2006 Study Plan for the Upper Mahoning River Watershed (Stark, Portage, Trumbull, Mahoning, and Columbiana Counties, Ohio)

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Introduction
During the 2006 field season (June through October) chemical, physical, and biological sampling will be conducted in the Upper Mahoning River basin to assess and characterize all of the various potential sources of water quality impairment in the watershed. As a Total Maximum Daily Load (TMDL) basin, this survey will incorporate a study design and some assessment techniques which are more comprehensive than a targeted sampling strategy alone would entail.

The Upper Mahoning River basin has not been assessed since 1994 and therefore will have a thorough assessment of the mainstem and tributaries. Table 1 contains a list of selected NPDES facilities within the basin. These will be targeted for evaluation of their potential aquatic influence. The sampling effort is structured to characterize non point source impacts including those from unsewered communities and agricultural activities. The unsewered community of Limaville is in the study area and will be evaluated.

Streams, locations and types of sampling scheduled for the study area are listed in Table 2. A listing of latitudes and longitudes, sorted by 11-digit HUC, is included in Table 3.

Sampling Objectives:

Monitor and assess the chemical, physical and biological integrity of the water bodies within the Upper Mahoning River study area.

Assess the physical conditions present in streams listed in the study plan to identify those which likely function as habitat for fish communities.

Evaluate the biological potential in any subsequently identified candidate WWH stream in the study plan.

Characterize the amount of aquatic resource degradation attributable to various land uses including agricultural practices and rural community development.

Determine any aquatic impacts from known potential sources including point source dischargers, and from any unsewered communities.

Evaluate the potential effects of explosives operations downstream of the Ravenna Training and Logistics Site (RTLS).
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Chemical/Physical Water and Sediment Quality
Chemical sampling locations within the study area are listed in Table 2. Conventional chemical/physical water quality samples will be collected 5 to 6 times. Bacteriological water samples will be collected 3 to 6 times, organic water samples will be collected 1 to 2 times, and sediment metal and organic samples will be collected once at designated locations. Bridge sites for modeling calibration will be monitored 5 to 6 times.

Periphyton and water column samples for determination of chlorophyll a concentrations are planned for nutrient sites. These sites require at least one water column or periphyton sample collected between late July and early September following a minimum of two weeks of stable, low-flow. For a given sampling event (either periphyton or water column), one composite sample per site will be split among three filters for later analysis. On the day of collection for water column chlorophyll ,a sample for dissolved phosphorus must also be collected. Datasondes are requested for each nutrient site.

Datasonde sampling will be completed by the Modeling Unit. Two runs are requested.

While the Upper Mahoning watershed will be thoroughly assessed in 2006 for a TMDL, the Ravenna Training and Logistics Site (RTLS), was sampled in 2003 by Dave Altfater and Mike Gray of DERR. The results are included in a report from the US Army Corps of Engineers (USACE). Since, in general, the sites included in the 2003 study had met their current use designations, RTLS will not be surveyed again in 2006. Nine sites downstream of RTLS will be included in the 2006 study plan to monitor for explosives. Two sites from 2003 will be re-sampled this year. A reference site, S. Fork Eagle Creek RM 3.86, will be sampled and is located on RTLS's grounds, therefore, access will need to be obtained from the facility. Trib. To W. Branch Mahoning River RM 2.1 was non-attaining when sampled in 2003. Excessive siltation is suspect, but there is also a concern that low DO may be affecting the aquatic community. Therefore, the site will be reassessed and a datasonde will be included in the sampling protocol.

Five Public Water Supply (PWS) systems use surface water within the Upper Mahoning River basin: Alliance, Sebring, Newton Falls, ODNR, and Mahoning Valley Sanitary District (MVSD). Stream intakes will include biological and Public Drinking Water Supply (PDWS) assessments. Reservoir intakes will include either Lakes Assessment, PDWS parameters, or both when possible. PDWS sampling will include standard chemical sampling parameters, nitrate and pesticides, specifically atrazine, simazine, cyanizine, metachlor, and metribuzin. Collection of PDWS samples may be completed at the intake.

