dashes**

**Stream Name** Laurel Branch

**Enter any additional Location information (change Upstream Roberts Fork to Upstream Roberts Fork 2 mi N of Spencer)**  
 East of Charleston, WV immediately upstream of outlet 001

**ANCode** WVK-23 **Mile Point** 99.5

**Watershed** Lower Kanawha **County** Kanawha, WV **24k Topo Name** Charleston East

**HUC 2** **HUC 2 Name** **HUC 4** **HUC 4 Name** **HUC 6** **HUC 6 Name**

**HUC 8** 05050008 **HUC 8 Name** Lower Kanawha **HUC 10** **HUC 10 Name**

**HUC 11** **HUC 11 Name** **HUC 12** **HUC 12 Name**

**Level IV Ecoregion** **Physiographic Name** **Freshwater Ecoregion Name (from TNC's Freshwater Ecoregions of the World)**

**Station Coordinates** Choose at least one of the following types of coordinates to enter: Degrees Minutes Seconds, Decimal Degrees, or UTM's

**Latitude (DMS)** 38 14 46.2 **Longitude (DMS)** 79 15 34.1 **Datum** NAD 1983

**Latitude (Decimal Degrees)** 38.24617 **Longitude (Decimal Degrees)** -79.25948

**UTM Easting (or -X)** **UTM Northing (or +Y)** **UTM Zone**

**Coordinate Quality** **Station Notes** Watch for spitting cobras!

**Garmin**

To add a Sample to this Station: **Open New Sample**

To modify data in existing Samples: **Open Existing Samples**

**Existing Samples at this Station**

Sample ID	Sample Date	Sample Time	Survey Type	Sample Notes	Station Code	ORG ID
1	9/12/2051	12:05	Benthic Macroinvertebrates		WV9009121BASUS001	WVDEP
* (New)						WVDEP

**Select Open New Sample Button to Reach Sample Info Form**

**Go to Previous Station** **Go to Next Station** **Add New Station**

**Go Back to MAIN MENU**

File Home

Paste Cut Copy Filter Ascending Descending Selection Advanced Toggle Filter Refresh All New Save Delete More Find Replace Go To Select

Clipboard Sort & Filter Records Find Text Formatting

Main Menu Org In... Stations Samples

Station Code WV9009121BASUS001 Station Record ID 2

Stream Name Laurel Branch

Map Location East of Charleston, WV immediately upstream of outlet 001

AN-Code WVK-23 Mile Point 99.5 Watershed Lower Kanawha County Kanawha, WV Quad Charleston East

ORG ID WVDEP

## Sample Data Entry Form

Enter the Sample Info

Sample ID 1 Sample Date 9/12/2051 Sample Time 12:05 Survey Type Benthic Macroinvertebrates

Sample Notes

Next, assign the sample to one or more Projects below

or Browse Projects or Create a New Project

Project Name	Project Description	Project Methods	Project Dates	Sample Frequency	ORG ID
WV9009121	Benthic survey to comply with NWQS requirements for NPDES permit	WVDEP WAB SOP 2009	Ongoing	Annual	WVDEP
*					WVDEP

Enter the Sample Date, Time, & Survey Type

Then Select Create New Project Button to Reach Project Info Tab

Then Enter the Sample Results in each of the applicable data types below

Go to Benthic Macroinvertebrate Go to Fish Go to RBP Habitat Go to Water Quality

Home

Cut Copy Paste Remove Sort Selection Toggle Filter Refresh All Save Delete More Find Replace Go To Select Text Formatting

Menu Org In... Stations Samples

Project Name: WV9009121BASUS001 Station Record ID: 2 **Sample Data Entry Form**

Location: Laurel Branch Mile Point: 99.5 Watershed: Lower Kanawha County: Kanawha, WV Quad: Charleston East ORG ID: WVDEP

Sample ID: 1 Sample Date: 9/12/2051 Sample Time: 12:05 Survey Type: Benthic Macroinvertebrates

the Sample Info

assign the sample to

Project Name

09121

Benthic survey to co

1 of 1

Projects

**Enter the Project Info** **Project Data Entry Form** ORG ID: WVDEP

Project Name: WV9009121  
Project Description: Benthic survey to comply with NWQS requirements for NPDES permit  
Project Methods: WVDEP WAB SOP 2009 Sample Frequency: Annual Project Dates: Ongoing

