

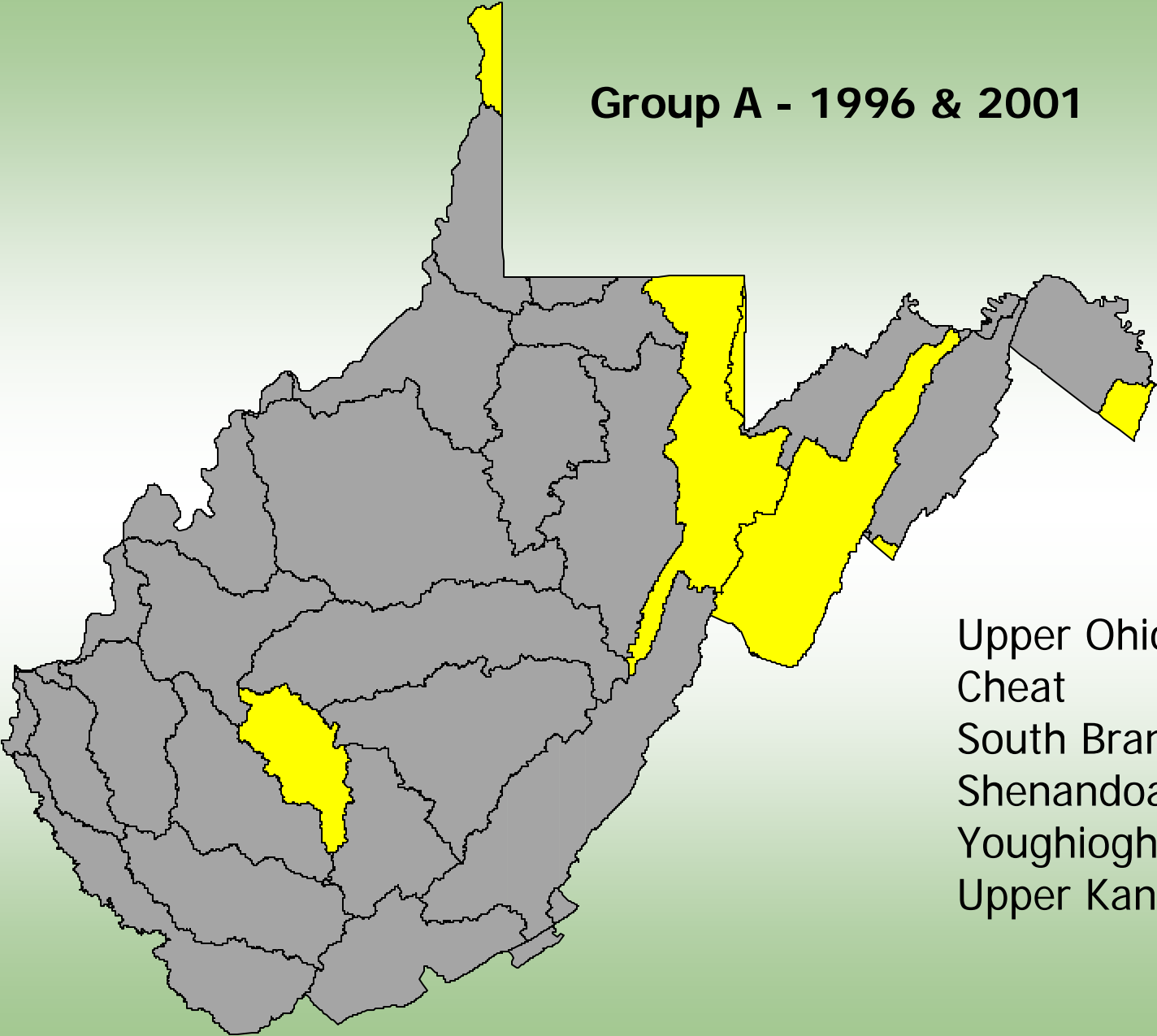
# West Virginia DEP's Watershed Assessment Program



dep

west virginia department of environmental protection

**Group A - 1996 & 2001**



- Upper Ohio North
- Cheat
- South Branch
- Shenandoah
- Youghiogheny
- Upper Kanawha

# Probabilistic, Targeted, and Pre-TMDL Sampling

Include similar assessment procedures.

