

Read Me:

In order to facilitate the transition of this document to electronic format, some font and format changes were necessitated. None of the contents have been altered in any other way. All data remains unchanged from the printed version.

Version 10/05/98



Office of Water Resources

Division of Environmental Protection *West Virginia*

The following information is being provided as a supplement to the West Virginia 1998 303(d) list. It is intended to explain the purpose and meaning of the list as well as provide an overview of the rationale used in its development.

Why is the list developed?

The Division of Environmental Protection (DEP), under the authority of the federal Clean Water Act, Section 303(d) and the U.S. Environmental Protection Agency (EPA) Water Quality Planning and Management Regulations, 40CFR Part 130.7, is required to develop and submit to EPA on a biennial basis a list of water quality limited waters. A Water quality limited water can be defined as a waterbody which, due to pollution impairment, fails to meet state water quality standards.

Federal law requires that the state develop Total Maximum Daily Loads (TMDLs) for streams that are water quality limited. In simple terms, a TMDL is a plan of action that is used to clean up polluted waters. The plan includes 1) a pollution source identification/prioritization and 2) a strategy development for contaminant source reduction/elimination. Streams with a high TMDL priority (as indicated in the table) will be the first to have TMDLs developed. Those having medium and low priority will follow. Priority determinations were made after consideration of legal mandates, degree and number of impairments, degree of public interest, feasibility of restoration, and the timing relationship with the West Virginia Watershed Management Framework.

Many high priority waters are having TMDLs developed in accordance with a 1997 consent decree between EPA and the Ohio Valley Environmental Coalition, Inc. et. al. In accordance with the consent decree select waters must have TMDLs developed by September 30, 1999. Others will be scheduled for TMDLs in accordance with West Virginia's Watershed Management Framework principles and as resources are made available. Generally, in a given year, TMDLs will be developed in those watersheds where DEP has recently completed its basin monitoring activities. DEP monitors the state's 32 major river basins on a five-year rotation (an average of 6-7 basins per year).

1998 TMDLs

Buckhannon River
Tenmile Creek of Buckhannon River
Lost River
Tomlinson Run Lake
Mountwood Park Lake
Hurricane Lake
Burches Run Lake

1999 TMDL considerations

Cheat River and its mine drainage impacted tributaries
Tygart River and its mine drainage impacted tributaries
Kanawha River (lower)
Armour Creek
Pocatalico River
Turkey Run Lake
Ridenhour Lake
Bear Rocks Lake
Castleman Run Lake

The ultimate goal of the TMDL process is to restore water quality limited waters so that they may be fully utilized for their many designated uses, such as fishing, swimming, and drinking water supply.

303(d) List Tables

The West Virginia 1998 303(d) list contains three separate tables of streams that DEP has determined to be water quality limited. In developing these tables, DEP utilized all existing and readily available water quality data from its own offices of Water Resources (OWR), Abandoned Mine Lands & Reclamation (AML), and Mining and Reclamation (OMR). In addition, information was acquired from the WV Division of Natural Resources (DNR), U. S. Geological Survey (USGS), U. S. Forest Service (USFS), U. S Army Corps of Engineers (COE), Ohio River Valley Water Sanitation Commission (ORSANCO), National Park Service, and the states of Virginia, Kentucky, Ohio, Pennsylvania, and Maryland. Also, data generated by the Cacapon Institute and selected permitted facilities in the state were reviewed in making listing determinations.

As a general rule, in order for data to be used to make listing decisions, it had to be of adequate quality, quantity, and not more than five years old. Data greater than five years old was only used in cases where severe, chronic, and long term pollution problems have been documented

(e.g., acid mine drainage). In addition, waters were not placed on the list in cases where the assessments were based primarily on best professional judgement (BPJ) or citizen collected data.

Waterbodies on the proposed 303(d) list are alphabetically indexed by the stream codes. The column headings across the top of each page describe the contents of the list. At a minimum, each of the tables includes the stream name, stream code, size affected, pollutant, source of impairment, and TMDL priority. Other information provided is specific to each table. Following is a description of information provided in each of the three tables and the rationale used in their development.

Table A - Primary Waterbody List

This table is a list of the state's waterbodies that are being actively considered for TMDL development. Generally, it contains the state's larger impaired streams as well as waters with fish consumption advisories, larger streams impaired by acid mine drainage (AMD), and pollution impacted lakes. It also contains streams that cannot be categorized in any of the other tables. A summary of the assessment criteria used in the development of the table is available upon request.

Table B - Waterbodies Impaired by Mine Drainage

This table is a list of all known acid mine drainage impacted streams in the state except those larger AMD streams that appear on the Primary Waterbody List. This list largely contains streams that were carried over from previously established AMD stream lists that were put together utilizing data collected in the 1970's and 1980's. The list also contains streams that recently have been determined to be impaired by AMD. Streams on this list are impaired by either pH, metals, or a combination of both.

Table C - Waterbodies Impaired by Acid Rain

This table contains a list of streams that are known to be impaired by acid rain. The primary data source used to develop this list was the Division of Natural Resources' infertile streams database. The primary criterion used to determine acid rain impacts was long-term average pH. If the long-term average pH was less than 6.0 standard units, the stream was listed. In cases where long-term data was not available, professional judgement was used to determine whether or not a stream was impaired by acid rain. Consideration was given to stream pH, conductivity, biology, and prior knowledge about the watershed. Streams that are being treated with limestone are not included on the list, provided the pH is being maintained at or above 6.0 standard units.

How was citizen's data incorporated?

The DEP currently receives citizen monitoring data from two sources: One is from the Save Our Streams (SOS) biological monitoring program, and the other is from the Cacapon Institute (formerly Pine Cabin Run Ecological Laboratory). SOS is a DEP-sponsored program whereby citizens adopt a stream and are taught how to gage the stream's health by collecting and identifying benthic macroinvertebrates. The Cacapon Institute is a private non-profit organization with a certified laboratory facility and volunteers who conduct water quality studies on streams predominantly in the Cacapon River Watershed.

SOS biological data is evaluated every two years for inclusion in the 305(b) Report. Since SOS incorporates an approved quality assurance program, the data is viewed as reliable. However, the data only equates to RBP Level I, which is considered screening data. Although the data can indicate general impairment, no attempt is made to collect chemical data or quantify a cause and effect relationship with a pollution source. Furthermore, no attempt is made to determine the length of stream affected. Due to the above limitations, SOS data is not used to make listing decisions for 303(d) purposes. However, it is used as a screening tool to target streams for further study or to substantiate assessments based on monitoring data from other sources.

Data from Cacapon Institute is utilized in the state 305(b) Report, and has recently been used to support a 303(d) listing decision. The data substantiated information collected by the U.S. Geological Survey and was used in TMDL development.

For more information.....

Any questions regarding the attached list should be directed to Steve Stutler, 1201 Greenbrier Street, Charleston, WV 25311, Phone (304)558-2108.

**WEST VIRGINIA
1998 303(d) List**

Primary Waterbody List

Table A

STREAM NAME	STREAM CODE	USE^ AFFECTE	POLLUTANT	PRIMARY SOURCE	SIZE AFFECTED	UNITS	REACH DESCRIPTION	TMDL PRIORITY	HUC
Tug Fork River	BST	AQL	Aluminum, Iron, Zinc	Undetermined	58.8	Miles	Kermit to mouth	High	05070201
Tug Fork River	BST	HH	Iron	Undetermined	58.8	Miles	Kermit to mouth	High	05070201
Pocatalico River	K-29	HH*	Dioxin	Undetermined	2	Miles	Lower 2 miles	High	05050008
Armour Creek	K-30	HH*	Dioxin	Undetermined	2	Miles	Lower 2 miles	High	05050008
Elk River	K-43	AQL	Aluminum, Lead, Iron, Zinc	Undetermined	21.77	Miles	Mouth to Big Sandy	Medium	05050007
Elk River	K-43	HH	Iron	Undetermined	21.77	Miles	Mouth to Big Sandy	Medium	05050007
Paint Creek	K-65	AQL	Aluminum	Mine Drainage	16.8	Miles	Mouth to mp 16.8	High	05050006
Paint Creek	K-65	AQL, HH	pH	Mine Drainage	5.8	Miles	mp 11 to mp 16.8	High	05050006
Gauley River	K-82	AQL	Zinc, Lead	Undetermined	35.52	Miles	Mouth to Summersville Dam	Medium	05050005
Dunloup Creek	KN-22	AQL	Aluminum	Undetermined	9.2	Miles	Headwaters to Glen Jean	High	05050004
Flat Fork Creek	KP-33	HH*	PCB's	Spencer Transformer - Harmony, WV	5	Miles	Entire length	Medium	05050008
Hurricane WS Reservoir	K(L)-22-(1)	AQL	Nutrients,Siltation,Iron	Domestic Sewage,Const.,Urb. Runoff	12	Acres	N/A	Completed	05050008
Hurricane WS Reservoir	K(L)-22-(1)	HH	Iron	Construction,Urban Runoff	12	Acres	N/A	Completed	05050008
Ridenhour Lake	K(L)-30-A-(1)	AQL	Nutrients,Siltation,Iron,Aluminum	Dom.Sewage,Const.,Agric.,Urb. Runoff	27	Acres	N/A	High	05050008
Ridenhour Lake	K(L)-30-A-(1)	HH	Iron	Construction,Urban Runoff	27	Acres	N/A	High	05050008
Reedy Creek	LK-25	AQL	Aluminum,Iron	Undetermined	22.63	Miles	Entire length	Low	05030203
Reedy Creek	LK-25	HH	Iron	Undetermined	22.63	Miles	Entire length	Low	05030203
Spring Creek	LK-31	AQL	Aluminum,Iron	Undetermined	25.27	Miles	Entire length	Low	05030203
Spring Creek	LK-31	HH	Iron	Undetermined	25.27	Miles	Entire length	Low	05030203
Sand Fork	LK-86	AQL	Aluminum,Iron	Undetermined	18.66	Miles	Entire length	Low	05030203
Sand Fork	LK-86	HH	Iron	Undetermined	18.66	Miles	Entire length	Low	05030203
Oil Creek	LK-94	AQL	Aluminum	Undetermined	9.81	Miles	Entire length	Low	05030203
Saltlick Creek	LK-95	AQL	Aluminum,Iron	Undetermined	17.71	Miles	Entire length	Low	05030203
Saltlick Creek	LK-95	HH	Iron	Undetermined	17.71	Miles	Entire length	Low	05030203
Mountwood Park Lake	LK(L)-10-(1)	AQL	Siltation	Constr.,Streambk.Mod.,Highway Maint.	48	Acres	N/A	Completed	05030203
Saltlick Pond #9	LK(L)-95-(1)	AQL	Siltation	Undetermined	15	Acres	N/A	High	05030203
Monongahela River	M	AQL	Aluminum	Undetermined	37.5	Miles	Entire length	Medium	05020003
Unnamed Trib Monongahela R.	M-23.5	AQL	Iron,Manganese	Sharon Steel - Fairmont, WV	0.5	Miles	Entire length	High	05020003
West Fork River	M-26	AQL	Aluminum, Zinc, Iron	Mine Drainage,Metals Tailings	73	Miles	Mouth upstream to Stonewall Jackson Dam	High	05020002
West Fork River	M-26	HH	Iron	Mine Drainage,Metals Tailings	73	Miles	Mouth upstream to Stonewall Jackson Dam	High	05020002
Tygart River	M-27	AQL	Metals, pH	Mine Drainage	36	Miles	Grassy Run downstream to Tygart Lake	High	05020001
Tygart River	M-27	AQL	Aluminum	Undetermined	23	Miles	Tygart Dam to mouth	High	05020001
Cheat River	MC	AQL, HH	Iron	Mine Drainage	12.6	Miles	Muddy Creek to Cheat Lake	High	05020004
Cheat River	MC	AQL	Aluminum, pH, Zinc	Mine Drainage	20.9	Miles	Pringle Run to Cheat Lake	High	05020004
Lower Blackwater River	MC-60-D	AQL	Iron, Aluminum	Mine Drainage	11	Miles	Davis to mouth	High	05020004
Lower Blackwater River	MC-60-D	HH	Iron	Mine Drainage	11	Miles	Davis to mouth	High	05020004
Upper Blackwater River	MC-60-D	AQL	Low D.O.	Municipal Point Sources	23.4	Miles	Headwaters to mouth of Yellow Creek	Completed	05020004

**WEST VIRGINIA
1998 303(d) List**

Primary Waterbody List

Table A

STREAM NAME	STREAM CODE	USE^ AFFECTE	POLLUTANT	PRIMARY SOURCE	SIZE AFFECTED	UNITS	REACH DESCRIPTION	TMDL PRIORITY	HUC
Buckhannon River	MT-31	AQL, HH	Iron	Mine Drainage	5.55	Miles	Forks to Beans Mill	Completed	05020001
Ten Mile Creek	MTB-25	AQL	Aluminum, Iron	Mine Drainage	3.2	Miles	Entire length	Completed	05020001
Middle Fork River	MT-33	AQL; HH	pH	Mine Drainage	4.7	Miles	Between Cassity Fork and Long Run	High	05020001
Middle Fork River	MT-33	AQL	Aluminum	Mine Drainage	4.7	Miles	Between Cassity Fork and Long Run	High	05020001
Ohio River	O	HH*	PCB's	Undetermined	277	Miles	Entire length	High	Multiple
Ohio River	O	HH*	Chlordane	Undetermined	277	Miles	Entire length	High	Multiple
Ohio River	O	HH #	Dioxin	Undetermined	79.5	Miles	mp 237.5 to mp 317	High	Multiple
Ohio River	O	AQL	Copper	Undetermined	72	Miles	mp 54.5 to mp 126.4	Low	Multiple
Ohio River	O	AQL	Aluminum	Undetermined	277	Miles	Entire length	Low	Multiple
Ohio River	O	AQL; HH	Iron	Undetermined	117	Miles	E. Liverpool to New Cumberland and Belleville to Kentucky border	Low	Multiple
Twelvepole Creek	O-2	AQL	Zinc	Undetermined	30	Miles	Mouth upstream to Wayne	Medium	05090102
Kanawha River (upper)	O-20	AQL	Zinc	Undetermined	23	Miles	Chelyan to New/Gauley River confluence	Medium	05050006
Kanawha River (lower)	O-20	HH#	Dioxin	Undetermined	45.5	Miles	Mouth of Coal R. to Kanawha R. mouth	High	05050008
UT of Robinson Run	O-21-B-1	AQL	Aluminum, Iron, Manganese	Undetermined	0.2	Miles	Entire length	Low	05030202
UT of Robinson Run	O-21-B-1	HH	Iron	Undetermined	0.2	Miles	Entire length	Low	05030202
Fourpole Creek	O-3	AQL	Aluminum	Undetermined	11.74	Miles	Entire length	Low	05090101
Guyandotte River	O-4	AQL	Iron,Aluminum	Undetermined	72	Miles	Pecks Mill to mouth	Medium	05070102
Guyandotte River	O-4	HH	Iron	Undetermined	72	Miles	Pecks Mill to mouth	Medium	05070102
Little Kanawha River	O-47	AQL	Aluminum	Undetermined	124.2	Miles	Mouth to Burnsville Dam	Medium	05030203
Little Kanawha River	O-47	AQL; HH	Iron	Undetermined	124.2	Miles	Mouth to Burnsville Dam	Medium	05030203
Pats Branch	OG-0.5	AQL	Copper	Undetermined	1.7	Miles	Entire length	Low	05070102
Pats Branch	OG-0.5	HH	Fluoride	Undetermined	1.7	Miles	Entire length	Low	05070102
Tomlinson Run Lake	O(L)-102-(1)	AQL	Siltation	Agriculture,Construction	30	Acres	N/A	Completed	05030101
Turkey Run Lake	O(L)-37-(1)	AQL	Siltation,Iron,Aluminum,Nutrients	Petroleum Activities	15	Acres	N/A	High	05030202
Turkey Run Lake	O(L)-37-(1)	HH	Iron	Petroleum Activities	15	Acres	N/A	High	05030202
Burches Run Lake	O(L)-83-C-(1)	AQL	Nutrients,Siltation	Agriculture,Domestic Sewage	16	Acres	N/A	Completed	05030106
Bear Rocks Lake	O(L)-88-D-2-F-(1)	AQL	Nutrients,Siltation,Low D.O.	Agriculture,Construction	8	Acres	N/A	High	05030106
Castleman Run Lake	O(L)-92-L-(1)	AQL	Siltation,Nutrients	Agriculture	22	Acres	N/A	High	05030106
South Branch Potomac River	P-21	HH	Fecal Coliform	Agriculture	36	Miles	Between Moorefield and Upper Tract	Completed	02070001
Lost River	PC-24	HH	Fecal Coliform	Agriculture	26.03	Miles	Headwaters to Rt.55 bridge crossing above Wardensville	Completed	02070003
Stony River	PNB-17	AQL	pH,Unionized Ammonia	Mine Drainage	4.69	Miles	Between Fourmile Run and Mill Run	High	02070002
Stony River	PNB-17	AQL	Metals	Mine Drainage	11.87	Miles	Between Fourmile Run and mouth	High	02070002
Anderson Run	PSB-18	HH	Fecal Coliform	Agriculture	4.94	Miles	Entire length	Completed	02070001
South Fk. So. Br. Potomac R.	PSB-21	HH	Fecal Coliform	Agriculture	73.99	Miles	Entire length	Completed	02070001