Existing Samples assigned to this Project

Station Code	Stream Name	AN-Code	Mile Point	Sample Date	Sample Time	Sample ID	Survey Type	Sample Notes
WV9009121BASUS001	Laurel Branch	WVK-23	99.5	9/12/2051	12:05	1 (New)	Benthic Macroinvertebrate	

Enter Permit # here

Then View Other Projects Go to Previous Project or Go to Next Project or Create a New Project or Go Back to Samples

Record: 1 of 1 Search or Go Back to MAIN MENU

# WV DEP/DNR Scientific Collection Permit Database

To enter Station Information (Including Stream Name, Location, Coordinates, Watershed, County), Sample Data (Including Project, RBP Habitat, Benthic, Fish, and Water Quality Data) select:

Data Entry Form

To enter (one time only) your Organization Information (Including Addresses, Electronic Addresses, and Phone Numbers) select:

Organization Info

Database and WVSCI Questions can be directed to:  
Michael J. Whitman  
Environmental Resource Specialist III  
West Virginia Department of Environmental Protection  
Division of Water and Waste Management  
Watershed Branch-Watershed Assessment Section  
601 57th Street S.E.  
Charleston, WV 25304-2345  
Phone: (304) 926-0499 ext. 1088 Fax: (304) 926-0463  
Email: [michael.j.whitman@wv.gov](mailto:michael.j.whitman@wv.gov)



To export data into multiple Excel flat files (Project, Station, RBP Habitat, Water Quality, Raw Benthic, WVSCI Benthic, and Raw Fish) at a location of your choosing select one of the below:

- Export All Data
- Browse Projects
- Export Data by Project

Note: Select Yes for the first 8 prompts (this is updating the WVSCI scores into a fixed table), and then select the location to which you wish to export the Excel files.

To export by project, you must type in the exact name of the project as documented in the DATA ENTRY FORM. You will be prompted for this before exporting each of the Excel files.

## Required Data For Query Submittal

Elkins, WV 26241  
Phone: (304) 637-0245 Fax: (304) 637-0250  
Email: [barbara.d.sargent@wv.gov](mailto:barbara.d.sargent@wv.gov)  
Web: <http://www.wvdnr.gov/wildlife/scollectpermit.shtm>



EXIT DATABASE

File Home

Cut Copy Paste Filter

Ascending Descending Remove Sort Toggle Filter

New Save Delete Refresh All

Spelling More

Find Replace Go To Select

Text Formatting

Main Menu Org In... Stations Samples **Benthic Collection and Comparability**

Sample ID  **Benthic Subsample Collection Info and Comparability**  ORG ID

**Enter the Benthic Collection Info**

Benthic Collection Device

# Riffle	# Run	Total # of Riffle/Run	Total Area Sampled (sq. m)
<input type="text" value="4"/>	<input type="text" value="0"/>	<input type="text" value="4"/>	<input type="text" value="1.0000"/>

**Enter the Benthic Collection Comparability Info**

Date Collected

Benthic Comparability Notes

**Enter the Benthic Picking and Identification Info**

Benthic Lab Sample ID  Benthic Identification Level

# of grids Picked  Total # of grids  # organisms picked

**IMPORTANT: You must enter the Benthic Collection Info above before entering the Benthic Identification data below!**

**Then move on to other data types**

File Home

Cut Copy Paste Remove Sort Selection Advanced Toggle Filter Refresh All Delete More Find Replace Go To Select Text Formatting

Main Menu Org In... Stations Samples Benthic Collection and Comparability

Sample ID 1 **Benthic Subsample Collection Info and Comparability** ORG ID WVDEP

Enter the Benthic Collection Device Kicknet-Rectangular Frame Is this device comparable?