- Water Quality

  - Field parameters, Fecal Coliform

  - Others dependent on likely stressor

- Habitat Assessments

  - Site maps, photos, & description

  - Physical measurements

  - Landuse activities and disturbances

  - Qualitative habitat evaluations

- Biological

  - Benthic macroinvertebrates

  - Periphyton

We collected 93 samples from 85 sites from the South Branch Watershed in July and August 2006.

We asked contractor to process and identify 21 samples from the South Branch and major forks

Data received last Friday and entered into our database by COB Monday.

## South Branch Potomac River WS Benthic Macroinvertebrate Study WVSCI Score Summary - 2006

Mile Point	Stream Name	Narrative Score	WVSCI
4.9	South Branch Potomac River	Unimpaired-Very Good	78.0
14.3		Unimpaired-Good	68.9
34.6		Unimpaired-Good	75.2
45.8		Unimpaired-Good	77.7
53.2		Unimpaired-Good	68.4
71.7		Unimpaired-Very Good	81.3
78		Unimpaired-Good	73.4
<b>92.6</b>		<b>Unimpaired-Very Good</b>	<b>89.5</b>
109.6		Unimpaired-Good	71.1
133.9		Unimpaired-Good	70.4
		<b>AVERAGE</b>	<b>75.4</b>
1.1	South Fork	Unimpaired-Very Good	80.6
5.5		Unimpaired-Good	72.2
27.3		Unimpaired-Good	77.8
40		Unimpaired-Good	77.7
44.4		Unimpaired-Very Good	78.7
55.6		Unimpaired-Very Good	81.9
		<b>AVERAGE</b>	<b>78.2</b>
1.8	North Fork	Unimpaired-Very Good	81.0
19.7		Unimpaired-Good	75.7
21.2		Unimpaired-Very Good	86.6
29.1		Unimpaired-Good	72.5
40.6		Unimpaired-Very Good	86.2
		<b>AVERAGE</b>	<b>80.4</b>



South Branch @ mp 92.6  
WVSCI = 89.5

South Branch @ mp 14.3  
WVSCI = 68.9





## South Branch Potomac River WS Benthic Macroinvertebrate Study Top 50 Genera (Taxa) From All Sites Combined - 2006

	Genus	Total #	#Sites
1	Isonychia	347	21
2	Ceratopsyche	316	21
3	Stenonema	169	21
4	Cheumatopsyche	469	20
5	Acentrella	291	20
6	Plauditus	295	20
7	Baetis	344	20
8	Simulium	220	20
9	Psephenus	66	19
10	Serratella	129	19
11	Stenelmis	426	19
12	Optioservus	182	18
13	Polypedilum	82	18
14	Cardiocladius	71	17
15	Chimarra	168	16
16	Leptoxis	279	15
17	Rheotanytarsus	41	15
18	Epeorus	42	15
19	Thienemannimyia	46	13
20	Tvetenia	30	12
21	Antocha	53	11
22	Cricotopus/Orthocladius	20	11
23	Acroneuria	28	10
24	Caenis	35	10
25	Brachycentrus	111	10

	Genus	Total #	#Sites
26	Leucrocuta	31	9
27	Hydropsyche	64	9
28	Oligochaeta	17	9
29	Corydalus	22	8
30	Atherix	12	8
31	Hydrolimax	16	7
32	Tanytarsus	18	7
33	Microtendipes	19	7
34	Gomphidae	18	7
35	Lepidostoma	12	6
36	Petrophila	17	5
37	Pteronarcys	7	5
38	Cricotopus	56	5
39	Hemerodromia	5	3
40	Hydroptila	3	3
41	Leucotrichia	10	3
42	Leptophlebiidae	4	3
43	Argia	3	3
44	Microcyloopus	6	3
45	Leuctra	10	3
46	Tricorythodes	10	3
47	Nigronia	6	3
48	Rhithrogena	6	2
49	Pseudocloeon	6	2
50	Ablabesmyia	2	2