**WEST VIRGINIA
1998 303(d) List**

Primary Waterbody List

Table A

STREAM NAME	STREAM CODE	USE^ AFFECTE	POLLUTANT	PRIMARY SOURCE	SIZE AFFECTED	UNITS	REACH DESCRIPTION	TMDL PRIORITY	HUC
Mill Creek	PSB-25	HH	Fecal Coliform	Agriculture	2.36	Miles	Entire length	Completed	02070001
Lunice Creek	PSB-26	HH	Fecal Coliform	Agriculture	7.5	Miles	Entire length	Completed	02070001
North Fk. So. Br. Potomac R.	PSB-28	HH	Fecal Coliform	Agriculture	45.77	Miles	Entire length	Completed	02070001
Shenandoah River	S	HH*	PCB's	Avtex Fibers - Front Royal, VA	19.45	Miles	Entire length	Medium	02070007

* Contaminant found in fish tissue

Contaminant found in fish tissue and water column

^AQL=Aquatic Life; HH=Human Health

TMDL = Total Maximum Daily Load

HUC = Hydrologic Unit Code

mp = mile point

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Tug Fork of Big Sandy River (05070201) - 63 Streams						
POWDERMILL BR	BST-3	2.27	Aquatic Life	Metals	Mine Drainage	Medium
PIGEON CK	BST-24	30.76	Aquatic Life	pH, Metals	Mine Drainage	Medium
MILLSTONE BR / PIGEON CK	BST-24-O	1.78	Aquatic Life	Metals	Mine Drainage	Medium
SUGARTREE CK	BST-32	2.42	Aquatic Life	Metals	Mine Drainage	Medium
WILLIAMSON CK	BST-33	1.52	Aquatic Life	Metals	Mine Drainage	Medium
SPROUSE CK	BST-38	1.60	Aquatic Life	Metals	Mine Drainage	Medium
MATE CK	BST-40	9.90	Aquatic Life	Metals	Mine Drainage	Medium
RUTHERFORD BR	BST-40-B	2.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
MITCHELL BR / MATE CK	BST-40-C	2.82	Aquatic Life	Metals	Mine Drainage	Medium
CHAFIN BR	BST-40-D	0.87	Aquatic Life	Metals	Mine Drainage	Medium
THACKER CK	BST-42	2.95	Aquatic Life	pH, Metals	Mine Drainage	Medium
SCISSORSVILLE BR	BST-42-A	1.90	Aquatic Life	pH, Metals	Mine Drainage	Medium
MAUCHLINVILLE BR	BST-42-B	1.78	Aquatic Life	pH, Metals	Mine Drainage	Medium
GRAPEVINE CK	BST-43	2.56	Aquatic Life	Metals	Mine Drainage	Medium
LICK FK / GRAPEVINE CK	BST-43-A	1.10	Aquatic Life	Metals	Mine Drainage	Medium
PANTHER CK	BST-60	9.40	Aquatic Life	Metals	Mine Drainage	Medium
CUB BR / PANTHER CK	BST-60-D	0.70	Aquatic Life	Metals	Mine Drainage	Medium
GRAPEVINE BR/DRY FK	BST-70-F	1.75	Aquatic Life	Metals	Mine Drainage	Medium
BEARTOWN BR	BST-70-I	1.70	Aquatic Life	Metals	Mine Drainage	Medium
ATWELL BR	BST-70-O	1.93	Aquatic Life	Metals	Mine Drainage	Medium
CLEAR FK / TUG FK	BST-76	11.00	Aquatic Life	Metals	Mine Drainage	Medium
SHABBYROOM BR	BST-78-B	2.10	Aquatic Life	Metals	Mine Drainage	Medium
HONEYCAMP BR	BST-78-D	1.67	Aquatic Life	Metals	Mine Drainage	Medium
COONTREE BR / SPICE CK	BST-78-E	0.95	Aquatic Life	Metals	Mine Drainage	Medium
STONECOAL BR / SPICE CK	BST-78-F	1.33	Aquatic Life	Metals	Mine Drainage	Medium
BADWAY BR	BST-78-G	1.33	Aquatic Life	Metals	Mine Drainage	Medium
NEWSON BR	BST-78-H	1.05	Aquatic Life	Metals	Mine Drainage	Medium
MOORECAMP BR	BST-78-I	0.91	Aquatic Life	Metals	Mine Drainage	Medium
LEFT FK / DAVY BR	BST-85-A	2.46	Aquatic Life	Metals	Mine Drainage	Medium
SHANNON BR	BST-94	3.10	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Tug Fork of Big Sandy River (05070201) (cont.)						
UPPER SHANNON BR	BST-95	2.45	Aquatic Life	Metals	Mine Drainage	Medium
PUNCHEONCAMP BR / BROWNS CK	BST-98-A	3.00	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE INDIAN CK	BST-100	2.12	Aquatic Life	Metals	Mine Drainage	Medium
JED BR	BST-102	0.95	Aquatic Life	Metals	Mine Drainage	Medium
ROCK NARROWS BR	BST-103	1.70	Aquatic Life	Metals	Mine Drainage	Medium
HARRIS BR	BST-104	1.15	Aquatic Life	Metals	Mine Drainage	Medium
MITCHELL BR	BST-105	2.10	Aquatic Life	Metals	Mine Drainage	Medium
SUGARCAMP BR	BST-106	2.58	Aquatic Life	Metals	Mine Drainage	Medium
GRAPEVINE BR	BST-107	0.51	Aquatic Life	Metals	Mine Drainage	Medium
SANDLICK CK	BST-109	5.25	Aquatic Life	Metals	Mine Drainage	Medium
RIGHT FK / SANDLICK CK	BST-109-A	2.95	Aquatic Life	Metals	Mine Drainage	Medium
LEFT FK / SANDLICK CK	BST-109-B	2.18	Aquatic Life	Metals	Mine Drainage	Medium
ADKIN BR	BST-110	2.15	Aquatic Life	Metals	Mine Drainage	Medium
BELCHER BR	BST-111	1.45	Aquatic Life	Metals	Mine Drainage	Medium
TURNHOLE BR	BST-112	2.20	Aquatic Life	Metals	Mine Drainage	Medium
HARMON BR	BST-113	3.10	Aquatic Life	Metals	Mine Drainage	Medium
SOUTH FK / TUG FK	BST-115	5.72	Aquatic Life	Metals	Mine Drainage	Medium
TEA BR	BST-115-A	1.14	Aquatic Life	Metals	Mine Drainage	Medium
MCCLURE BR	BST-115-B	1.25	Aquatic Life	Metals	Mine Drainage	Medium
JUMP BR	BST-115-D	1.67	Aquatic Life	Metals	Mine Drainage	Medium
SPICE CK / SOUTH FK	BST-115-E	3.18	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL BR / SOUTH BR	BST-115-F	2.42	Aquatic Life	Metals	Mine Drainage	Medium
ROAD FK / SOUTH FK	BST-115-G	1.25	Aquatic Life	Metals	Mine Drainage	Medium
BELCHER BR	BST-116	1.75	Aquatic Life	Metals	Mine Drainage	Medium
LOOP BR	BST-117	1.38	Aquatic Life	Metals	Mine Drainage	Medium
MILL BR	BST-118	2.00	Aquatic Life	Metals	Mine Drainage	Medium
DRY BR / TUG FK	BST-119	0.95	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE CK	BST-120	4.20	Aquatic Life	Metals	Mine Drainage	Medium
INDIAN GRAVE BR	BST-120-A	2.08	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Tug Fork of Big Sandy River (05070201) (cont.)						
PUNCHEONCAMP BR / LITTLE CK	BST-120-B	2.05	Aquatic Life	Metals	Mine Drainage	Medium
MILLSEAT BR	BST-121	1.40	Aquatic Life	Metals	Mine Drainage	Medium
BALLARD HARMON BR	BST-122	2.03	Aquatic Life	Metals	Mine Drainage	Medium
SAMS BR	BST-123	1.85	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Lower Kanawha River (05050008) - 4 Streams						
RICH FORK / TWO MILE CREEK	K-41-D.5	1.52	Aquatic Life	pH, Metals	Mine Drainage	Medium
HEIZER CK	KP-1	9.18	Aquatic Life	pH, Metals	Mine Drainage	Medium
MANILLA CK	KP-1-A	7.37	Aquatic Life	pH, Metals	Mine Drainage	Medium
TUPPERS CK	KP-13	6.82	Aquatic Life	pH, Metals	Mine Drainage	Medium
DRAINAGE: Upper Kanawha River (05050006) - 53 Streams						
LEFT FK / LENS CK	K-53-A	2.13	Aquatic Life	Metals	Mine Drainage	Medium
COUNTERFEIT BR	K-57-D	0.75	Aquatic Life	Metals	Mine Drainage	Medium
FIELDS CK	K-58	5.55	Aquatic Life	Metals	Mine Drainage	Medium
MILL BR / FIELDS CK	K-58-A	1.18	Aquatic Life	Metals	Mine Drainage	Medium
WOLFPEN HL	K-58-B.1	0.98	Aquatic Life	pH, Metals	Mine Drainage	Medium
NEW WEST HL / MILL BR / FIELDS CK		1.14	Aquatic Life	Metals	Mine Drainage	Medium
CARROLL BR	K-59	2.76	Aquatic Life	pH, Metals	Mine Drainage	Medium
SLAUGHTER CK	K-60	6.02	Aquatic Life	Metals	Mine Drainage	Medium
CABIN CK	K-61	21.14	Aquatic Life	pH, Metals	Mine Drainage	Medium
HICKS HL	K-61.5	0.95	Aquatic Life	pH, Metals	Mine Drainage	Medium
GREENS BR	K-61-G	1.98	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAUREL FK	K-61-H-1	3.50	Aquatic Life	pH	Mine Drainage	Medium
BEAR HL / CABIN CK	K-61-I	1.63	Aquatic Life	pH, Metals	Mine Drainage	Medium
CANE FK / CABIN CK	K-61-J	2.67	Aquatic Life	pH, Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper Kanawha River (05050006) (cont.)						
TENMILE FK / CABIN CK	K-61-L	6.02	Aquatic Life	Metals	Mine Drainage	Medium
FIFTEENMILE FK / CABIN CK	K-61-O	3.59	Aquatic Life	pH, Metals	Mine Drainage	Medium
ABBOTT CK	K-61-O-1	2.25	Aquatic Life	pH, Metals	Mine Drainage	Medium
LONG BR / FIFTEENMILE FK	K-61-0-2	2.85	Aquatic Life	pH, Metals	Mine Drainage	Medium
WATSON BR	K-62	1.24	Aquatic Life	pH, Metals	Mine Drainage	Medium
MILE BR	K-63	1.31	Aquatic Life	Metals	Mine Drainage	Medium
JONES BR	K-65-C	1.43	Aquatic Life	Metals	Mine Drainage	Medium
PACKS BR / PAINT CK	K-65-DD	3.80	Aquatic Life	Metals	Mine Drainage	Medium
BIG FK / PACKS BR	K-65-DD-2	1.24	Aquatic Life	Metals	Mine Drainage	Medium
TENMILE FK / PAINT CK	K-65-M	34.71	Aquatic Life	pH, Metals	Mine Drainage	Medium
LONG BR / TENMILE FK	K-65-M-1	1.43	Aquatic Life	pH, Metals	Mine Drainage	Medium
HICKORY CAMP BR	K-65-P	3.80	Aquatic Life	pH, Metals	Mine Drainage	Medium
CEDAR CK	K-65-Q	1.20	Aquatic Life	pH	Mine Drainage	Medium
UT OF PAINT CK #1	K-65-Q.3	0.36	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT OF PAINT CK #2	K-65-Q.5	0.44	Aquatic Life	pH, Metals	Mine Drainage	Medium
FIFTEENMILE CK / PAINT CK	K-65-R	1.24	Aquatic Life	Metals	Mine Drainage	Medium
SPRING BR	K-65-S	1.30	Aquatic Life	pH	Mine Drainage	Medium
SKITTER CK	K-65-T	1.48	Aquatic Life	Metals	Mine Drainage	Medium
LYKINS CK	K-65-W	4.62	Aquatic Life	pH, Metals	Mine Drainage	Medium
LONG BR / MOSSY CK	K-65-Y-2	2.43	Aquatic Life	Metals	Mine Drainage	Medium
WEST HL	K-68.5	4.05	Aquatic Life	Metals	Mine Drainage	Medium
MORRIS CK	K-70	4.85	Aquatic Life	Metals	Mine Drainage	Medium
STATEN RN	K-71	1.22	Aquatic Life	Metals	Mine Drainage	Medium
SMITHERS CK	K-72	7.03	Aquatic Life	Metals	Mine Drainage	Medium
FISHHOOK FK	K-72-A-1	1.52	Aquatic Life	Metals	Mine Drainage	Medium
ARMSTRONG CK	K-73	8.40	Aquatic Life	Metals	Mine Drainage	Medium
JENKINS FK	K-73-D	2.13	Aquatic Life	pH, Metals	Mine Drainage	Medium
POWELLTON FK	K-73-E	4.39	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL FK / POWELLTON FK	K-73-E-1	1.23	Aquatic Life	Metals	Mine Drainage	Medium
RIGHT FK / ARMSTRONG CK	K-73-F	2.51	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper Kanawha River (05050006) (cont.)						
LEFT FK / ARMSTRONG CK	K-73-G	2.89	Aquatic Life	Metals	Mine Drainage	Medium
BOOMER BR	K-74	2.55	Aquatic Life	pH, Metals	Mine Drainage	Medium
JARRETT BR	K-75	1.58	Aquatic Life	Metals	Mine Drainage	Medium
BEARDS FK	K-76-D	4.28	Aquatic Life	Metals	Mine Drainage	Medium
RIGHT FK / BEARDS FK	K-76-D-1	2.32	Aquatic Life	Metals	Mine Drainage	Medium
ROBINSON BR	K-76-E	1.60	Aquatic Life	Metals	Mine Drainage	Medium
MOLLY KINCAID BR	K-76-G	1.25	Aquatic Life	Metals	Mine Drainage	Medium
CAMP BR / LOOP CK	K-76-J	2.00	Aquatic Life	Metals	Mine Drainage	Medium
INGRAM BR	K-76-K	1.24	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Coal River (05050009) - 10 Streams						
SHUMATE CK	KC-46-D	3.23	Aquatic Life	Metals	Mine Drainage	Medium
PEACHTREE CK	KC-46-G	3.76	Aquatic Life	Metals	Mine Drainage	Medium
DREWS CK	KC-46-G-1	4.48	Aquatic Life	Metals	Mine Drainage	Medium
MARTIN FK / PEACHTREE CK	KC-46-G-2	3.01	Aquatic Life	Metals	Mine Drainage	Medium
JEHU BR	KC-46-Q-5	1.71	Aquatic Life	Metals	Mine Drainage	Medium
CLEAR FK	KC-47	21.55	Aquatic Life	Metals	Mine Drainage	Medium
LONG FK / CLEAR FK	KC-47-G	2.55	Aquatic Life	Metals	Mine Drainage	Medium
DOW FK	KC-47-G-1	1.29	Aquatic Life	Metals	Mine Drainage	Medium
TONEY FK	KC-47-L	2.36	Aquatic Life	Metals	Mine Drainage	Medium
WORKMAN CK / CLEAR FK	KC-47-O	3.46	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Elk River (05050007) - 4 Streams						
MORRIS CK	KE-26	0.97	Aquatic Life	pH, Metals	Mine Drainage	Medium
LEFT FK / MORRIS CK	KE-26-A	2.15	Aquatic Life	pH, Metals	Mine Drainage	Medium
BUFFALO CK	KE-50	23.81	Aquatic Life	Metals	Mine Drainage	Medium
PHEASANT RN	KE-50-T	1.50	Aquatic Life	pH, Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Gauley River (05050005) - 19 Streams						
SCRABBLE CK	KG-1	3.10	Aquatic Life	Metals	Mine Drainage	Medium
PETERS CK	KG-13	17.65	Aquatic Life	Metals	Mine Drainage	Medium
JERRY FK / PETERS CK	KG-13-F	2.35	Aquatic Life	Metals	Mine Drainage	Medium
BUCK GARDEN CK	KG-13-K	5.13	Aquatic Life	Metals	Mine Drainage	Medium
SEWELL CK	KG-19-Q	14.07	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE CLEAR CK	KG-19-V	16.26	Aquatic Life	Metals	Mine Drainage	Medium
BRUSHY MEADOW CK	KG-24-E-2	5.95	Aquatic Life	Metals	Mine Drainage	Medium
COLT BR	KG-24-I	2.15	Aquatic Life	Metals	Mine Drainage	Medium
MUDDLETY CK	KG-26	27.02	Aquatic Life	Metals	Mine Drainage	Medium
FOCKLER BR	KG-26-E	2.69	Aquatic Life	Metals	Mine Drainage	Medium
MCMILLION CK / MUDDLETY CK	KG-26-I	6.99	Aquatic Life	Metals	Mine Drainage	Medium
LOWER SPRUCE RN	KG-26-K-1	1.57	Aquatic Life	Metals	Mine Drainage	Medium
SPRUCE RN / LOWER SPRUCE RN	KG-26-K-1-A	1.50	Aquatic Life	Metals	Mine Drainage	Medium
CLEAR FK	KG-26-O	4.01	Aquatic Life	Metals	Mine Drainage	Medium
PERSINGER CK	KG-27	4.90	Aquatic Life	Metals	Mine Drainage	Medium
BIG BEAVER CK	KG-30	16.42	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE BEAVER CK	KG-30-E	6.00	Aquatic Life	Metals	Mine Drainage	Medium
BEARPEN FK / BEAVER CK	KG-30-L	2.53	Aquatic Life	Metals	Mine Drainage	Medium
PANTHER CK	KG-32	8.55	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Lower New River (05050004) - 7 Streams						
FLOYD CK	KN-17-B	3.00	Aquatic Life	Metals	Mine Drainage	Medium
ARBUCKLE CK	KN-21	6.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
MEADOW FK / DUNLOUP CK	KN-22-B	4.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
BATOFF CK	KN-26-A	3.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
WINDING GULF	KN-26-K-2	0.00	Aquatic Life	Metals	Mine Drainage	Medium
BOWYER CK	KN-26-M	4.40	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL CK / PINEY CK	KN-26-N	5.50	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper New River (05050002) - 1 Stream						
RICH CK	KNB-18	10.90	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Little Kanawha River (05030203) - 3 Streams						
DUCK CK	LK-82	3.69	Aquatic Life	Metals	Mine Drainage	Medium
LYNCH RN	LK-85	2.42	Aquatic Life	Metals	Mine Drainage	Medium
DUSKCAMP RN	LK-88	3.48	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Monongahela River (05020003) - 37 Streams						
UT @ MONTANA/MONON RV	M?	1.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT @ MILLERSVILLE / MONON	M?	1.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
CAMP RN	M?	3.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT @ BAKERS RIDGE / MONON RV	M?	1.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAUREL RN / MONON RV	M-2.7	1.90	Aquatic Life	pH, Metals	Mine Drainage	Medium
WEST RN	M-3	6.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
ROBINSON RN	M-4	4.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
CRAFTS RN	M-4?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT#1 / ROBINSON RN	M-4?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
SCOTT RN	M-6	6.00	Aquatic Life	Al, Fe, Mn	Mine Drainage	Medium
DENTS RN	M-7	5.69	Aquatic Life	Al, Fe, Mn	Mine Drainage	Medium
UT#2 / DENTS RN	M-7?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
DECKERS CK	M-8	24.70	Aquatic Life	pH, Metals	Mine Drainage	Medium
HARTMAN RN / DECKERS CK	M-8-O.5	1.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT#2 / DECKERS CK (Deep Hollow)	M-8-A.7	1.30	Aquatic Life	pH, Metals	Mine Drainage	Medium
GLADY RN / DECKERS CK	M-8-D	1.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
SLABCAMP RN	M-8-F	1.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
DILLAN CK	M-8-G	5.40	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL RN / DECKERS CK	M-8-H	3.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
KANES CK	M-8-I	4.80	Aquatic Life	pH, Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Monongahela River (05020003) (cont.)						
BOOTH'S CK	M-10	9.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
UT #2 / BOOTH'S RN	M-10?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
OWL CK	M-10-D	4.05	Aquatic Life	pH, Metals	Mine Drainage	Medium
MAYS RN	M-10-E	2.10	Aquatic Life	pH, Metals	Mine Drainage	Medium
BRAND RN	M-11	2.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
FLAGGY MEADOW RN	M-14	3.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
BIRCHFIELD RN	M-15	2.30	Aquatic Life	pH, Metals	Mine Drainage	Medium
INDIAN CK	M-17	2.08	Aquatic Life	Aluminum	Mine Drainage	Medium
PARKER RN	M-20	2.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
PHARAOH RN	M-21	3.30	Aquatic Life	pH, Metals	Mine Drainage	Medium
ROBINSON RN / PAWPAW CK	M-22-C	4.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
SUGAR RN / PAWPAW	M-22-K	2.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
BUFFALO CK	M-23	30.2	Aquatic Life	Aluminum	Mine Drainage	Medium
MOD RN	M-23-K	4.00	Aquatic Life	Metals	Mine Drainage	Medium
FLEMING FK	M-23-N-1	1.50	Aquatic Life	Metals	Mine Drainage	Medium
WHETSTONE RN	M-23-Q	2.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
JOES RN / BUFFALO CK	M-23-R	1.80	Aquatic Life	pH, Metals	Mine Drainage	Medium
DRAINAGE: Dunkard Creek (05020005) - 1 Stream						
DUNKARD CK	M-1	16.00	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Cheat River (05020004) - 53 Streams						
U.T. #1 / CHEAT LK	MC?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
U.T. #2 / CHEAT LK	MC?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
U.T. #3 / CHEAT LK	MC?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
CRAMMEYS RN	MC-3	1.40	Aquatic Life	Metals	Mine Drainage	High
BULL RN	MC-11	6.20	Aquatic Life	pH, Metals	Mine Drainage	High
MIDDLE RN / BULL RN	MC-11-A	1.70	Aquatic Life	pH, Metals	Mine Drainage	High
1ST UNNAMED TRIB / BULL RUN	MC-11-.1A	1.44	Aquatic Life	pH/Al	Mine Drainage	High