Benthic Final ID (Genus)

Sample ID 1 **Enter Benthic Final ID by Genus** ORG ID WVDEP

**IMPORTANT: You must enter the Benthic Collection Info before entering the Benthic Identifications Below!**

Final WVSCI Family	Final GLIMPSS Genus	Benthic Final ID	Coun	Benthic Comments	Sample Methodology	Vouchered	Larvae	Adults	Pupae	Exclude IBI?
Baetidae	Baetis	Baetis	13		200-Count Subsample					No
Baetidae	Procloeon	Procloeon	7		200-Count Subsample					No
Baetiscidae	Baetisca	Baetisca	2		200-Count Subsample					No
Heptageniidae	Maccaffertium	Maccaffertium	23		200-Count Subsample					No
Isonychiidae	Isonychia	Isonychia	12		200-Count Subsample					No
Capniidae	Capniidae	Capniidae	18		200-Count Subsample					No
Hydropsychidae	Cheumatopsyche	Cheumatopsyche	23		200-Count Subsample					No
Hydropsychidae	Hydropsyche	Hydropsyche	14		200-Count Subsample					No
Philopotamidae	Chimarra	Chimarra	11		200-Count Subsample					No
Velidae	Microvelia	Microvelia	7		200-Count Subsample					No
Chironomidae	Chironomidae	Chironomidae	39		200-Count Subsample					No
Simuliidae	Simulium	Simulium	11		200-Count Subsample					No
Tipulidae	Antocha	Antocha	14		200-Count Subsample					No
Aeshnidae	Boyeria	Boyeria	3		200-Count Subsample					No
Gomphidae	Progomphus	Progomphus	2		200-Count Subsample					No
Psephenidae	Psephenus	Psephenus	6		200-Count Subsample					No
Corydalidae	Nigronia	Nigronia	3		200-Count Subsample					No
Lumbricidae	Lumbricidae	Lumbricidae	1		200-Count Subsample					No
Cambaridae	Cambarus	Cambarus	3		200-Count Subsample					No
*										No

Record: 1 of 19 No Filter Search

Then [View WVSCI Score and Data](#) or [View Benthic Life Histories](#) or [Enter Family Level Benthic IDs](#) or [Go back BENTHIC COLLECTION DATA ENTRY](#)

Then move on to other data types [Go to Fish](#) [Go to Benthic](#) [Go to Water Quality](#)

or [Go Back to Samples](#) or [Go Back to Stations](#) or [Go Back to MAIN MENU](#)

Record: 1 of 1 Filtered Search

File Home

Cut Copy Paste

Remove Sort Selection **Toggle Filter**

New Save Spelling Refresh All Delete More

Replace Go To Find Select

Clipboard Sort & Filter Records Find Text Formatting

Main Menu Org In... Stations Samples Benthic Collection and Comparability

Sample ID 1 **Benthic Subsample Collection Info and Comparability** ORG ID WVDEP

Benthic Final ID (Genus)

Sample ID 1 **Enter Benthic Final ID by Genus** ORG ID WVDEP

Benthic WVSCI

Sample ID 1 **West Virginia Stream Condition Index (WVSCI)** ORG ID WVDEP

**IMPORTANT: A blank screen below means that you have not entered the Benthic Identifications correctly! All individuals that are part of the 200-count subsample must be designated as such in the Sample Methodology column on the Benthic ID forms (Family or Genus)!**

WVSCI Family	Count	TV
Aeshnidae	3	3
Baetidae	20	4
Baetiscidae	2	3
Cambaridae	3	8
Capniidae	18	1
Chironomidae	39	6
Corydalidae	3	5
Gomphidae	2	3
Heptageniidae	23	4
Hydropsychidae	37	5
Isonychiidae	12	2
Lumbricidae	1	1
Philopotamidae	11	3
Psephenidae	6	4
Simuliidae	11	6
Tipulidae	14	3
Velidae	7	6

WVSCI Metrics and Scores		
Metrics	BSV	WVSCI Standardized Score w BSV 1996-2001
% 2 Dominant Taxa (Family)	35.85	37.3   102.31
% Chironomidae	18.40	1.7   83.02
% EPT (Family)	58.02	89.3   64.97
HBI (Family)	4.24	2.61   77.94
# EPT Taxa (Family)	7	13   53.85
# Total Taxa (Family)	17	22   77.27
<b>WVSCI Score w/ BSV 1996-2001</b>		<b>76.17</b>