## South Branch Potomac River WS Benthic Macroinvertebrate Study WVSCI and Component Metric Summary -2006

<b>Mile Point</b>	<b>Stream Name</b>	<b># Taxa</b>	<b># EPT</b>	<b>HBI</b>	<b>% 2 Dom</b>	<b>% Chiro</b>	<b>% EPT</b>	<b>WVSCI</b>
4.9	South Branch Potomac River	15	9	4.16	54.2	3.1	71.6	78.0
14.3		13	8	3.95	72.5	0.5	59.9	68.9
34.6		18	9	4.07	61.6	1.7	52.1	75.2
45.8		14	8	4.02	47.7	2.6	69.4	77.7
53.2		14	8	4.09	58.2	2.4	35.1	68.4
71.7		17	8	4.13	33.0	7.7	67.4	81.3
78.0		14	8	4.31	41.9	17.1	54.7	73.4
92.6		23	13	4.37	43.5	5.8	66.7	89.5
109.6		17	9	4.50	48.4	33.5	49.8	71.1
133.9		15	8	4.06	58.2	28.4	64.9	70.4
1.1	South Fork	18	8	3.91	36.3	2.4	52.4	80.6
5.5		16	7	4.42	43.1	7.1	40.8	72.2
27.3		17	9	4.07	57.2	6.5	68.4	77.8
40.0		14	8	4.03	36.6	5.6	57.3	77.7
44.4		15	7	3.36	54.3	2.9	79.2	78.7
55.6		20	11	4.19	49.4	1.9	51.0	81.9
1.8	North Fork	20	9	4.36	43.9	8.3	59.6	81.0
19.7		18	10	4.56	59.5	22.6	70.1	75.7
21.2		20	12	4.12	55.3	7.1	81.0	86.6
29.1		15	7	4.51	58.9	13.5	75.9	72.5
40.6		19	13	4.28	59.3	8.8	85.2	86.2



## South Branch Potomac River WS Benthic Macroinvertebrate Study Hydropsychidae, Simuliidae, Ephemeroptera Importance - 2006

Mile Point	Stream Name	% Hydropsychidae	% Simuliidae	% Ephemeroptera	# Ephemeroptera Fam
4.9	South Branch Potomac River	27.1	1.8	40.0	5
14.3		6.3	1.8	44.1	4
34.6		8.3	1.2	36.8	5
45.8		20.0	2.1	41.3	4
53.2		14.4	1.9	16.8	4
71.7		17.7	2.3	45.3	5
78.0		6.4	3.9	42.3	4
92.6		26.6	4.4	33.8	6
109.6		14.9	0.9	22.8	6
133.9		29.81	0.0	7.7	5
1.1	South Fork	5.7	3.3	35.4	4
5.5		4.7	15.7	34.9	4
27.3		2.8	2.8	58.1	5
40.0		9.9	19.3	35.7	4
44.4		8.2	6.9	61.2	5
55.6		12.2	6.8	35.4	5
1.8	North Fork	9.6	11.7	47.4	6
19.7		36.9	0.5	26.3	5
21.2		29.2	5.3	44.3	5
29.1		45.4	1.0	24.2	4
40.6		50.5	1.9	22.7	6

# South Branch Potomac River Benthic Macroinvertebrate Study

## Taxa Comparison of Stations with Highest & Lowest WVSCI -2006

<b>South Branch Potomac River Mile 53.2</b>			
	<b>WVSCI Family</b>	<b>Genus (taxon)</b>	<b>Count</b>
1	Turbellaria	Hydrolimax	2
2	Pleuroceridae	Leptoxis	88
3	Baetidae	Acentrella	2
4	Baetidae	Baetis	5
5	Baetidae	Plauditus	10
6	Isonychiidae	Isonychia	5
7	Heptageniidae	Epeorus	2
8	Heptageniidae	Leucocuta	1
9	Heptageniidae	Stenonema	8
10	Ephemereididae	Serratella	2
11	Perlidae	Perlidae	1
12	Elmidae	Optioservus	5
13	Elmidae	Stenelmis	28
14	Psephenidae	Psephenus	3
15	Philopotamidae	Chimarra	3
16	Hydropsychidae	Ceratopsyche	6
17	Hydropsychidae	Cheumatopsyche	13
18	Hydropsychidae	Hydropsyche	11
19	Brachycentridae	Brachycentrus	4
20	Simuliidae	Simulium	4
21	Chironomidae	Cardiocladius	1
22	Chironomidae	Tvetenia	1
23	Chironomidae	Polypedilum	3
		<b>Lowest WVSCI</b>	<b>68.4</b>