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Cheat River (05020004) (cont.)						
MOUNTAIN RN / BULL RN	MC-11-B	2.40	Aquatic Life	pH, Metals	Mine Drainage	High
LICK RN / BULL RN	MC-11-C	1.50	Aquatic Life	pH, Metals	Mine Drainage	High
2ND UNNAMED TRIB / BULL RUN	MC-11-C.1	1.40	Aquatic Life	pH/Fe,Al,Mn	Mine Drainage	High
RIGHT FORK BULL RUN	MC-11-E	1.80	Aquatic Life	pH/Fe,Al,Mn	Mine Drainage	High
BIG SANDY CK	MC-12	19.00	Aquatic Life	pH, Metals	Mine Drainage	High
U.T. / BIG SANDY CK	MC-12?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
LITTLE SANDY CK	MC-12-B	14.00	Aquatic Life	pH, Metals	Mine Drainage	High
WEBSTER RN / LITTLE SANDY CK	MC-12-B-0.5	3.00	Aquatic Life	pH, Metals	Mine Drainage	High
BEAVER CK / LL SANDY CK	MC-12-B-1	7.40	Aquatic Life	pH, Metals	Mine Drainage	High
GLADE RN / BEAVER CK / L. SANDY CK	MC-12-B-1-A	2.80	Aquatic Life	pH, Metals	Mine Drainage	High
U.T.#2 / BEAVER CK / L. SANDY CK	MC-12-B-1?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
HOG RN / LL SANDY CK	MC-12-B-3	4.60	Aquatic Life	pH, Metals	Mine Drainage	High
CHERRY RN	MC-12-B-5	3.00	Aquatic Life	pH, Metals	Mine Drainage	High
HAZEL RN	MC-12-C	5.60	Aquatic Life	pH, Metals	Mine Drainage	High
SOVERN RN / BIG SANDY CK	MC-12-O.5	4.70	Aquatic Life	pH, Metals	Mine Drainage	High
CONNER RN / CHEAT RV	MC-13.5	2.90	Aquatic Life	pH, Metals	Mine Drainage	High
GREENS RN	MC-16	8.20	Aquatic Life	pH, Metals	Mine Drainage	High
SOUTH FK / GREEN RN	MC-16-A	4.30	Aquatic Life	Metals	Mine Drainage	High
MIDDLE FORK / GREENS RUN	MC-16-A-.1	2.40	Aquatic Life	pH/Fe,Al,Mn	Mine Drainage	High
MUDDY CK	MC-17	15.60	Aquatic Life	pH, Metals	Mine Drainage	High
MARTIN CK	MC-17-A	2.60	Aquatic Life	pH, Metals	Mine Drainage	High
FICKEY RN	MC-17-A-0.5	2.80	Aquatic Life	pH, Metals	Mine Drainage	High
GLADE RN / MARTIN CK	MC-17-A-1	3.60	Aquatic Life	pH, Metals	Mine Drainage	High
1ST UNNAMED TRIB / GLADE RUN	MC-17-A-1.1	1.00	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High
2ND UNNAMED TRIB / GLADE RUN	MC-17-A-1.2	1.20	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High
ROARING CK	MC-18	9.20	Aquatic Life	pH, Metals	Mine Drainage	High
MORGAN RN	MC-23	4.60	Aquatic Life	pH, Metals	Mine Drainage	High
1ST UNNAMED TRIB / MORGAN RUN	MC-23-.2A	2.29	Aquatic Life	pH,Al,Mn	Mine Drainage	High
CHURCH CK / MORGAN RN	MC-23-A	4.00	Aquatic Life	pH, Metals	Mine Drainage	High
LEFT FORK / U.T. / CHURCH RUN	MC-23-A-.1-A	1.00	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High
RIGHT FORK / U.T. / CHURCH RUN	MC-23-A-.1-B	1.80	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Cheat River (05020004) (cont.)						
HEATHER RN	MC-24	3.40	Aquatic Life	pH, Metals	Mine Drainage	High
1ST UNNAMED TRIB / HEATHER RUN	MC-24-A	1.00	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High
LICK RN	MC-25	4.00	Aquatic Life	pH, Metals	Mine Drainage	High
JOES RN	MC-26	2.80	Aquatic Life	Metals	Mine Drainage	High
PRINGLE RN	MC-27	4.70	Aquatic Life	pH, Metals	Mine Drainage	High
LEFT FORK / PRINGLE RUN	MC-27-A	4.00	Aquatic Life	pH,Al,Fe,Mn	Mine Drainage	High
RIGHT FORK OF PRINGLE RUN	MC-27-B	3.00	Aquatic Life	pH,Al,Fe,Mn	Mine Drainage	High
TUB RN	MC-60-D-2	2.80	Aquatic Life	pH, Metals	Mine Drainage	High
FINLEY RN	MC-60-D-2.7	0.73	Aquatic Life	pH, Metals	Mine Drainage	High
NORTH FK / BLACKWATER RV	MC-60-D-3	4.00	Aquatic Life	pH, Metals	Mine Drainage	High
LONG RN	MC-60-D-3-A	3.60	Aquatic Life	pH,Al,Mn,Fe	Mine Drainage	High
MIDDLE RN / NO FK / BLACKWATER RV	MC-60-D-3-B	1.80	Aquatic Life	pH, Metals	Mine Drainage	High
SNYDER RN / NO FK / BLACKWATER RV	MC-60-D-3-C	2.80	Aquatic Life	pH, Metals	Mine Drainage	High
BEAVER CK / BLACKWATER RV	MC-60-D-5	13.80	Aquatic Life	pH, Metals	Mine Drainage	High
HAWKINS RN	MC-60-D-5-C	2.00	Aquatic Life	pH, Metals	Mine Drainage	High
DRAINAGE: Tygart Valley River (05020001) - 50 Streams						
GOOSE CK	MT-4	2.60	Aquatic Life	pH, Metals	Mine Drainage	High
LOST RN	MT-5	8.60	Aquatic Life	pH, Metals	Mine Drainage	High
BERKELY RN	MT-11	7.20	Aquatic Life	pH, Metals	Mine Drainage	High
SHELBY RN	MT-11-A	3.60	Aquatic Life	pH, Metals	Mine Drainage	High
LONG RN / BERKELEY RN	MT-11-B	3.60	Aquatic Life	pH, Metals	Mine Drainage	High
BERRY RN	MT-11-B-1	1.50	Aquatic Life	pH, Metals	Mine Drainage	High
THREEFORK CK	MT-12	19.00	Aquatic Life	pH, Metals	Mine Drainage	High
RACCOON CK / THREEFORK CK	MT-12-C	8.80	Aquatic Life	pH, Metals	Mine Drainage	High
LITTLE RACCOON RN	MT-12-C-2	2.60	Aquatic Life	Metals	Mine Drainage	High
BRAINS CK / FIELDS CK	MT-12-G-2	4.90	Aquatic Life	pH, Metals	Mine Drainage	High
BIRDS CK	MT-12-H	5.50	Aquatic Life	pH, Metals	Mine Drainage	High
SQUIRES CK	MT-12-I	4.50	Aquatic Life	pH, Metals	Mine Drainage	High
SANDY CK	MT-18	16.40	Aquatic Life	pH, Metals	Mine Drainage	High