Benthic Density	
WVSCI	
# of grids Picked	8
Total # of grids	100
Total Individuals	212
# of Organisms per Grid	26.50
Organisms per Sq cm	0.2650
Organisms per Sq m	2650.00

WVSCI Category: Unimpaired-Good

WVSCI Thresholds  
 Unimpaired = > 68.00  
 Gray Zone = 60.61 to 68.00  
 Impaired = < 60.61

Record: 1 of 17

Enter Family Level Benthic IDs | Enter Genus Level Benthic IDs | View Benthic Life Histories | Go back BENTHIC COLLECTION DATA ENTRY

Then move on to other data types | Go to Fish | Go to RBP Habitat | Go to Water Quality

or Go Back to Samples | or Go Back to Stations | or Go Back to MAIN MENU

File Home

Paste Cut Copy Filter

Ascending Descending Remove Sort Toggle Filter

New Save Delete More

Spelling Find

Replace Go To Select

Text Formatting

Main Menu Org In... Stations Samples **RBP Habitat**

Sample ID 1 **RBP Habitat Data** ORG ID WVDEP

**Enter the RBP Habitat Data**

1. Epifaunal Substrate/ Available Fish Cover	14
2. Embeddedness/ Pool Substrate Characterization	12
3. Velocity Depth/ Pool Variability	10
4. Channel Alteration	16
5. Sediment Deposition	16
6. Riffle Frequency/ Channel Sinuosity	16
7. Channel Flow Status	11

All Left vs. Right Bank data is based on Left/Right as you look downstream (e.g., Left Descending Bank)..

8. Total Bank Stability	Left 7	Total 14
	Right 7	
9. Total Bank Vegetative Protection	Left 9	Total 13
	Right 4	
10. Total Width of Undisturbed Vegetative Zone	Left 8	Total 13
	Right 5	

RBP Habitat Notes

Total RBP Score	135
Calculated Narrative RBP Score	Sub-Optimal
Enter RBP Narrative Score Here!	Sub-Optimal

WVDEP Narrative RBP Ranges  
 Optimal = >=160  
 Sub-Optimal = 110-159  
 Marginal = 60-109  
 Poor = <=59

**Then move on to other data types**

Go to Benthic Macroinvertebrate Go to Fish Go to Water Quality

OR Go Back to Samples OR Go Back to Stations OR Go Back to MAIN MENU



WV DEP/DNR Scientific Collection Permit Database

File Home

Cut Copy Paste Filter Ascending Descending Selection Advanced Remove Sort Toggle Filter Refresh All New Save Delete More Find Replace Go To Select MS Sans Serif 8 Text Formatting

Main Menu Org In... Stations Samples Water Quality

Sample ID 1 **Water Quality Data** ORG ID WVDEP

**Enter the Water Quality Data**

Parameter	Non Detect	Value	Default Units	Water Quality Notes	Analysis Method	MDL	Analysis Date	Analysis Time	Lab	Enter
Temperature	No	19.55	°C				9/12/2051	12:05	N/A	3/7
PH	No	6.81	S.U.				9/12/2051	12:05	N/A	3/7
DO	No	7.53	mg/L or ppm				9/12/2051	12:05	N/A	3/7
Specific Conductance	No	235	uS or umhos/cm				9/12/2051	12:05	N/A	3/7
Lab pH	No	7.01	S.U.				9/14/2051	10:00	ABC Chem	3/7
Lab Specific Conductance	No	250	uS or umhos/cm				9/14/2051	10:00	ABC Chem	3/7
Hot Acidity	No	1.5	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Alkalinity	No	32.8	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Hardness	No	75.1	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
NO2-NO3-N	No	0.19	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Chloride Total	No	3.5	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Sulfate	No	56.8	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
TSS	No	3	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
TDS	No	95	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Al Total	No	0.26	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Al Dissolved	Yes	0.012	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Fe Total	No	0.389	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Fe Dissolved	No	0.155	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Ca Total	No	15.7	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Mn Total	No	0.116	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Mn Dissolved	No	0.101	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Mg Total	No	6.87	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
K Total	No	2.51	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Se Total	Yes	0.001	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Na Total	No	4.33	mg/L or ppm				9/14/2051	10:00	ABC Chem	3/7
Flow	No	0.583	cfs							3/7
*	No									