<b>South Branch Potomac River Mile 92.6</b>			
	<b>WVSCI Family</b>	<b>Genus (taxon)</b>	<b>Count</b>
1	Turbellaria	Hydrolimax	1
2	Pleuroceridae	Leptoxis	8
3	Baetidae	Acentrella	15
4	Baetidae	Baetis	14
5	Baetidae	Plauditus	6
6	Isonychiidae	Isonychia	12
7	Heptageniidae	Epeorus	3
8	Heptageniidae	Stenonema	3
9	Leptohyphidae	Tricorythodes	1
10	Ephemereididae	Serratella	6
11	Caenidae	Caenis	10
12	Coenagrionidae	Argia	1
13	Pteronarcyidae	Pteronarcys	1
14	Elmidae	Optioservus	14
15	Elmidae	Stenelmis	15
16	Psephenidae	Psephenus	2
17	Philopotamidae	Chimarra	8
18	Psychomyiidae	Psychomyia	1
19	Polycentropodidae	Neureclipsis	1
20	Hydropsychidae	Ceratopsyche	24
21	Hydropsychidae	Cheumatopsyche	31
22	Brachycentridae	Brachycentrus	1
23	Lepidostomatidae	Lepidostoma	1
24	Pyalidae	Petrophila	1
25	Tipulidae	Antocha	4
26	Simuliidae	Simulium	9
27	Chironomidae	Thienemannimyia	2
28	Chironomidae	Cricotopus/Orthocladius	1
29	Chironomidae	Microtendipes	2
30	Chironomidae	Polypedilum	5
31	Chironomidae	Rheotanytarsus	1
32	Chironomidae	Tanytarsus	1
33	Athericidae	Atherix	2
		<b>Highest WVSCI</b>	<b>89.5</b>

# Water Quality

Temp (oC)
pH
DO (mg/L)
Sp Cond (umhos/cm)
Fecal
Hot Acidity (mg/L)
Alkalinity (mg/L)
Total As (mg/L)
<b>Barium (mg/L)</b>
NO2-NO3-N (mg/L)
Total Phosphorous (mg/L)
TKN (mg/L)
TSS (mg/L)
Lab Hardness
Sulfate (mg/L)
Chloride (mg/L)
Total N (mg/L)
Total Al (mg/L)
Dis Al (mg/L)
Dis Cu (mg/L)
Total Fe (mg/L)
Dis Fe (mg/L)
Total Mn (mg/L)
Total Se (mg/L)
Dis Zn (mg/L)
Lab Water Notes