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Tygart Valley River (05020001) (cont.)						
GLADE RN / SANDY CK	MT-18-C	2.90	Aquatic Life	pH, Metals	Mine Drainage	High
LITTLE SANDY CK	MT-18-E	10.60	Aquatic Life	pH, Metals	Mine Drainage	High
MAPLE RN	MT-18-E-1	4.80	Aquatic Life	pH, Metals	Mine Drainage	High
LEFT FK / LL SANDY CK	MT-18-E-3	5.40	Aquatic Life	pH, Metals	Mine Drainage	High
LEFT FORK / SANDY CK	MT-18-G	8.00	Aquatic Life	Metals	Mine Drainage	High
FROST RN	MT-24-A	2.20	Aquatic Life	pH, Metals	Mine Drainage	High
FOXGRAPE RN	MT-26-B	3.40	Aquatic Life	Aluminum	Mine Drainage	High
LITTLE HACKERS CK	MT-26-C	1.60	Aquatic Life	Aluminum	Mine Drainage	High
FORD RN	MT-27	2.70	Aquatic Life	pH, Metals	Mine Drainage	High
ANGLINS RN	MT-29	2.60	Aquatic Life	pH, Metals	Mine Drainage	High
ISLAND RN	MT-36	1.20	Aquatic Life	pH, Metals	Mine Drainage	High
BEAVER CK	MT-37	4.60	Aquatic Life	pH, Metals	Mine Drainage	High
LAUREL RN	MT-39	3.40	Aquatic Life	pH, Metals	Mine Drainage	High
U.T. / TYGART VALLEY RV AT HARDING	MT-40.?	0.00	Aquatic Life	pH, Metals	Mine Drainage	High
GRASSY RN	MT-41	2.80	Aquatic Life	pH, Metals	Mine Drainage	High
ROARING CK	MT-42	15.00	Aquatic Life	pH, Metals	Mine Drainage	High
PECKS RN	MTB-5	8.20	Aquatic Life	pH/Metals	Mine Drainage	High
U.T. / PECKS RN	MTB-5-.8A	0.69	Aquatic Life	pH/Metals	Mine Drainage	High
LITTLE PECKS RN	MTB-5-B	2.49	Aquatic Life	Mn, Fe	Mine Drainage	High
MUD RN/PECKS RN	MTB-5-C	1.18	Aquatic Life	Metals	Mine Drainage	High
TURKEY RN	MTB-10	7.04	Aquatic Life	pH/Metals	Mine Drainage	High
SUGAR RN	MTB-10-A	1.73	Aquatic Life	Metals	Mine Drainage	High
FINK RN	MTB-11	8.17	Aquatic Life	pH/Metals	Mine Drainage	High
MUD LICK OF FINK RN	MTB-11-B	1.90	Aquatic Life	Iron, Manganese	Mine Drainage	High
BRIDGE RN / FINK RN	MTB-11-B.7	2.47	Aquatic Life	pH, Metals	Mine Drainage	High
BULL RN	MTB-18-B	3.90	Aquatic Life	Iron	Mine Drainage	High
BLACKLICK RN	MTB-18-B-2	2.09	Aquatic Life	Iron	Mine Drainage	High
MUDLICK RN	MTB-18-B-3	1.14	Aquatic Life	Iron	Mine Drainage	High
PANTHER FK	MTB-27	6.40	Aquatic Life	pH	Mine Drainage	High
SWAMP RN	MTB-29	1.68	Aquatic Life	pH, Metals	Mine Drainage	High

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Tygart Valley River (05020001) (cont.)						
HERODS RN	MTB-30	2.62	Aquatic Life	pH	Mine Drainage	High
LEFT FK / BUCKHANNON RV	MTB-32	17.90	Aquatic Life	pH, Iron	Mine Drainage	High
DEVIL RN	MTM-4	2.33	Aquatic Life	pH, Metals	Mine Drainage	High
HELL RN	MTM-6	3.23	Aquatic Life	pH, Metals	Mine Drainage	High
WHITEOAK RN	MTM-8	1.92	Aquatic Life	pH, Metals	Mine Drainage	High
CASSITY CK	MTM-16	6.40	Aquatic Life	pH, Metals	Mine Drainage	High
PANTHER RN	MTM-16-A	5.80	Aquatic Life	pH, Metals	Mine Drainage	High
DRAINAGE: West Fork River (05020002) - 98 Streams						
U.T.#4 @ HUTCHINSON	MW?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
BOOTHES CK	MW-2	8.60	Aquatic Life	Metals	Mine Drainage	Medium
U.T.#1 / BOOTHES CK	MW-2?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#2 / BOOTHES CK	MW-2?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#3 / BOOTHES CK	MW-2?	0.00	Aquatic Life	Metals	Mine Drainage	Medium
HOG LICK RN	MW-2-A	1.40	Aquatic Life	Metals	Mine Drainage	Medium
SWEEP RN	MW-2-C	1.10	Aquatic Life	Metals	Mine Drainage	Medium
HORNERS RN	MW-2-D	2.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
PURDYS RN/HORNERS RN	MW-2-D-1	1.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
COONS RN	MW-3	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
BINGAMON CK	MW-7	14.80	Aquatic Life	Al, Fe	Mine Drainage	Medium
ELKLICK	MW-7-C	1.20	Aquatic Life	Metals	Mine Drainage	Medium
CUNNINGHAM RN	MW-7-D	2.40	Aquatic Life	Al, Fe	Mine Drainage	Medium
LAUREL RN	MW-8	1.20	Aquatic Life	Metals	Mine Drainage	Medium
U.T.#3 @ VIROPA	MW-8.7	0.70	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#2 @ VIROPA	MW-8.5	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
MUDLICK RN	MW-9	2.90	Aquatic Life	pH, Metals	Mine Drainage	Medium
BROWNS RN	MW-10	1.00	Aquatic Life	Metals	Mine Drainage	Medium
SHINNS RN	MW-11	6.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
ROBINSON RN	MW-12	5.40	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: West Fork River (05020002) (cont.)						
U.T. / ROBINSON RN	MW-12?	0.00	Aquatic Life	Metals	Mine Drainage	Medium
PIGEON RN	MW-12-A	1.20	Aquatic Life	Metals	Mine Drainage	Medium
TENMILE CK	MW-13	26.40	Aquatic Life	Metals	Mine Drainage	Medium
JACK RN / TENMILE CK	MW-13.5-A	1.00	Aquatic Life	Metals	Mine Drainage	Medium
U.T. / TENMILE CK	MW-13?	0.00	Aquatic Life	Metals	Mine Drainage	Medium
JONES CK	MW-13-A	8.80	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE TENMILE CK	MW-13-B	13.00	Aquatic Life	Metals	Mine Drainage	Medium
U.T.#1 / LITTLE TENMILE CK	MW-13-B?	0.00	Aquatic Life	Metals	Mine Drainage	Medium
PETERS RN	MW-13-B-1	1.20	Aquatic Life	Metals	Mine Drainage	Medium
BENNETT RN	MW-13-B-2	2.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAUREL RN / LL TENMILE CK	MW-13-B-4	2.00	Aquatic Life	Metals	Mine Drainage	Medium
ELK CK / LL TENMILE CK	MW-13-B-6	3.00	Aquatic Life	Metals	Mine Drainage	Medium
MUDLICK RN / LL TENMILE CK	MW-13-B-9	2.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
ISAACS CK	MW-13-C	2.80	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE ISAACS CK	MW-13-C-1	0.60	Aquatic Life	Metals	Mine Drainage	Medium
GREGORY RN	MW-13-D	2.40	Aquatic Life	Metals	Mine Drainage	Medium
KATYS LICK CK	MW-13-E	2.80	Aquatic Life	Metals	Mine Drainage	Medium
ROCKCAMP RN	MW-13-F	6.80	Aquatic Life	Metals	Mine Drainage	Medium
LITTLE ROCKCAMP RN	MW-13-F-1	4.20	Aquatic Life	Metals	Mine Drainage	Medium
CHERRYCAMP RN	MW-13-I-2	3.20	Aquatic Life	Metals	Mine Drainage	Medium
PATTERSON FK	MW-13-I-3	2.40	Aquatic Life	Metals	Mine Drainage	Medium
COBURY FK	MW-13-N	4.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
SHAW RN	MW-13-N-1	1.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#1 @ GYPSY	MW-14.2	1.45	Aquatic Life	pH, Metals	Mine Drainage	Medium
SIMPSON CK	MW-15	28.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#6 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#5 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#4 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#3 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#2 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#1 / SIMPSON CK	MW-15?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: West Fork River (05020002) (cont.)						
JACK RN / SIMPSON CK	MW-15-A	1.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
SMITH RN / SIMPSON CK	MW-15-B	2.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
JERRY RN	MW-15-H	2.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
BERRYRN	MW-15-I	3.30	Aquatic Life	pH, Metals	Mine Drainage	Medium
RIGHT FK / SIMPSON CK	MW-15-J	3.60	Aquatic Life	pH, Metals	Mine Drainage	Medium
BUCK RN	MW-15-J-1	2.70	Aquatic Life	pH, Metals	Mine Drainage	Medium
SAND LICK RN	MW-15-J-2	3.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
GABE FK	MW-15-J-3	5.50	Aquatic Life	pH, Metals	Mine Drainage	Medium
BARTLETT RN	MW-15-K	1.80	Aquatic Life	pH, Metals	Mine Drainage	Medium
WEST BR / SIMPSON CK	MW-15-L	3.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
RT BR/WEST BR / SIMPSONCK	MW-15-L?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
U.T.#1/WEST BR / SIMPSON CK	MW-15-L?	0.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
STILLHOUSE RN	MW-15-L-1	1.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
CAMP RN / SIMPSON CK	MW-15-M	1.80	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAMBERT RN	MW-16	4.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
JACK RN	MW-17	2.40	Aquatic Life	Metals	Mine Drainage	Medium
FALL RN	MW-18	1.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
CROOKED RN	MW-19	2.50	Aquatic Life	pH, Metals	Mine Drainage	Medium
LIMESTONE RN	MW-20-A	1.40	Aquatic Life	Metals	Mine Drainage	Medium
ELK CK	MW-21	29.00	Aquatic Life	Metals	Mine Drainage	Medium
MURPHY RN	MW-21-A	2.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
NUTTER RN	MW-21-D	1.36	Aquatic Life	Metals	Mine Drainage	Medium
TURKEY RN / ELK CK	MW-21-E	1.70	Aquatic Life	Metals	Mine Drainage	Medium
HOOPPOLE RN	MW-21-F	1.40	Aquatic Life	Metals	Mine Drainage	Medium
BRUSHY FK	MW-21-G	14.00	Aquatic Life	Metals	Mine Drainage	Medium
COPLIN RN	MW-21-G-1	1.80	Aquatic Life	Metals	Mine Drainage	Medium
GNATTY CK	MW-21-M	8.88	Aquatic Life	Metals	Mine Drainage	Medium
RIGHT BR / GNATTY CK	MW-21-M-5	2.70	Aquatic Life	Metals	Mine Drainage	Medium
CHARITY FK	MW-21-M-5-A	1.90	Aquatic Life	Metals	Mine Drainage	Medium
BIRDS RN	MW-21-O	1.80	Aquatic Life	Metals	Mine Drainage	Medium
ARNOLD RN	MW-21-P	2.80	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: West Fork River (05020002) (cont.)						
ISAACS RN / ELK CK	MW-21-Q	2.00	Aquatic Life	Metals	Mine Drainage	Medium
STEWART RN	MW-21-S	3.40	Aquatic Life	Metals	Mine Drainage	Medium
WASHBURNCAMP RN / DAVISSON RN	MW-22-A	1.40	Aquatic Life	Metals	Mine Drainage	Medium
BROWNS CK	MW-23	5.00	Aquatic Life	pH, Metals	Mine Drainage	Medium
COBUN CK	MW-24	3.20	Aquatic Life	Metals	Mine Drainage	Medium
SYCAMORE CK	MW-25	5.70	Aquatic Life	Metals	Mine Drainage	Medium
LOST CK	MW-26	11.40	Aquatic Life	Metals	Mine Drainage	Medium
U.T./LOST CK	MW-26?	0.00	Aquatic Life	Metals	Mine Drainage	Medium
BONDS RN	MW-26-A	1.40	Aquatic Life	Metals	Mine Drainage	Medium
BUFFALO CK	MW-27	4.70	Aquatic Life	Metals	Mine Drainage	Medium
HACKERS CK	MW-31	25.40	Aquatic Life	pH, Metals	Mine Drainage	Medium
MARE RN / FREEMANS CK	MW-36-C.5	2.20	Aquatic Life	Metals	Mine Drainage	Medium
GRASS RN / STONECOAL CK	MW-38-E	1.40	Aquatic Life	Metals	Mine Drainage	Medium
STONE LICK	MW-44	1.00	Aquatic Life	Metals	Mine Drainage	Medium
FITZ RN	MW-50-C	1.20	Aquatic Life	pH, Metals	Mine Drainage	Medium
WARD RN	MW-50-D	1.00	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Twelvepole Creek (05090102) - 2 Streams						
CAMP CK	O-2-Q-8	0.91	Aquatic Life	pH, Metals	Mine Drainage	Medium
LEFT FK / CAMP CK	O-2-Q-8-A	4.43	Aquatic Life	pH, Metals	Mine Drainage	Medium
DRAINAGE: Upper Ohio River South (05030106) - 8 Streams						
WELLS RUN / MD GRAVE CK	O-83-A-1.5	1.14	Aquatic Life	pH, Metals	Mine Drainage	Medium
LONG RN	O-88-B	4.25	Aquatic Life	pH, Metals	Mine Drainage	Medium
WADDLES RN / LONG RN	O-88-B-1	2.84	Aquatic Life	pH, Metals	Mine Drainage	Medium
POGUE RN / LONG RN	O-88-B-2	0.90	Aquatic Life	pH, Metals	Mine Drainage	Medium
BRITT RN	O-88-E.9	2.42	Aquatic Life	pH, Metals	Mine Drainage	Medium
HOLLIDAYS HL	O-88-H.5	1.74	Aquatic Life	pH, Metals	Mine Drainage	Medium
GLENNS RUN	O-89	1.30	Aquatic Life	pH, Al, Fe	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper Ohio River South (05030106) (cont.)						
SHORT CK	O-90	4.90	Aquatic Life	pH, Iron	Mine Drainage	Medium
DRAINAGE: Upper Ohio River North (05030101) - 4 Streams						
SAPPINGSTON RN	O-97-A	2.92	Aquatic Life	pH, Metals	Mine Drainage	Medium
ALEXANDERS RN	O-97-B	3.35	Aquatic Life	pH, Metals	Mine Drainage	Medium
MECHLING RN	O-97-C	1.74	Aquatic Life	Metals	Mine Drainage	Medium
DEEP GUT RN	O-101	4.27	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: Lower Guyandotte River (05070102) - 5 Streams						
LIMESTONE BR	OG-48	1.78	Aquatic Life	pH, Metals	Mine Drainage	Medium
ED STONE BR / BIG CK	OG-49-A	2.35	Aquatic Life	pH, Metals	Mine Drainage	Medium
NORTH BR/BIG CK	OG-49-A-1	0.75	Aquatic Life	pH, Metals	Mine Drainage	Medium
GODBY BR	OG-53	1.52	Aquatic Life	pH, Metals	Mine Drainage	Medium
BUFFALO CK	OG-61	3.14	Aquatic Life	pH, Metals	Mine Drainage	Medium
DRAINAGE: Upper Guyandotte River (05070101) - 52 Streams						
ISLAND CK	OG-65	18.10	Aquatic Life	Metals	Mine Drainage	Medium
COAL BR/ISLAND CK	OG-65-A	2.05	Aquatic Life	pH, Metals	Mine Drainage	Medium
COPPERAS MINE FK	OG-65-B	9.32	Aquatic Life	pH, Metals	Mine Drainage	Medium
MUD FK	OG-65-B-1	7.50	Aquatic Life	pH, Metals	Mine Drainage	Medium
LOWER DEMPSEY BR	OG-65-B-1-A	2.05	Aquatic Life	pH, Metals	Mine Drainage	Medium
ELLIS BR/MUD	OG-65-B-1-B	1.63	Aquatic Life	pH, Metals	Mine Drainage	Medium
UPPER DEMPSEY BR	OG-65-B-1-E	1.33	Aquatic Life	pH, Metals	Mine Drainage	Medium
TRACE FK / COPPERAS MINE FK	OG-65-B-4	3.83	Aquatic Life	pH, Metals	Mine Drainage	Medium
PROCTOR HL / BUFFALO	OG-75-C.5	1.55	Aquatic Life	pH, Metals	Mine Drainage	Medium
HUFF CK	OG-76	21.21	Aquatic Life	Metals	Mine Drainage	Medium
TONEY FK / HUFF CK	OG-76-L	4.17	Aquatic Life	Metals	Mine Drainage	Medium
OLDHOUSE BR / ROCKHOUSE CK	OG-77-A-5	1.10	Aquatic Life	pH, Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper Guyandotte River (05070101) (cont.)						
MUZZLE CK	OG-92-I	3.33	Aquatic Life	Metals	Mine Drainage	Medium
BUFFALO CK / LITTLE HUFF CK	OG-92-K	3.14	Aquatic Life	pH, Metals	Mine Drainage	Medium
KEZEE FK	OG-92-K-1	0.76	Aquatic Life	Metals	Mine Drainage	Medium
MUDLICK FK / BUFFALO CK	OG-92-K-2	0.68	Aquatic Life	Metals	Mine Drainage	Medium
PAD FK	OG-92-Q	4.13	Aquatic Life	Metals	Mine Drainage	Medium
RIGHTHAND FK / PAD FK	OG-92-Q-1	2.12	Aquatic Life	Metals	Mine Drainage	Medium
BIG CUB CK	OG-96	8.67	Aquatic Life	Metals	Mine Drainage	Medium
STURGEON BR	OG-96-A	1.55	Aquatic Life	Metals	Mine Drainage	Medium
ROAD BR	OG-96-B	1.59	Aquatic Life	Metals	Mine Drainage	Medium
ELK TRACE BR / BIG CUB CK	OG-96-C	1.97	Aquatic Life	Metals	Mine Drainage	Medium
TOLER HOL	OG-96-F	1.14	Aquatic Life	Metals	Mine Drainage	Medium
MCDONALD FK	OG-96-H	1.33	Aquatic Life	Metals	Mine Drainage	Medium
REEDY BR	OG-99	2.84	Aquatic Life	Metals	Mine Drainage	Medium
LOWER ROAD BR	OGC-12	2.46	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL FK	OGC-16	23.50	Aquatic Life	Metals	Mine Drainage	Medium
MILAM BR	OGC-16-M	4.88	Aquatic Life	Metals	Mine Drainage	Medium
TROUGH FK	OGC-16-P	3.55	Aquatic Life	Metals	Mine Drainage	Medium
TONEY FK	OGC-19	6.63	Aquatic Life	Metals	Mine Drainage	Medium
CRANE FK	OGC-26	4.32	Aquatic Life	Metals	Mine Drainage	Medium
INDIAN CK	OG-110	18.85	Aquatic Life	Metals	Mine Drainage	Medium
BRIER CK / INDIAN CK	OG-110-A	4.77	Aquatic Life	Metals	Mine Drainage	Medium
MARSH FK / BRIER CK	OG-110-A-2	2.00	Aquatic Life	Metals	Mine Drainage	Medium
PINNACLE CK	OG-124	26.60	Aquatic Life	Metals	Mine Drainage	Medium
SMITH BR / PINNACLE CK	OG-124-D	2.08	Aquatic Life	Metals	Mine Drainage	Medium
LAUREL BR / PINNACLE CK	OG-124-H	2.05	Aquatic Life	Metals	Mine Drainage	Medium
SPIDER CK	OG-124-I	3.54	Aquatic Life	Metals	Mine Drainage	Medium
CABIN CK	OG-127	3.64	Aquatic Life	Metals	Mine Drainage	Medium
JOE BR	OG-128	1.61	Aquatic Life	Metals	Mine Drainage	Medium
LONG BR	OG-129	2.05	Aquatic Life	Metals	Mine Drainage	Medium
STILL RN	OG-130	5.27	Aquatic Life	Metals	Mine Drainage	Medium
BARKERS CK	OG-131	8.00	Aquatic Life	Metals	Mine Drainage	Medium