Record: 16 of 26 No Filter Search

**Then move on to other data types**

[Go to Benthic Macroinvertebrate](#)
[Go to Fish](#)
[Go to RBP Habitat](#)

or [Go Back to Samples](#)
 or [Go Back to Stations](#)
 or [Go Back to MAIN MENU](#)

# WV DEP/DNR Scientific Collection Permit Database

To enter Station Information (Including Stream Name.

To export data into multiple Excel flat files

The screenshot shows a Windows file explorer window titled "Output To" with the address bar set to "Computer > Local Disk (C:) > Users > A106639 > Desktop > WV9009121 2051 Sample Data". The main pane displays a table of files:

Name	Date modified	Type	Size
EXPORT DATA 02-Export Selected PROJE...	3/7/2012 1:06 PM	Microsoft Excel 97...	11 KB

An "Enter Parameter Value" dialog box is overlaid on the file explorer, asking "What project do you wish to export?" with the text "WV9009121" entered in the input field. Below the dialog, the file explorer shows the "File name" field containing "EXPORT DATA 03-Export Selected RBP HABITAT DATA.xls" and the "Save as type" dropdown set to "Excel 97 - Excel 2003 Workbook (\*.xls)".

ct (Permit#)

P.O. Box 67, Ward Road  
Elkins, WV 26241  
Phone: (304) 637-0245 Fax: (304) 637-0250  
Email: [barbara.d.sargent@wv.gov](mailto:barbara.d.sargent@wv.gov)  
Web: <http://www.wvdnr.gov/wildlife/scollectpermit.shtm>