## Other Available data

Roxarsone / Antibiotic Study - 2004

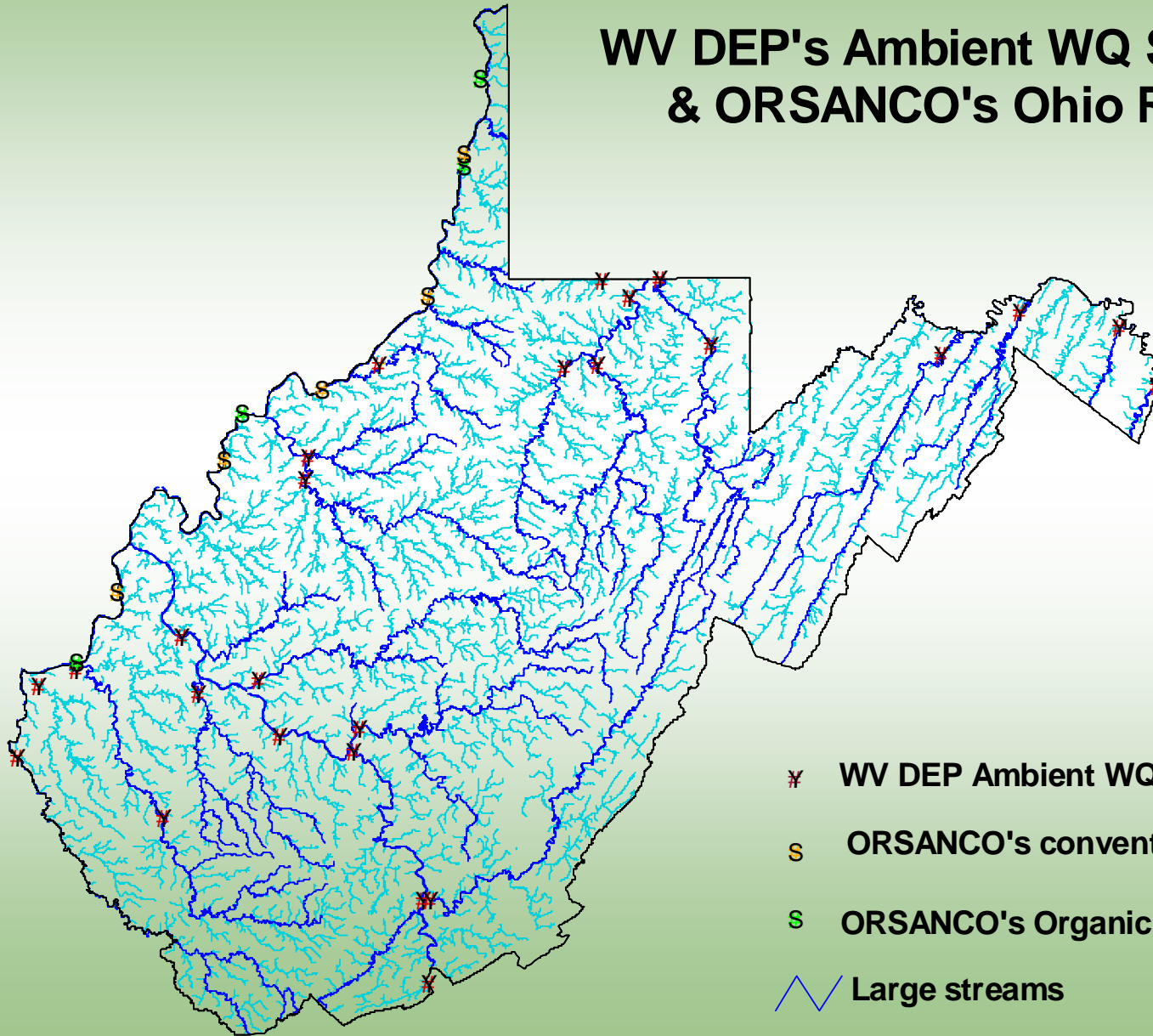
# Ambient Monitoring Program

Monitor the state's largest streams and rivers

- Currently 25 sites on the major rivers. (now 26)
- Quarterly samples for many parameters.  
(Increased frequency to bi-monthly)
- Long term data - many have been monitored for nearly 50 years.
- Biology

# Ambient Monitoring Program

## WV DEP's Ambient WQ Stations & ORSANCO's Ohio River sites





# Ambient Network – Sample parameters

	Parameter	Fraction
Field Measurements	Oxygen, Field	Dissolved
	Specific Conductance	
	Temperature, water	
	pH	
Lab analyzed	Alkalinity, Carbonate as CaCO <sub>3</sub>	Total
	Aluminum	Dissolved
	Aluminum	Total
	Arsenic	Dissolved
	Arsenic	Total
	Cadmium	Dissolved
	Chloride	Total
	Copper	Dissolved
	Hardness, carbonate	Total
	Iron	Dissolved
	Iron	Total
	Lead	Dissolved
	Manganese	Dissolved
	Manganese	Total
	Mercury	Total
	Nickel	Dissolved
	Nitrogen, ammonia	Total
	Nitrogen, Kjeldahl	Total
	Nitrogen, Nitrate	Total
	Nitrogen, Nitrite	Total
	Phosphorus as P	Total
	Silver	Dissolved
	Sulfate	Total
	Total Fecal Coliform	Total
	Total Suspended Solids (TSS)	
	Zinc	Dissolved
		+ 15 qualitative fields

# Periphyton Data