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Mine Drainage

Table B

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE: Upper Guyandotte River (05070101) (cont.)						
HICKORY BR / BARKERS CK	OG-131-B	2.08	Aquatic Life	Metals	Mine Drainage	Medium
GOONEY OTTER CK	OG-131-F	6.78	Aquatic Life	Metals	Mine Drainage	Medium
JIMS BR / GOONEY OTTER CK	OG-131-F-1	1.36	Aquatic Life	Metals	Mine Drainage	Medium
NOSEMAN BR	OG-131-F-2	2.27	Aquatic Life	Metals	Mine Drainage	Medium
SLAB FK	OG-134	15.11	Aquatic Life	Metals	Mine Drainage	Medium
MEASLE FK	OG-134-D	3.30	Aquatic Life	pH, Metals	Mine Drainage	Medium
LEFT FK / ALLEN CK	OG-135-A	2.60	Aquatic Life	Metals	Mine Drainage	Medium
DEVILS FK	OG-137	4.89	Aquatic Life	Metals	Mine Drainage	Medium
STONECOAL CK	OG-139	10.15	Aquatic Life	Metals	Mine Drainage	Medium
DRAINAGE: North Branch Potomac River (02070002) - 13 Streams						
SLAUGHTERHOUSE RN	PNB-10	2.17	Aquatic Life	pH, Metals	Mine Drainage	Medium
MONTGOMERY RN	PNB-11	2.81	Aquatic Life	pH, Metals	Mine Drainage	Medium
PINEY SWAMP RN	PNB-12	5.51	Aquatic Life	pH, Metals	Mine Drainage	Medium
ABRAM CK	PNB-16	18.50	Aquatic Life	pH, Metals	Mine Drainage	Medium
EMORY RN	PNB-16-A	2.25	Aquatic Life	pH, Metals	Mine Drainage	Medium
GLADE RN	PNB-16-C	3.04	Aquatic Life	pH, Metals	Mine Drainage	Medium
LITTLE CK	PNB-16-D	0.68	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAUREL RUN	PNB-17-B.5	1.42	Aquatic Life	pH	Mine Drainage	Medium
FOURMILE RUN	PNB-17-C	1.52	Aquatic Life	pH, Metals	Mine Drainage	Medium
LAUREL RUN	PNB-17-D	1.37	Aquatic Life	pH, Metals	Mine Drainage	Medium
HELMICK RUN	PNB-17-E	0.95	Aquatic Life	pH, Metals	Mine Drainage	Medium
ELK RUN	PNB-21	3.15	Aquatic Life	Iron	Mine Drainage	Medium
DEAKIN RN	PNB-22	1.15	Aquatic Life	pH, Metals	Mine Drainage	Medium
DRAINAGE: Youghiogheny River (05020006) - 1 Stream						
LAUREL RUN	MY-3	4.76	Aquatic Life	pH, Metals	Mine Drainage	Medium

TOTAL WATERBODIES IMPAIRED BY MINE DRAINAGE - 488

West Virginia
1998 303(d) List

Waterbodies with Biological Impairment

Table C

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	Bio Score	TMDL Priority
DRAINAGE BASIN: Upper Kanawha River (05050006) - 19 Streams							
MISSION HOLLOW	K-46-A	undetermined	Aquatic Life	Unknown	Unknown	21.4	Low
COAL FORK / CAMPBELLS CREEK	K-49-D	undetermined	Aquatic Life	Unknown	Unknown	28.6	Low
POINT LICK FORK	K-49-F	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
RATTLESNAKE HOLLOW	K-49-I	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
LENS CREEK	K-53-{00.3}	undetermined	Aquatic Life	Unknown	Unknown	42.9	Low
DRY BRANCH / WITCHERS CREEK	K-57-A	undetermined	Aquatic Life	Unknown	Unknown	42.9	Low
WET BRANCH	K-61-C	undetermined	Aquatic Life	Unknown	Unknown	21.4	Low
LAUREL FORK / COAL FORK	K-61-H-1	undetermined	Aquatic Life	Unknown	Unknown	42.9	Low
HORSEMILL BRANCH	K-64-A	undetermined	Aquatic Life	Unknown	Unknown	21.4	Low
HURRICANE FORK / KELLYS CREEK	K-64-J	undetermined	Aquatic Life	Unknown	Unknown	42.9	Low
SYCAMORE BRANCH	K-65-L	undetermined	Aquatic Life	Unknown	Unknown	42.9	Low
HICKORY CAMP BRANCH	K-65-P	undetermined	Aquatic Life	Unknown	Unknown	35.7	Low
SOUTH SAND BRANCH	K-65-HH-2	undetermined	Aquatic Life	Unknown	Unknown	35.7	Low
HUGHES CREEK	K-66-{00.3}	undetermined	Aquatic Life	Unknown	Unknown	35.7	Low
LOWER CREEK	K-67	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MORRIS CREEK	K-70-{00.4}	undetermined	Aquatic Life	Unknown	Unknown	14.3	Low
SMITHERS CREEK	K-72-{00.5}	undetermined	Aquatic Life	Unknown	Unknown	21.4	Low
BULLPUSH HOLLOW	K-72-B	undetermined	Aquatic Life	Unknown	Unknown	28.6	Low
BOOMER BRANCH	K-74	undetermined	Aquatic Life	Unknown	Unknown	14.3	Low

West Virginia
1998 303(d) List

Waterbodies with Biological Impairment

Table C

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	Bio Score	TMDL Priority
DRAINAGE BASIN: Cheat River (05020004) - 25 Streams							
COLES RUN	MC-2.5	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
KELLY RUN	MC-2.7	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
WHITES RUN	MC-4	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
SCOTT RUN / CHEAT RIVER	MC-7	undetermined	Aquatic Life	Unknown	Unknown	17.0	Low
LEFT FORK BULL RUN	MC-11-D-{00}	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
PATTERSON RUN	MC-12-A-2	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
UNNAMED TRIB / WEBSTER RUN	MC-12-B-.5-A	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
ELK RUN	MC-12-B-4-{03}	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
THIRD UNNAMED TRIB / CHERRY RUN	MC-12-B-5-C	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
GLADE RUN	MC-12-E	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
2ND UNNAMED TRIB / MUDDY CREEK	MC-17-.6A	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
CRAB ORCHARD CREEK	MC-17-.7	undetermined	Aquatic Life	Unknown	Unknown	33.0	Low
JUMP ROCK RUN	MC-17-B	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
1ST UNNAMED TRIB / ROARING CREEK	MC-18-.1A	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
2ND UNNAMED TRIB / BUFFALO RUN	MC-22-A	undetermined	Aquatic Life	Unknown	Unknown	33.0	Low
BUCKHORN RUN	MC-31-{0.0}	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
JACOBS RUN	MC-43-B	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
CLAY LICK RUN	MC-49	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
WOLF RUN / CHEAT RIVER	MC-57	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
YOKUM RUN	MC-60-D-11	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
FREELAND RUN	MC-60-D-12	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
SHAYS RUN	MC-60-D-4.5	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
RED CREEK	MC-60-O-{07.0}	undetermined	Aquatic Life	Unknown	Unknown	33.0	Low
SMOKY HOLLOW	MCS-.5	undetermined	Aquatic Life	Unknown	Unknown	42.0	Low
RED RUN / SHAVERS FORK	MCS-46	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low

**West Virginia
1998 303(d) List**

Waterbodies with Biological Impairment

Table C

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	Bio Score	TMDL Priority
-------------	-------------	----------------	--------------	-----------	--------	-----------	---------------

DRAINAGE BASIN: Youghiogheny River (05020006) - 5 Streams

TANKILN RUN	MY-1-E	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
WARDWELL RUN	MY-2-A-1	undetermined	Aquatic Life	Unknown	Unknown	46.0	Low
SNOWY CREEK	MY-2	undetermined	Aquatic Life	Unknown	Unknown	46.0	Low
LITTLE LAUREL RUN	MY-3-A	undetermined	Aquatic Life	Unknown	Unknown	39.0	Low
BUFFALO RUN	MY-9	undetermined	Aquatic Life	Unknown	Unknown	39.0	Low

DRAINAGE BASIN: Upper Ohio River North (05030101) - 16 Streams

CROSS CREEK	O-95	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
BOSLEY RUN	O-95-A	undetermined	Aquatic Life	Unknown	Unknown	36.0	Low
EBENEZER RUN	O-95-B	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
NORTH POTROCK RUN	O-95-C	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
POTROCK RUN	O-95-D	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
SCOTT RUN	O-95-E	undetermined	Aquatic Life	Unknown	Unknown	36.0	Low
ALLEGHENY STEEL RUN	O-95.5	undetermined	Aquatic Life	Unknown	Unknown	14.0	Low
MAHAN RUN	O-96	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
BROWN HOLLOW	O-97-D	undetermined	Aquatic Life	Unknown	Unknown	29.0	Low
MARROW RUN	O-98-A.5	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
TURKEY FOOT RUN	O-98.5A	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
SOUTH FORK TOMLINSON RUN	O-102-B	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
NORTH FORK TOMLINSON RUN	O-102-C	undetermined	Aquatic Life	Unknown	Unknown	43.0	Low
MERCER RUN	O-102-C-1	undetermined	Aquatic Life	Unknown	Unknown	36.0	Low
MIDDLE RUN	O-107	undetermined	Aquatic Life	Unknown	Unknown	36.0	Low
MARKS RUN	O-108	undetermined	Aquatic Life	Unknown	Unknown	36.0	Low

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	Bio Score	TMDL Priority
DRAINAGE BASIN: South Branch Potomac River (02070001) - 32 Streams							
IST UNNAMED TRIB / SOUTH BR POTOMAC	PSB-0.5	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
JOHN'S RUN	PSB-2	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
BUFFALO CREEK	PSB-5	undetermined	Aquatic Life	Unknown	Unknown	33.3	Low
DUMPLING RUN/MILL CREEK	PSB-9-B	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
MAYHEW RUN	PSB-9-B-2	undetermined	Aquatic Life	Unknown	Unknown	33.3	Low
MCDOWELL RUN	PSB-11	undetermined	Aquatic Life	Unknown	Unknown	41.7	Low
BUFFALO RUN	PSB-14	undetermined	Aquatic Life	Unknown	Unknown	41.7	Low
DEVIL HOLE RUN	PSB-16	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
CLIFFORD HOLLOW	PSB-17-A	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MUDLICK RUN	PSB-18-A-{6.7}	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
UNNAMED TRIB / MUDLICK RUN	PSB-18-A-0.5	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
DUMPLING RUN / MOOREFIELD RUN	PSB-21-F	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
STONY RUN	PSB-21-R	undetermined	Aquatic Life	Unknown	Unknown	33.3	Low
HIVELY GAP	PSB-21-T	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MILLER RUN	PSB-21-AA	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
WAGNER RUN	PSB-21-O	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MITCHELL RUN / DURGEON RUN	PSB-23-A-1	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
SOUTH FORK / LUNICE CREEK	PSB-26-D	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
POWERS HOLLOW	PSB-28-.5A	undetermined	Aquatic Life	Unknown	Unknown	41.7	Low
BRUSHY RUN / SENECA CREEK	PSB-28-K-1	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MILL CREEK	PSB-28-M	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
ROOT RUN	PSB-28-P	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
JUDY RUN	PSB-28-U	undetermined	Aquatic Life	Unknown	Unknown	33.3	Low
NELSON RUN	PSB-28-V	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
BOUSES RUN	PSB-28-Z	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
UNNAMED TRIB / SOUTH BR POTOMAC	PSB-30.5	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
BRIGGS RUN	PSB-32	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low

**West Virginia
1998 303(d) List**

Waterbodies with Biological Impairment

Table C

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	Bio Score	TMDL Priority
-------------	-------------	----------------	--------------	-----------	--------	-----------	---------------

DRAINAGE BASIN: South Branch Potomac River (02070001) (cont.)