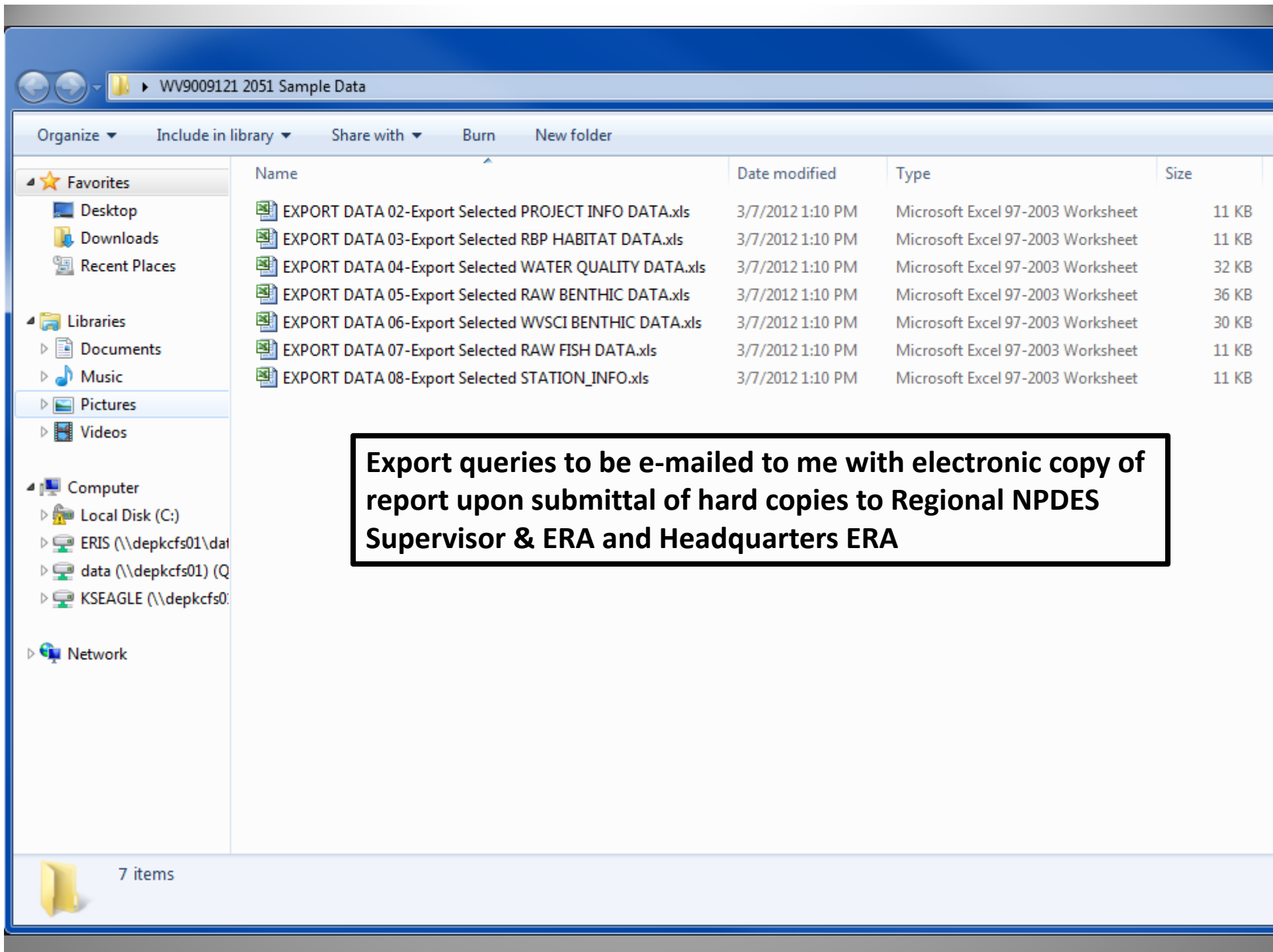


[WVDEP 2011 SUP](#)



EXIT DATABASE

Version 4.01 20110705



# Database version 4.02

- Database will compact and repair on close, speeding up performance of databases with large data sets
- Requires ANCode and coordinates
- Color coded impairment or threshold status for WVSCI and RBP
- Has QA/QC color coding for data entry forms
- “No Fish” option for fish surveys
- Instruction manual includes station and project naming conventions for NPDES benthic sampling
- HQ ERA contact info on Main Menu
- Available for download online at:

[http://www.dep.wv.gov/WWE/watershed/bio\\_fish/Pages/Bio\\_Fish.aspx](http://www.dep.wv.gov/WWE/watershed/bio_fish/Pages/Bio_Fish.aspx)

# WV DEP/DNR Scientific Collection Permit Database for Stream Benthic Macroinvertebrates and Fish

To enter Station Information (Including Stream Name, Location, Coordinates, Watershed, County), Sample Data (Including Project, RBP Habitat, Benthic, Fish, and Water Quality Data) select:

Data Entry Form

To enter (one time only) your Organization Information (Including Addresses, Electronic Addresses, and Phone Numbers) select:

Organization Info

DMR Permit Submission Requirement, General DB, and Narrative Water Quality Permit Guidance Questions can be directed to:

Kevin D. Seagle  
Environmental Resource Analyst  
West Virginia Department of Environmental Protection  
Division of Mining and Reclamation-NPDES Permit Development  
601 57th Street S.E.  
Charleston, WV 25304-2345  
Phone: (304) 926-0499 ext. 1512 Fax: (304) 926-0456  
Email: [kevin.d.seagle@wv.gov](mailto:kevin.d.seagle@wv.gov)  
Web Link: [WVDEP Narrative WQ Guidance](#)



WVDEP WAB SOP and WVSCI Questions can be directed to:

Michael J. Whitman  
Environmental Resource Analyst  
West Virginia Department of Environmental Protection  
Division of Water and Waste Management  
Watershed Branch-Watershed Assessment Section  
601 57th Street S.E.  
Charleston, WV 25304-2345  
Phone: (304) 926-0499 ext. 1088 Fax: (304) 926-0463  
Email: [michael.j.whitman@wv.gov](mailto:michael.j.whitman@wv.gov)  
Web Link: [WVDEP Division of Water and Waste Management](#)



Scientific Collection Permit Questions can be directed to:

Barbara Sargent  
West Virginia Division of Natural Resources  
Wildlife Resources  
Scientific Collecting Permit/Endangered Species Program  
P.O. Box 67, Ward Road  
Elkins, WV 26241  
Phone: (304) 637-0245 Fax: (304) 637-0250  
Email: [barbara.d.sargent@wv.gov](mailto:barbara.d.sargent@wv.gov)  
Web Link: [WVDNR Scientific Collection Permit](#)



To export data into multiple Excel flat files (Project, Station, RBP Habitat, Water Quality, Raw Benthic, WVSCI Benthic, and Raw Fish) at a location of your choosing select one of the below:

- Export All Data
- Browse Projects
- Export Data by Project

To EXPORT ALL DATA, simply choose a location to which you want the 8 Excel files saved.

To EXPORT PROJECT DATA, you must first choose a location to which you want the 8 Excel files saved. Then you must type in the exact name of the project as documented in the PROJECT DATA ENTRY FORM. You will be prompted for this before exporting all but the very first Excel files.

Important Links:

[WVSCI Document.pdf](#)

[WVSCI Addendum.doc](#)

[EPA RBP Download Page](#)

[WVDEP WAB SOP \(2011 or newer\)](#)

[DNR Scientific Collection Permit Database and Training Materials \(at bottom of WVDEP Hosted Page\)](#)



EXIT DATABASE

Sample ID

**Enter Benthic Final ID by Genus**

ORG ID

**IMPORTANT: You must enter the Benthic Collection Info before entering the Benthic Identifications Below!**

Final WVSCI Family	Final GLIMPSS Genus	Benthic Final ID	Coun	Benthic Comments	Sample Methodology	Vouchered	Larvae	Adults	Pupae	Exclude IBI?
		Acari	1		200-Count Subsample					No
Dytiscidae	Dytiscidae	Dytiscidae	2		200-Count Subsample					No
		Diptera	3		200-Count Subsample					No
Simuliidae	Simuliidae	Simuliidae			200-Count Subsample					No
Chironomidae	Ablabesmyia	Ablabesmyia rhamphe	1							Yes
Chironomidae	Limnophyes	Limnophyes	5		200-Count Subsample					No
Chironomidae	Polypedilum	Polypedilum	8		200-Count Subsample					No
*										

Record: 6 of 7 | No Filter | Search

Then [View WVSCI Score and Data](#) or [View Benthic Life Histories](#) or [Enter Family Level Benthic IDs](#) or [Go back BENTHIC COLLECTION DATA ENTRY](#)

Then move on to other data types [Go to Fish](#) [Go to RBP Habitat](#) [Go to Water Quality](#)

or [Go Back to Samples](#) or [Go Back to Stations](#) or [Go Back to MAIN MENU](#)

Record: 1 of 1 | Filtered | Search

Sample ID 5

**Water Quality Data**

ORG ID DEPT01A

**Enter the Water Quality Data**

Parameter	Non Detect	Value	Default Units	Water Quality Notes	Analysis Method	MDL	Analysis Date	Analysis Time	Lab	Enter
Temperature	No	14.33	°C		Field		10/2/2006	16:40		11/1
PH	No	2.95	S.U.	pH probe was slow to respc	Field		10/2/2006	16:40		11/1
DO	No	10.3	mg/L or ppm		Field		10/2/2006	16:40		11/1
Specific Conductance	No	940	uS or umhos/cm		Field		10/2/2006	16:40		11/1
Hot Acidity	No	206	mg/L or ppm		EPA305.1	5.0000	10/10/2006	18:43	Biochem	11/1
Al Total	No	1.25	mg/L or ppm			0.1500	11/10/2006	12:45		11/1
Al Dissolved	Yes		mg/L or ppm			0.1500	11/10/2006	12:45		11/1
Alkalinity	Yes		mg/L or ppm		EPA310.1	5.0000	10/10/2006	15:03	Biochem	11/1
*	No									

Record: 6 of 8 No Filter Search

**Then move on to other data types** [Go to Benthic Macroinvertebrate](#) [Go to Fish](#) [Go to RBP Habitat](#)

or [Go Back to Samples](#)

or [Go Back to Stations](#)

or [Go Back to MAIN MENU](#)