REEDS CREEK	PSB-33	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
MILL RUN / SOUTH BR POTOMAC	PSB-34	undetermined	Aquatic Life	Unknown	Unknown	41.7	Low
SMITH CREEK	PSB-46	undetermined	Aquatic Life	Unknown	Unknown	25.0	Low
BLACKTHORN CREEK	PSB-47-B	undetermined	Aquatic Life	Unknown	Unknown	50.0	Low
EAST DRY RUN	PSB-53	undetermined	Aquatic Life	Unknown	Unknown	33.3	Low

DRAINAGE BASIN: Shenandoah River (02070007) - 2 Streams

BULLSKIN RUN	S-6	6.0	Aquatic Life	Unknown	Unknown	46.0;46.0	Low
NORTH FORK / BULLSKIN RUN	S-6-A	undetermined	Aquatic Life	Unknown	Unknown	39.0	Low

Total Assessed Waterbodies With Biological Impairment Attributable To Unknown Pollutants - 99

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Acid Rain

Table D

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE BASIN: Elk River (05050007) - 1 Stream						
FALL RN / LT FK / HOLLY RV	KE-98-C-14	5.7	Aquatic Life	pH	Acid Rain	Low
DRAINAGE BASIN: Gauley River (05050005) - 20 Streams						
CARPENTER RUN	KG-34-H-11	1.38	Aquatic Life	pH	Acid Rain	Low
WINDY RUN	KG-34-H-8	1.97	Aquatic Life	pH	Acid Rain	Low
ARMSTRONG RUN	KG-34-H-9	1.34	Aquatic Life	pH	Acid Rain	Low
TURKEY CREEK	KG-60	5.09	Aquatic Life	pH	Acid Rain	Low
RIGHT FK / TURKEY CREEK	KG-60-A	2.35	Aquatic Life	pH	Acid Rain	Low
BIG RUN / GAULEY RV	KG-70	4.37	Aquatic Life	pH	Acid Rain	Low
LICK BRANCH	KGC-14	2.08	Aquatic Life	pH	Acid Rain	Low
BARRENSHE RUN	KGC-4	3	Aquatic Life	pH	Acid Rain	Low
ALDRICH BRANCH	KGC-9	2.52	Aquatic Life	pH	Acid Rain	Low
LITTLE ROUGH	KGC-17	2.7	Aquatic Life	pH	Acid Rain	Low
COLD RUN	KGC-18	1.52	Aquatic Life	pH	Acid Rain	Low
DOGWAY FK	KGC-19	6.8	Aquatic Life	pH	Acid Rain	Low
BIRCH LOG	KGC-21	2.28	Aquatic Life	pH	Acid Rain	Low
TUMBLING ROCK	KGC-22	2.4	Aquatic Life	pH	Acid Rain	Low
NORTH FORK / CRANBERRY	KGC-23	3.76	Aquatic Life	pH	Acid Rain	Low
LEFT FORK / NORTH FORK / CRANBERRY	KGC-23-C	1.48	Aquatic Life	pH	Acid Rain	Low
CRAIG RN	KGW-1	3	Aquatic Life	pH	Acid Rain	Low
MIDDLE FK / WILLIAMS RV	KGW-10	12.85	Aquatic Life	pH	Acid Rain	Low
TEA CREEK	KGW-20	5.7	Aquatic Life	pH	Acid Rain	Low
SUGAR CREEK	KGW-21	3.84	Aquatic Life	pH	Acid Rain	Low
DRAINAGE BASIN: Lower New River (05050004) - 1 Stream						
U.T. / GLADE CK / MANNS CK	KN-17-A-0.5	1.5	Aquatic Life	pH	Acid Rain	Low

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Acid Rain

Table D

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE BASIN: Little Kanawha (05030203) - 5 Streams						
RIGHT FK / LL KANAWHA RV	LK-115	14.06	Aquatic Life	pH	Acid Rain	Low
LEFT FK / RIGHT FK / LITTLE KAN	LK-115-H	7.07	Aquatic Life	pH	Acid Rain	Low
ELLIS CK	LK-130.5	2.6	Aquatic Life	pH	Acid Rain	Low
GETOUT RN	LK-131	2.46	Aquatic Life	pH	Acid Rain	Low
LITTLE KANAWHA RIVER	LK	6.92	Aquatic Life	pH	Acid Rain	Low
DRAINAGE BASIN: Monongahela River (05020003) - 1 Stream						
COBUN CK	M-9	9.6	Aquatic Life	pH	Acid Rain	Low
DRAINAGE BASIN: Cheat River (05020004) - 14 Streams						
SHAVERS FK	MC-59	35	Aquatic Life	pH	Acid Rain	Low
LAUREL RUN / DRY FORK	MC-60-E	3.6	Aquatic Life	pH	Acid Rain	Low
RED CREEK	MC-60-O	19.8	Aquatic Life	pH	Acid Rain	Low
GANDY RN / RED CK	MC-60-O-3	2.3	Aquatic Life	pH	Acid Rain	Low
SOUTH FK / RED CREEK	MC-60-O-4	6	Aquatic Life	pH	Acid Rain	Low
LAUREL RN	MCS-5	3.8	Aquatic Life	pH	Acid Rain	Low
MCGEE RN	MCS-39	2	Aquatic Life	pH	Acid Rain	Low
YOKUM RN	MCS-40	1.6	Aquatic Life	pH	Acid Rain	Low
CROUCH RN	MCS-41	1.8	Aquatic Life	pH	Acid Rain	Low
WHITMEADOW RN	MCS-44	1.2	Aquatic Life	pH	Acid Rain	Low
STONECOAL RUN	MCS-45	2.6	Aquatic Life	pH	Acid Rain	Low
FISH HATCHERY RUN	MCS-48	2.8	Aquatic Life	pH	Acid Rain	Low
FIRST FORK	MCS-50	3.9	Aquatic Life	pH	Acid Rain	Low
BUCK RN	MCS-52	1	Aquatic Life	pH	Acid Rain	Low

**West Virginia
1998 303(d) List**

Waterbodies Impaired by Acid Rain

Table D

Stream Name	Stream Code	Miles Affected	Use Affected	Pollutant	Source	TMDL Priority
DRAINAGE BASIN: Tygart River (05020001) - 18 Streams						
LITTLE LAUREL RUN / BIG RUN	MT-40-A	3.8	Aquatic Life	pH	Acid Rain	Low
U.T. / ROARING CREEK	MT-42-F	1.2	Aquatic Life	pH	Acid Rain	Low
GLADE RUN	MT-64-C	1.8	Aquatic Life	pH	Acid Rain	Low
MEATBOX RUN	MT-64-E	1.3	Aquatic Life	pH	Acid Rain	Low
POTATOHOLE FORK	MT-64-F	2	Aquatic Life	pH	Acid Rain	Low
RIGHT FK / TENMILE CREEK	MTB-25-A	4.03	Aquatic Life	pH	Acid Rain	Low
RIGHT FK / BUCKHANNON RV	MTB-31	16.8	Aquatic Life	pH	Acid Rain	Low
MARSH FORK	MTB-31-J	5.48	Aquatic Life	pH	Acid Rain	Low
LEFT FK / BUCKHANNON RV	MTB-32	17.9	Aquatic Life	pH	Acid Rain	Low
SMOOTH ROCKCLICK RN (DONS RUN)	MTB-32-A	1.96	Aquatic Life	pH	Acid Rain	Low
BEARCAMP RUN	MTB-32-D	5.48	Aquatic Life	pH	Acid Rain	Low
BEECH RN / LT FK / BUCKHANNON RV	MTB-32-H	5.2	Aquatic Life	pH	Acid Rain	Low
LAUREL RN / MIDDLE FORK	MTM-2	2	Aquatic Life	pH	Acid Rain	Low
SERVICE RUN / MIDDLE FK	MTM-5	0.95	Aquatic Life	pH	Acid Rain	Low
SHORT RUN / MIDDLE FK	MTM-7	1.74	Aquatic Life	pH	Acid Rain	Low
CASSITY FK	MTM-16	4.3	Aquatic Life	pH	Acid Rain	Low
BIRCH FK	MTM-26	6.6	Aquatic Life	pH	Acid Rain	Low
KITTLE CK	MTM-28	6.2	Aquatic Life	pH	Acid Rain	Low

Total Number Of Streams Known To Be Impaired By Acid Rain - 60



1998 303(d) List of Impaired Streams Response to Comments

Overview

The West Virginia Division of Environmental Protection (DEP) is pleased to provide this response to comment on the state's draft 1998 303 (d) list. The volume of comment received was the largest ever associated with this process and is reflective of the increased attention, locally and nationally, on both the 303(d) and Total Maximum Daily Load (TMDL) processes. In all, DEP received 140 comments during the 30-day comment period. The DEP appreciates the efforts commenters have put forth to make this process more understandable, predictable and accurate. The 303(d) and TMDL programs are undergoing constant change resulting from a federal advisory committee's recommendations, court rulings, new national guidance and policy, and state experiences. As the modern TMDL process matures, increased dialogue and understanding will be necessary as difficult and complex Clean Water Act issues are debated.

The state was allowed 30 days to respond to the comments received and the Environmental Protection Agency has until September 20th, 1998 to approve the list (OVEC vs EPA, 1997).

The volume of comment precludes the DEP from providing specific responses to each individual commenter on each issue raised. Where possible, comment both in support of or in opposition to a particular issue were combined, considered and addressed with one agency response. Certain comments were unique in nature and source. Those comments were addressed individually.

Comments and comment summaries in this document appear in italics. The DEP response is shown in plain text.

Acronyms Used

EPA	U. S Environmental Protection Agency
DEP	West Virginia Division of Environmental Protection
FACA	Federal Advisory Committee on the Total Maximum Daily Load Program
OWR	DEP's Office of Water Resources
QA/QC	Quality Assurance/ Quality Control
RBP	Rapid Bioassessment Protocol
TMDL	Total Maximum Daily Loads
WAP	OWR's Watershed Assessment Program
303(d)	Clean Water Act section calling for identification of waters not attaining standards
305(b)	Clean Water Act section calling for a description of a states water quality biennially
46CSR1	West Virginia Requirements Governing Water Quality Standards

Stakeholder Involvement

It is apparent from many of the comments that stakeholders desire more involvement in development of the list and want a better understanding of the listing processes. Commenters also want the DEP to conduct informational meetings around the state to inform and educate interested parties about the list, the listing process, program strengths, weaknesses, and to detail the TMDL process from development through implementation. Stated simply, commenters want processes which 1) incorporate stakeholder consensus building principles to achieve improvements in the listing and TMDL processes, and 2) provide mechanisms for information transfer leading to an increased understanding of all Clean Water Act issues by the general public.

The DEP acknowledges the importance of stakeholder derived and supported decisions, but has been unable to conduct this process for TMDLs due to insufficient human and monetary resources. Even more important, DEP is unable to develop TMDLs which result from 303(d) listings due to resource limitations. Both the 303(d) and TMDL processes have increased in importance, but associated increases in resources to respond to these increasing pressures have not materialized. It would be difficult, if not impossible for the DEP to hold either monthly meetings, or a series of statewide meetings on the 303(d) and TMDL processes without jeopardizing other existing programs. In fact, funding to conduct stream assessments that are the foundation for the 303(d) decision process and for improved permitting decisions is uncertain after December 1998. Increased workloads in the areas of monitoring, assessment and TMDL development have not been countered by increased resources.

Although resources have not improved, the DEP has moved forward on establishing the framework for stakeholder involvement in 303(d) and TMDL processes. Exploration of options relating to increased stakeholder involvement has begun internally and will expand externally in the near future. Finalization of recommendations from a federal committee (FACA) chartered to study the TMDL program nationally are expected to improve national TMDL policy and assist all parties in the future. Much work lies ahead, many questions remain unanswered, yet the goal of fulfillment of Clean Water Act requirements remains attainable.

Through the WV Watershed Framework and other recent initiatives, the DEP's Office of Water Resources hopes to facilitate public input in all water-related processes. Public outreach and environmental education are important facets in the program and they will continue to evolve with further development of processes such as TMDL development and 303(d) listings.

Deckers Creek

Nearly 100 commenters voiced their concern about the listing of Deckers Creek as a medium priority. Commenters requested that Deckers Creek be relisted as a high priority.

To respond, a description of the priority process is offered. Federal Regulation 40 CFR 130.7 requires states to prioritize their 303(d) listings considering the magnitude and severity of impairment, and the number of uses not being met. States must also consider legal requirements (lawsuit settlements), public interest, technical capabilities, and funding when projecting TMDL development years.

Specific to Deckers Creek, the only mine drainage streams selected as high priority in the draft list were those in the Cheat and Tygart Rivers. This choice was made in large part due to the consent decree's requirement for TMDLs to be developed in eight specific waters by September 30, 1999, among which are the Cheat and Tygart rivers. Completing a TMDL on the Cheat mainstem requires the tributary loadings to be analyzed simultaneously, therefore it is only logical to determine TMDLs for the tributaries at the same time the mainstem loadings are analyzed. This process is often referred to as nesting TMDLs.

The priority assigned to Deckers Creek, like all other remaining mine drainage streams, was medium. What this recognized was that the Cheat and Tygart TMDLs are court ordered to be completed by September 30, 1999. All other mine drainage streams were assigned priority of medium acknowledging that they were in need of completion, but that would likely not be developed during this listing cycle. The DEP encourages continued

stakeholder involvement and improvement in the Deckers Creek watershed, and offers that the highest consideration will be given to developing a TMDL on Deckers creek in the next decision making session. The 1998 TMDLs have already been drafted, and court ordered TMDLs on specific streams will command state and EPA resources in 1999. The DEP will consider the strong show of broad based support for efforts to restore Deckers Creek and its tributaries when decisions are made concerning TMDLs to be developed in 2000.

TMDLs and Listing

A comment was received that suggested that streams which have a TMDL developed on them be removed from the list.

The DEP chose to re-include those waterbodies on the 303(d) list, which have had a TMDL developed on, based on the FACA committee's recommendation to EPA that these streams would be required to remain on the list until such time that streams uses are being fully attained.

Middle Fork River/Blackwater River

One commenter states that both the Middle Fork River and the Blackwater River have been restored and should not have been included on the draft 1998 list.

The DEP recognizes that restoration efforts in both of these streams have been very successful and widely supported. Relative to the 303(d) listing, the mileage listed in the Middle Fork was reduced significantly, reflecting the areas where improvements have all but eliminated standard violations. The lower Blackwater River data reflects significant improvements in the river's water quality, yet periodic violations of iron combined with frequent violations of aluminum water quality standards are cause for the stream to remain on the list.

Violation Frequency

A comment was submitted encouraging a return to 25% frequency of violation prior to listing.

In general terms, federal regulations suggest states list waterbodies which are not fully meeting their designated uses. Fully meeting a designated use, as provided in 305(b) report guidance, is not violating water quality standards more than 10% in all samples taken. Previously West Virginia made listing determinations at other levels of the 305(b) guidance: those with greater than 25% frequency of violation for all samples taken (Nonsupport), and those with 11-25% frequency of violation (Partial Support).

Increased scrutiny and stricter interpretations of regulations by federal officials, resulting from multiple lawsuits nationwide, have caused EPA to review closely the frequency of violations in available data. West Virginia was informed in correspondence from EPA dated May 18, 1998 EPA that waterbodies which violate standards more than 10% of the time are required to be listed. Believing this to be somewhat strict, especially when available data is limited, West Virginia developed new data volume guidelines which were applied in developing the draft 1998 list.

Age of Data

Several commenters recommended that data older than five years not be used for listing; others believe that even if data is old, if it reflects impairment, it should be used for listing..

The DEP agrees that in certain instances, using data older than five years could lead to incorrect listing decisions. Typically, the state only uses data older than five years in two situations. In the situation where very expensive analyses are required, older data is used due to a lack of resources. In the second instance, older data is used where acid mine drainage impacts were encountered historically. There is broad consensus that updated/targeted monitoring of many acid mine drainage impacted streams is desirable. The agency does not dispute that some streams in Table B have recovered since they were last visited. But, the larger issue prevails. Generally, if

acid mine drainage impacts were observed in a stream, and reclamation, remining, passive treatment, or active treatment has not occurred, the stream's improvements are likely minimal. For this reason, the streams on Table B continue to be listed.

The DEP is seeking funds which would be directed toward additional monitoring on these streams to further determine if violations are still occurring, and if TMDLs are needed. As always, the DEP encourages entities to submit water quality data as part of the 303(d) comment process. Given the current resource consequences of placing a stream on the list, DEP is reluctant to use data older than five years for initial listings.

Dioxin

The Kanawha and Ohio Rivers are on the 303(d) list for dioxin impairment. A comment was received requesting the delisting of both rivers for dioxin, stating recent water quality data supports decreasing contamination, and that use of fish as an indicator of water quality is not good due to their inherent mobility, their life span, etc.

The DEP responds that even though only limited dioxin sampling has been performed (primarily due to the analytic cost), both in fish tissue and direct measurements of the water column concentration, violations of state water quality standards are still observed. While the commenters raise some interesting aspects concerning the suitability of fish for listing purposes, extenuating circumstances including recent direct measurement of dioxin in the water column and dioxin's known persistence in the environment combine to be cause for continued listing of these waters.

Revision Frequency

Multiple commenters request the state revise the list more frequently than every two years, and desire a clear mechanism describing what constitutes delisting.

From a practical standpoint the DEP cannot honor the commenters' request to more frequently update the 303(d) list. The period between formal listing reviews provides an opportunity for stakeholders to work with the DEP to compile or review additional data that may affect the listing and delisting process. The agency understands that commenters would like to be able to submit data to have their stream of interest removed from the list prior to TMDL development. This would save the agency TMDL development resources and possibly lessen the economic impact upon dischargers in the affected watersheds. In absence of updating the list more frequently than every two years, if a TMDL is being proposed on a waterbody and data exists which would challenge the listing, then it should be given to the DEP for review. If the agency is in agreement with the information, and does not have conflicting data, then it is only logical that the development of a TMDL on that particular waterbody should be discontinued. If a TMDL is not being developed during the listing cycle then the removal of a stream from the 303(d) list prior to the scheduled next listing is of minimal value.

Listing/Delisting

Regarding a clear mechanism for delisting, the agency responds that in general terms the criteria for listing a stream (based on number of samples and frequency of violation) are generally the same criteria for delisting a waterbody. What the commenters want is an absolute black and white decision process for listing and delisting. While a crisp process that includes set boundaries reduces potential subjectivity, a certain, but minimal, amount of subjectivity is inherent in any decision-making process. For that reason, DEP employees are trained scientists using sound ecologic principles to facilitate the use of the best science in the decision process. Rigid or prescriptive processes can also reduce the state's flexibility not only for delisting, but also for listing. Water resources professionals in the agency use the best science to make the best possible decisions regarding a stream's health. The decisions of these individuals are available for review each time the listing is offered for public comment. Questions such as: is the stream expected to improve, is it expected to get worse, what would more monitoring in

certain flow conditions likely tell us, were sampling conditions optimal, are samples representative of a large area of the stream, etc. all require experienced water quality personnel. Many of these same factors are considered each time a listing or delisting decision is made. Science strives to assign ecological health a quantitative value, but until this process is perfected, informed decisions combining data and professional judgement, remain viable assessment tools.

Separate but still related, is the issue of leaving a stream on the list after the water quality data has grown old. Many argue that this would be cause for delisting, that we are no longer certain the impairment exists, therefore the waterbody should be removed. The DEP responds in the opposite. Evidence of impairment is used to place a waterbody on the list; similarly evidence of full use attainment must be presented before a waterbody can be delisted.

Dissolved Metals

A comment was received urging the DEP not to include listings such as the Kanawha River for zinc and the Ohio River for copper until such time that a review of the stream's quality as compared to a dissolved metals criterion is made.

The DEP acknowledges that there is a movement to change from a total recoverable metals standard to a dissolved metals standard for select parameters. In fact, agency personnel have been a part of the Environmental Quality Board's committee to study the dissolved versus total metals issue. Specific to certain parameters the committee has recommended the standards be changed from total to dissolved concentration. However, the West Virginia Legislature has yet to review the proposals as required by law. Until such time that the water quality standards receive legislative approval, the DEP must determine use attainment based on the current law. TMDLs on the named waterbodies, for the parameters mentioned, are not envisioned in the next two years. Should the Legislature alter the metals standards from total to dissolved, and should the new standard eliminate the need for a waterbodies listing, then the waterbodies would be delisted in the next cycle. DEP would likely not support EPA's development of a TMDL for a particular parameter if it is reasonably believed that the standard would change in the near future. In this case, until the standard is changed, listings are appropriate and will remain.

The Terms 'Metals' & 'Nutrients'

A comment was offered expressing dissatisfaction with the use of the term metals as reason for impairment as opposed to a more specific listing such as aluminum, iron or manganese. Further, the comment requested that detailed source information be included, if known. Also comment seeking the definition of nutrients was submitted.

The DEP responds that the use of the term "metals" is less than desirable from the agency perspective also. The term metals is only used in conjunction with streams being listed for mine drainage impacts. Metals, as used in this context, means iron, manganese, and aluminum. It is important to note, and is certainly acknowledged by the DEP, that a listing of "metals" does not necessarily mean the stream is out of compliance for all three of these metals. Instead, use of the term metals is a reflection of the need to conduct additional study of the waterbody to define which metals are in violation of the standards. Absent an ability for the DEP to conduct thorough studies of these mine drainage impacted streams prior to TMDL development, then a stream specific listing of the individual metals would only occur if additional data collection activities are undertaken, or if existing data is encountered as part of planned TMDL development. Data necessary to improve some of these listings is believed to be in existence (in paper files) and will be pursued prior to the next listing cycle.

Regarding the source of pollutant, the DEP offers that identification of each source of a pollutant would be very cumbersome in a 303(d) table and is often not known at the time of listing. Source identification is an integral part of TMDL development, and for this reason only the general source descriptions, if confirmed, are included in the actual 303(d) list.

Specific to ‘nutrients’, DEP offers that this term has only been used in lakes listings. Nutrients in this context means enrichment from phosphorous and nitrogen compounds, both which lead to eutrophic conditions. Eutrophic conditions can occur without a numeric water quality standard violation. In fact West Virginia has no phosphorous standard, and the nitrate standard is centered around public health concerns. Generally if one pollutant is present, so is the other, and can be troublesome to lakes. Use of the term ‘nutrients’ is common among lakes biologists.

Impaired Length

One commenter observed that specific to Table B, it appeared that in most cases the entire stream length was listed and the commenter doubts the validity of those mileages.

The commenters observations are correct. On most Table B listings the entire stream length is listed as impaired, and it is unlikely that in all cases the entire stream is impacted. Information necessary to provide the level of detail to pinpoint the impaired zones is simply not available, and in a default situation the agency has opted to list the entire stream length. Unless more monitoring is conducted on these streams, this agency response is the same as above. Information necessary to make adjustments to the mileages will likely not be available until the time of TMDL development, if then.

Waterbodies Impaired by Acid Rain

Comments both in support and in opposition to Table D, Waterbodies Impaired by Acid Rain, were received. Arguments representing the basic premise that regulatory provisions of the Clean Air Act are sufficient to control any effect of acid rain were put forth.

Without invoking detailed debate as to whether acid rain is an issue best resolved via Clean Air Act provisions or Clean Water Act provisions, the agency responds that information exists which demonstrates violations of the state’s water quality standard for pH. These standards are clearly specified in 46 CSR 1, Requirements Governing Water Quality Standards, and violations of this criterion are therefore worthy of listing, consistent with the Clean Water Act. The implementation of any solution to these waters is in large part found in the Clean Air Act.

The agency does acknowledge that development of TMDLs and associated control strategies for acid rain impacted streams will require Clean Air Act regulatory authorities. The mechanisms to achieve improvements in this area are currently being debated. This is quickly demonstrated by the FACA’s inability to reach consensus on atmospheric deposition issues, and the differing opinions offered on Clean Air Act regulations. It is for these primary reasons that the acid rain impacted waters were given a low priority for TMDL development. Essentially, many issues associated with atmospheric deposition are in need of resolution; yet the DEP has evidence of a stream’s violation of water quality standards, and that in itself warrants listing.

Biologically Impaired Streams

Comments both in support of and in opposition to Table C (Biologically Impaired) were received.

The determining factors in whether or not to list these streams are complex and numerous. They vividly represent the challenges all parties face as they define the modern 303(d) and TMDL processes.

Compelling arguments were offered that the DEP does not have the authority to list streams which are biologically impaired absent “Biocriteria” in the water quality standards rule(46CSR1). Some want absolute black and white boundaries which define whether or not a stream is placed on the 303(d) list. Others, including EPA, encourage states to err on the side of caution. They believe that any information which points towards impairment of a use should be considered when making listing decisions. Further, they encourage differing types of data to be looked at independently. For example, if the benthic population and fishery appears healthy, yet a water quality standard is routinely violated, this condition warrants listing, even though the stream has self-

sustaining aquatic life and a viable fishery. DEP and EPA interpret the Clean Water Act, and its supporting state and federal regulations, as follows: All water quality standards, both numeric and narrative, must be attained.

Upon consideration of comments received, and after lengthy consultation with EPA, the DEP believes the evidence of impairment is strong enough to warrant listing. Biologic assessments using RBPII protocols, coupled with laboratory organism identification, yield credible assessments of a stream's quality. This type of assessment methodology is widely accepted in the scientific community and is increasingly being used for 303(d) listings nationwide.

One question, how much of the stream is impaired, remains significant. The draft list included the entire mileage of the stream as the default impaired segment. It is doubtful that in most cases the entire stream length is impaired. For this reason DEP has changed the size affected from the default value of the entire stream length, to "Undetermined". This change carries with it significance in that it calls for all streams on Table C to be revisited to 1) confirm the impairment 2) determine the impaired length and 3) determine the cause, source and severity of impairment. This process can be likened to a "need to monitor more list". Much work lies ahead in understanding the reasons behind the observed impairment. It is generally believed that the source of impairment in many of these streams is caused by a combination of riparian habitat alterations and sedimentation, not chemical contamination. Development of TMDL's for these waterbodies will be in the distant future, allowing time for additional monitoring and enhanced nonpoint source TMDL tools to be developed. For this reason all streams on Table C have been assigned low priority.

Regarding authority for listing biologically impaired streams, DEP maintains that language found in 46CSR1, Section 3.2.i prohibits significant adverse impact to the biological component of aquatic ecosystems. Thus, if significant biological impairment is observed, violation of this narrative criteria has occurred, and listing is proper. This action is supported by federal regulations at 40CFR130.7(b)(3), which includes narrative criteria as part of a state's water quality standards. DEP anticipates continued questioning of its authority to list streams on Table C, yet maintains its actions are consistent with the intent of the Clean Water Act. As explained in other responses and below, some professional judgement is unavoidable when making listing decisions.

The threshold of <51% of reference which was used is explained as follows (excerpted from previous correspondence from DEP to EPA, June 15, 1998): "OWR evaluated the benthological data collected by the Watershed Assessment Program on the basis of what percentage of reference the streams scored. The 51% threshold was an agreed upon value for use in the 1998 listing cycle only. The 51% value represents an interim measure which will allow newly acquired benthologic data to be considered in the 303(d) listing process. The OWR believes this value could change after a detailed evaluation and verification of reference conditions in the state is made. However, the OWR also believes that the current evidence of benthological impairment in many streams is strong enough to support listing.

The foundation of the 51% value lies in the number of metrics OWR uses in benthic evaluations and in the experience of OWR biologists. Six metrics were used in evaluating biologic data in 1996 studies. They are taxa richness, modified Hilsenhoff biotic index, EPT Taxa, % dominant taxa, scrapers/filtering collectors ratio, and EPT/ chironomidae plus EPT ratio. The benthic community metric values for the reference set are calculated and the distribution of these values determines the scoring criterion for each metric. The lower quartile (25th percentile) of the reference set is the lower cutoff for the optimal score for metrics whose values decrease with increasing perturbation. The upper quartile is used for metrics whose values increase with increasing perturbation (HBI, percent dominant taxa). For each metric there are three possible scores: optimal receives a 2; mid-range receives a 1; and the lowest values receive a zero. The division between the mid-range and lowest score is the value which is equidistant between the quartile used to determine the optimal score and the lowest possible score (or highest - for those which use the 75th quartile). The sum of the scores of the 6 metrics used by the Program provide a single index value for each site. This value is adjusted to a scale of 100 (a score of 12, which is the highest possible, is 100) and this value is referred to as the "biological condition". Because of the limited num-

ber of scores possible (12), a number of streams score a 50.

State biologists, based on extensive field experience, believe that 50% of reference is a reasonable threshold for measuring benthologic impairment; stated a different way, streams which are scoring 50% or less than reference exhibit benthologic stress, and are thus impaired. The threshold was adjusted from 50% to <51% to account for the large number of streams which were scoring 50% based on the number and scoring of metrics. In summary, the <51% criteria is an interim value constructed around accepted science and professional opinion. Modification of the value is likely as more resources are focused on Biocriteria development and benthologic reference site criteria development.”

Technical comments were submitted which set forth concerns relating to the state’s biologic monitoring program, detailing sampling methodology, the sampling period and sampling techniques.

DEP responds that it’s biologic monitoring program has been designed to eliminate many of the commenter’s concern, and that biologic monitoring programs nationwide are expanding in scope, credibility, and demand. Research in the area of RBP methods have undergone extensive peer review and the methods are both widely accepted and widely used. A full discussion of the program is not appropriate in this forum, but DEP does offer the following brief response to issues raised by the commentator.

WAP uses RBP II protocols for the collection and processing of macroinvertebrate data. Samples are collected from riffles using a modified Surber sampler. If no riffles are present, macroinvertebrates are collected following procedures developed by the Mid-Atlantic Coastal Streams (MACS) Workgroup for sampling in non-tidal, low-gradient streams. Both of these sampling protocols are employed at the reference sites to provide an accurate representation of each biological community.

Reference sites are streams that represent least-impacted conditions. Reference sites may or may not be within the watershed under question, but reference sites are ALWAYS within the same ecological region as the sample sites. Reference sites are sampled within the same time frame as the actual watershed assessment, thereby limiting seasonal and year-to-year variability.

In conjunction with the macroinvertebrate sampling, field crews conduct an exhaustive habitat quality assessment, and gather, at a minimum, pH, DO, conductivity, temperature and fecal coliform data.

OWR recognizes that the RBP metrics should be adjusted to better reflect situations typical for this region, and believes current review of DEP biologic data, by contracted personnel, will substantiate many of the chosen metrics.

Sampling Period. OWR recognizes the optimal season for benthic sampling is debatable (some sources say that February is the optimum season, others July/August). Regardless, it is unrealistic to expect to complete a full year’s worth of field work in a two month time frame. Seasonal variability is addressed by collecting data from reference sites at the same time the watershed is being assessed. Any given watershed can be assessed within a four to six week period.

Standardization of sampling techniques. In order to maintain consistency within the program OWR conducts an annual training session in which all field crew members go over all aspects of sampling protocols. OWR has developed its own Standards Operating procedures based upon guidance provided by EPA and other sources. Duplicate sampling is performed on a percentage of the samples and duplication is done simultaneously to eliminate seasonal variability. Sampling gear is checked prior to each use, and replaced or repaired as necessary.

TMDLs and Economic Development

One commenter was concerned that TMDLs will adversely effect the economy of WV, and stated strong opposition to the process until the impacts on private property ownership is understood.

The DEP responds that balancing the economic needs of society with the preservation of our environment

W e s t V i r g i n i a

Division of Environmental Protection

is a fundamental charge of the agency. Although the federal Clean Water Act mandates that TMDLs be completed, a certain amount of discretion is available to the agency and stakeholders regarding implementation decisions. Responsibility for treatment costs from owners of property, which have abandoned mine discharges, which the owner did not cause, is not a consideration being pursued at this time.