Sample ID 5

## West Virginia Stream Condition Index (WVSCI)

ORG ID DEPTTEST01A

**IMPORTANT: A blank screen below means that you have not entered the Benthic Identifications correctly! All individuals that are part of the 200-count subsample must be designated as such in the Sample Methodolgy column on the Benthic ID forms (Family or Genus)!**

WVSCI Family	Count	TV	0
Chironomidae	13	6	DE
Dytiscidae	2	5	DE
Simuliidae	6	6	DE

Record: 1 of 3

### WVSCI Metrics and Scores

ORG ID DEPTTEST01A

Metrics	BSV	WVSCI Standardized Score w BSV 1996-2001
% 2 Dominant Taxa (Family)	100.00	37.3
% Chironomidae	86.67	1.7
% EPT (Family)	0.00	89.3
HBI (Family)	5.87	2.61
# EPT Taxa (Family)	0	13
# Total Taxa (Family)	2	22
WVSCI Score w/ BSV 1996-2001		13.10

### Benthic Density

# of grids Picked	10	Total # of grids	100
<b>WVSCI</b>			
Total Individuals	15		
# of Organisms per Grid	1.50		
Organisms per Sq cm	0.0150		
Organisms per Sq m	150.00		

WVSCI Category Impaired-Severely

**WVSCI Thresholds**  
 Unimpaired = >68.00  
 Gray Zone = 60.61 to 68.00  
 Impaired = <60.61

[Enter Family Level Benthic IDs](#)
[Enter Genus Level Benthic IDs](#)
[View Benthic Life Histories](#)
[Go back BENTHIC COLLECTION DATA ENTRY](#)

**Then move on to other data types**
[Go to Fish](#)
[Go to RBP Habitat](#)
[Go to Water Quality](#)

or [Go Back to Samples](#)
 or [Go Back to Stations](#)
 or [Go Back to MAIN MENU](#)



Sample ID 5

ORG ID DEPTTEST01A

### Enter the RBP Habitat Data

### RBP Habitat Data

All Left vs. Right Bank data is based on Left/Right as you look downstream (e.g., Left Descending Bank)..

### RBP Habitat Notes

Bugs-5, Fish-11. Velocity Depth-barely had one fast deep pool.

1. Epifaunal Substrate/ Available Fish Cover	7
2. Embeddedness/ Pool Substrate Characterization	5
3. Velocity Depth/ Pool Variability	16
4. Channel Alteration	13
5. Sediment Deposition	3
6. Riffle Frequency/ Channel Sinuosity	15
7. Channel Flow Status	14

8. Total Bank Stability	Left	3	Total
	Right	4	7
9. Total Bank Vegetative Protection	Left	7	Total
	Right	7	14
10. Total Width of Undisturbed Vegetative Zone	Left	4	Total
	Right	7	11

Total RBP Score	105
Calculated Narrative RBP Score	Marginal
Enter RBP Narrative Score Here!	Marginal <input type="button" value="v"/>

**WVDEP Narrative RBP Ranges**  
 Optimal = >=160  
 Sub-Optimal = 110-159  
 Marginal = 60-109  
 Poor = <=59

### Then move on to other data types

[Go to Benthic Macroinvertebrate](#)

[Go to Fish](#)

[Go to Water Quality](#)

or [Go Back to Samples](#)

or [Go Back to Stations](#)

or [Go Back to MAIN MENU](#)

Sample ID

ORG ID

**Enter Fish Final ID by Common Name or Scientific Name**

**IMPORTANT: You must enter the Fish Collection Info before entering the Fish Identifications Below!**

	Common Name	Scientific Name	Count	Voucher	Max Fish Length (mm)	Min Fish Length (mm)	Min Fish V
*	No Fish	No Fish					

Record: 1 of 1 | No Filter | Search

Then move on to other data types [Benthic Macroinvertebrate](#) [RBP Habitat](#) [Water Quality](#) or [Go back to FISH DATA ENTRY FORM](#)

or [Go Back to Samples](#) or [Go Back to Stations](#) or [Go Back to MAIN MENU](#)