Pre-Publication Review

A comment was received requesting that local governments be given an opportunity for pre-publication review of the list as this would facilitate growth planning and management responsibilities.

Under the current system, all entities are provided equal review opportunities. A better solution to the commenter's request would be involvement in a stakeholder process whereby all interested parties would either be directly involved (in an advisory or similar capacity) or be able to participate in periodic program updates. The DEP urges the commenter to participate in the stakeholder process being organized.

Availability of Assessment Criteria

A comment was received requesting that the agency publish criteria for data validation and impairment determinations.

The DEP did reference the availability of assessment criteria in the descriptive document on the cover sheet of the list. This criteria represented data volume for making primary listing decisions on Table A. However, no single document exists which can be used as a quick reference to 303(d) listing and prioritization criteria. Understanding the process involves familiarity with the federal Water Pollution Control Act, associated federal regulations, biennial 305(b) guidance, state Requirements Governing Water Quality Standards, and a multitude of EPA guidance and policy documents. Further, a degree of professional judgment can often not be avoided.

The DEP acknowledges the many advantages of having condensed listing decision information. Further, guidelines defining the level and quantity of QA/QC information necessary for the DEP to accept data are desirable. Both issues are worthy of agency attention prior to the next listing cycle, and are prime topics where stakeholder input would be valuable.

Along the same lines, a comment was received asking where the data to support listing decisions could be obtained.

Information in support of listing decisions is available by contacting Steve Stutler, Office of Water Resources, 1201 Greenbrier Street, Charleston, WV 25311, (304)558-2108.

Blackwater and Lost Rivers

A comment was received stating that there is insufficient violation frequency to warrant listing the Blackwater and Lost Rivers and reference was made to correspondence between DEP and EPA dated March 31, 1998.

The above-referenced correspondence was attached to OWR's initial draft of the 303(d) list which was submitted to EPA for their advance comment prior to the list's release for public comment. EPA responded, in correspondence dated May 18, 1998, that "West Virginia clearly should list all water quality segments with less than 10% violation of criteria unless the state can provide a justification that the water segment does not meet the criteria for listing." At that time West Virginia, in correspondence dated June 15, 1998, provided updated listing criteria more reflective of EPA's directive. It is this updated listing criteria which served as the basis for the list which was released for public comment June 17, 1998, not the criteria referenced in the March 31, 1998 correspondence.

Presently there is no justification to remove either stream from the list.

DEP believes the commenters are inappropriately trying to use the 1998 303(d) listing process to put forth

arguments that the TMDLs should not have been developed, issues not proper for comment in this forum. Modeling contained in both TMDLs demonstrates violations of water quality standards and supports these streams' appearance on the list, in past cycles and currently. Contesting an approved TMDL is appropriately done through federal processes, not via comment on the state's 303(d) list.

Comment was received stating that information now points to the upper Blackwater River as only maintaining a put and take trout fishery, and thus should have a lower standard.

DEP responds that the water quality criterion for this section of the Blackwater River is 6.0 mg/l at all times. Standard changes are only to be proposed by the Environmental Quality Board with final approval by the West Virginia Legislature and the Governor. Specific to the upper Blackwater River, the DEP does not wish to address the above issues in detail since these same topics will be part of litigation scheduled before the Environmental Quality Board in mid-September, 1998.

The same commenter also stated that data pertinent to listing could not be found in STORET. DEP will work with the U.S. Geological Survey to ensure that the information becomes available from the STORET system.

Comment submitted urged the DEP not to rely on citizen collected data for making listing decisions, and that this particular action was in conflict with the DEP's previous statements.

Information collected by the Cacapon Institute is regarded as credible. Data can be categorized in two broad terms: monitored and evaluated. Monitored data generally consists of repeated sampling and uses approved analytic techniques. Evaluated data, such as Save Our Streams Rapid Assessments or pH measured via litmus paper, are not used for primary listing decisions. The Cacapon Institute is certified by the DEP's Quality Assurance Program for fecal coliform, and samples have been collected multiple times. The DEP was thankful that information of this type existed, and would encourage the generation of data by other similar organizations. Questions regarding bias may never truly be overcome. But as with the self monitoring program, permit holders currently operate under, a degree of trust is required. The DEP has acknowledged elsewhere in this responsiveness summary that improvements in data validation procedures are needed. This is yet another example where opportunity exists to improve existing mechanisms through stakeholder involvement.

Buckhannon River

Comment requesting that the listed mileage, and listed parameters be altered to reflect the findings contained in EPA's Buckhannon River TMDL study.

DEP acknowledges that in this particular situation, the additional data and analyses generated as part of the TMDL development do not support continued listing of most of the Buckhannon River. Only the section of the river from the forks downstream to Bean's Mill currently exhibits water quality standard violations. These violations are for iron only. Reasons and data contained in the TMDL are believed sufficient to warrant delisting the Buckhannon River for Aluminum, Manganese and pH. Similarly, reducing the listed mileage from 16.74 to 5.55 miles for iron is justified in the TMDL. See the Stream Specific Action Summaries at the end of this Responsiveness Summary.

DEP does wish to state that select tributaries of the Buckhannon River remain impaired by mine drainage. Improvements in these stream's water quality would enhance the quality of the Buckhannon and Tygart Rivers. Yet, DEP also cautions that the Buckhannon River is a fragile system, one which can ill afford mistakes or lapses in treatment operations. These treatment operations currently enable the Buckhannon River to meet numeric water quality standards. Any future loadings into the Buckhannon system will be carefully considered.

Ohio River

A commenter asks us to investigate the source of pollutants in the Ohio River before proceeding with TMDL development, perhaps in cooperation with the commenter.

DEP responds that identification of all significant sources of a pollutant is an essential element of a

W e s t V i r g i n i a

Division of **E**nvironmental **P**rotection

TMDL. This information must be contained in the TMDL before it can be approved. Generally, source identification is done early in the development process and any information provided may be of value. Joining others in a TMDL stakeholder effort would be a valuable first step in this process, and the commentor's involvement in upcoming stakeholder activities is welcome.

Comments from two permitted dischargers question the listing of iron, aluminum and copper in selected pools of the Ohio River based on a variety of reasons. Reasons include: aluminum is a very abundant crustal element, control of these metals will be difficult and introduces complicated interstate allocation issues, aquatic life is not being affected, standards may change, etc.,

To these many issues, DEP begins response by providing a specific response to data issues raised by one of the commenters. The commenter submitted that, of 58 data points for aluminum representing three pools, seven exceeded the criteria, constituting a 12.1% frequency of violation, thus allowing extra consideration of the facts before listing. Specific to aluminum, the assessment criteria which was submitted to EPA June 15, 1998, and used in development of the draft list, indicated that if 20 or more samples had been collected and the frequency of violation was greater than 11%, listing was warranted. Notably though, DEP used a slightly different methodology to make listing determinations on the Ohio River so as to remain as consistent with ORSANCO assessments and to avoid duplication of effort. Since each Ohio River pool is monitored routinely, for assessment purposes, each pool was analyzed independently using information from the most current ORSANCO 305(b) report (October 1995 to September 1997). DEP applied West Virginia's water quality standard for aluminum to ORSANCO's assessment data, and then used ORSANCO's assessment criteria of 20% frequency of violation, to make listing determinations. ORSANCO aluminum data, collected during their most recent 305(b) reporting period, indicated that each pool exceeded the 20% frequency of violation criteria, and therefore listing the entire length was appropriate.

Specific to copper, the commenter again merged pool information to come up with an aggregate violation summary, and used older data. DEP relied solely on ORSANCO's 305(b) assessment (October 1994 to September 1997) in which the aquatic life use was only being partially supported between river mile 54.5 and 126.4. West Virginia's draft list contained an error in this listing and it will be altered to mirror the ORSANCO assessment. The correct listing should be 71.9 miles. Also of note, when assessments are made involving standards, which vary depending upon the stream's hardness value, and when actual hardness data is available, the actual hardness value is used to calculate the water quality standard. Observed stream hardness values on the day of sample collection are much preferred over an average stream hardness value.

Regarding the Ohio River chlordane listing, the response is twofold. First, as mentioned above, DEP incorporates ORSANCO assessments into the West Virginia 303(d) list to the extent possible. ORSANCO lists the entire West Virginia portion of the Ohio River as partially supporting due to chlordane. Second, contrary to the commenters statement, West Virginia has not adopted the Great Lakes Initiative protocols for issuing consumption advisories respective to chlordane. DEP does recognize that chlordane levels have been decreasing over the last ten years. Between 1988 and 1992, 19% of the fish tissue samples collected exceeded the FDA action level of 0.3 parts per million (ppm). Only 9% of the samples exceeded the FDA criterion between 1993 and 1997. Since West Virginia still considers certain fish species to be under an advisory for chlordane, and ORSANCO's latest 305(b) report indicates less than full support, DEP is reluctant to remove chlordane from the list at this time. However, the declining trends are encouraging, and if they continue, removal of chlordane from the list in 2000 may be possible.

In broader terms, DEP acknowledges that listing of iron, aluminum and copper raises serious TMDL development and implementation issues. These poorly understood interstate development, implementation and economic issues are complicated by differing water quality standards for iron and aluminum among states. The change to a dissolved copper standard in West Virginia is possible as early as July, 1999. However, ORSANCO may or may not react similarly. Can a West Virginia TMDL call for load reductions in Pennsylvania? Many of

these questions are just beginning to be analyzed. The actions DEP has taken regarding listing decisions are consistent with the state's water quality standards, and are therefore believed appropriate. However, acknowledging that there remain many unanswered questions, and in support of comment received, DEP has changed the TMDL development priority on the Ohio River for iron, aluminum, and copper to low. Low priority equates to TMDL development more than two listing cycles away. Chlordane, PCB, and Dioxin TMDL development priority must remain high, as these TMDLs have court ordered completion dates by 2002. All affected parties should participate in open discussions, incorporating stakeholder processes as these complicated and sometimes conflicting interstate TMDL issues are resolved.

Fecal Coliform

Many inquiries were received asking why a particular stream was not included on the list for fecal coliform.

Three scenarios described below illustrate the reasons fecal coliform violations, attributable to human waste, are not listed

The response to this particular issue begins by summarizing language in the Clean Water Act. In general terms, listing of a waterbody is not required under Section 303(d) if technology based controls have not yet been put in place on the stream. In simple terms, if a water quality problem can be corrected with existing technology and authorities applied at the point of discharge, then the stream should not be listed. Specific to fecal coliform, the technology based control is considered to be secondary treatment. Secondary treatment, followed by disinfection reduces fecal coliform levels dramatically. Therefore, if an area of stream is impacted by sewage, and a treatment plant does not exist, then the problem could be corrected with existing technology and the stream does not have to be listed. The matter of cost or feasibility is not required to be considered.

Many streams are impacted by Combined Sewer Overflows (CSO). CSO's are common in many West Virginia cities, and consist of piping that carries both stormwater and wastewater to a treatment plant. As the two types of water are combined, during storm events, the treatment plant's hydraulic capacity may be exceeded and the excess water directly discharged to the stream. When this happens, the fecal coliform concentration in the stream can exceed standards. Technology exists to correct this problem, and therefore listing is not required.

Finally, illicit discharge of untreated domestic sewage (straight pipes) occurs along numerous West Virginia streams. Admittedly, the extent and magnitude of this problem is not well known. Two issues combine to explain why streams impacted by homeowners are not listed. First, multiple samples along many of these smaller streams has not been conducted. Multiple samples are needed to confirm standards violation prior to 303(d) listing. Second, existing authorities and treatment technologies exist to eliminate the illicit discharges. A straight pipe discharge could be replaced with a traditional septic tank and leach field, home aeration unit, or a number of alternative treatment systems. In any case, technology exists to remedy the problem, but it has yet to be applied, and therefore listing is not required.

In previous discussions with EPA, the state has been encouraged to list waterbodies impacted by fecal coliform, regardless of the exclusions mentioned above, if the waterbodies affected are not expected to attain compliance with water quality standards in the next two years. Specific to fecal coliform issues, DEP maintains that this two year time frame, recommended by EPA, is only a recommendation, with no force of law or regulation.

DEP does not deny the impacts of untreated sewage on the streams of West Virginia. In fact, many programs are in place working daily to eliminate this problem. Inclusion of streams on the 303(d) list, impacted by point sources of bacteria, is not viewed as the solution to the problem. Efforts such as expansion of the CSO program, making available low interest loans to owners of non compliant systems, combined with expanded enforcement action in cooperation with local health departments should be explored, piloted, and implemented prior to merely placing the streams on the list. Any TMDL's implementation mechanism would likely mirror the

options just mentioned. Attention can be called to these issues without placing the stream on the 303(d) list and substantially increasing government's potential TMDL development liability, especially when the underlying authority is only guidance. Finally, comment suggesting that DEP notify the public if waters are unsafe for recreational use goes beyond DEP's authority. The West Virginia Bureau of Public Health issues advisories when bacterial levels are unsafe for swimming, but even this authority is limited to public bathing beaches.

Stream Specific Action Summaries

Many commenters submitted either water quality data, opinions, or anecdotal data specific to numerous streams and requested a change in listing status. Each comment was given consideration and the Table below summarizes the action DEP has taken on the information submitted.

Stream	AN Code	Action taken
Left Fork of Davy Branch	BST-85-A	none, insufficient data
Shannon Branch	BST-94	none, insufficient data
Upper Shannon Branch	BST-95	none, insufficient data
Puncheoncamp Br of Browns Ck	BST-98-A	none, insufficient data
Big Beaver Creek	KG-30	removed lower 2.4 miles
North Fork of Cranberry	KGC-23	added to Table C for acid rain impacts
Left Fork of North Fork	KGC-23-A	added to Table C for acid rain impacts
Monongahela River	M	changed pollutant to aluminum
Dunkard Creek	M-1	changed pollutants to aluminum and iron
Scott Run	M-6	changed pollutants to aluminum, iron and manganese
Dents Run	M-7	changed mileage, changed pollutants to aluminum, iron and manganese
Deckers Creek	M-8	none
Dillan Ck	M-8-?	delisted, cause - duplicate
UT #2 of Deckers Ck	M-8-A.7	changed mileage
Falls Run	M-8-C	none, targeted for WAP study in 1999
UT #? Below Fairfax Pond	M-8-?	none, targeted for WAP study in 1999
Indian Creek	M-17	reduced mileage, changed pollutant to aluminum
Little Indian Creek	M-17-A	delisted
Buffalo Creek	M-23	delisted
Finches Run	M-23-B	delisted
Dunkard Mill run	M-23-E	delisted
Plum Run	M-23-I	delisted
Mod Run	M-23-K	none, insufficient data
Pyles Fork	M-23-O	delisted
Llewellyn Run	M-23-O-3-A	delisted
Cheat River	MC	changed mileages
Upper Blackwater River	MC-60-D	none
Lower Blackwater River	MC-60-D	none
Buckhannon River	MT-31	removed pH, manganese, aluminum from pollutant list; reduced iron mileage
Right Fork of Tenmile Creek	MTB-25-A	none
Middle Fork River	MT-33	none
West Fork River	MW	none, insufficient data
Tevebaugh Creek	MW-5	delisted
Bingamon Creek	MW-7	changed pollutant to aluminum and iron

Stream	AN Code	Action taken
Cunningham Run	MW-7-D	changed pollutant to aluminum and iron
Robinson Run	MW-12	changed pollutant to aluminum and iron
Ohio River	O	changed TMDL priority for copper, aluminum and iron to low; copper mileage correction made
Pats Branch	O-0.5	none, comment previously addressed
Glenns Run	O-89	added to Table B for iron
Short Creek	O-90	added to Table B for AMD parameters
Indian Creek	OG-110	none, insufficient data
Brier Ck of Indian Creek	OG-110-A	none, insufficient data
Lost River	PC-24	none