Three Mahoning River mainstem sites that lie outside the study area will be included in the study plan. These sites will be assessed for chemistry, macroinvertebrate, and sediment quality, and will bracket Thomas Steel Corp. Thomas Steel has requested an increase in their toxicity limit for their discharge into the Mahoning River, and the data collected from these sites will be used to determine whether there is a toxic effect from a higher limit.

Macroinvertebrate and Fish Assemblages

Quantitative and qualitative macroinvertebrate sampling methods will be used as listed in Table 2. Quantitative macroinvertebrates shall be assessed using 5 Hester-Dendy multi-plate samplers, placed in the riffle/run area of the stream with a minimum flow of 0.3 f/s and collected after 6 weeks. All macroinvertebrate sites shall include a qualitative sample that includes all habitats in the sampling area. Fish assemblages will be sampled once or twice as listed in Table 2. QHEI scores will be calculated on the habitat at all fish sampling locations.

ODNR Wildlife Officers by county:

County	Officer Name	Phone Number
Columbiana	Scott Angelo	330-644-3802 ext.3212
Mahoning	David J. Brown	330-644-3802 ext.3213
Portage	Jarod Roof	330-644-3802 ext. 3210
Stark	Timothy Jordan	330-644-3802 ext. 3211
Trumbull	Jerrod Allison	330-644-3802 ext.3214

Sheriffs by County:

County	Phone Number
Columbiana	330-424-7255
Mahoning	330-480-5000
Portage	330-296-5100
Stark	330-430-3800
Trumbull	911 or 330-675-2508

Hospitals By County

Name	County	Phone Number
Alliance Community Hospital	Columbiana	330-829-4000
St. Elizabeth	Mahoning	330-480-2202
Western Reserve	Mahoning	330-747-0777
Robinson Memorial	Portage	330-297-0811
Doctor's Hospital of Stark Co.	Stark	330-837-7217
Massillon Community	Stark	330-832-8761
St. Joseph's	Trumbull	330-841-4000
Trumbull Memorial	Trumbull	330-841-9117

Study Planning Team: Assigned DSW Staff

Study Plan Coordinator: Angela Dripps (614) 836-8798

Chemical Sampling: Robert Davic (330) 963-1132

Nonpoint: Mark Bergman (330) 963-1215

Modeling: Jim Connon (614) 644-4825

Benthic: Angela Dripps (614) 836-8798

Fish: Holly Tucker (614) 836-8777

Please notify Angela Dripps (614)836-8798 if there are any changes to this study plan, sampling problems, or additional information.

Table 1. Facilities regulated by the National Pollution Discharge Elimination System in the Upper Mahoning River basin.

Facility Name	Ohio EPA Permit No.	County	Receiving Stream	River Mile	Type of Treatment
City of Alliance WWTP	3PD00000*ID	Stark	Beech Creek	0.36	Secondary*
Newton Falls WWTP	3PD00015*FD	Trumbull	Mahoning River	55.13	Secondary*
Mahoning County Craig Beach WWTP	3PH00030*FD	Mahoning	Mahoning River	61.7	Secondary*
Sebring WWTP	3PC00011*HD	Mahoning	Sulphur Ditch	0.49	Secondary*
Beloit WWTP	3PB00005*ED	Mahoning	Unnamed Trib. to Mahoning River (@ RM 89.48)	3.25	Secondary*
Windham WWTP	3PC00019*GD	Portage	Unnamed Trib to S. Fork Eagle Creek (@ RM 2.60)	0.32	Secondary*
Garrettsville WWTP	3PB00016*HD	Portage	Eagle Creek	18.02	Secondary*
Atwater WWTP	3PH00033*GD	Portage	Unnamed Trib to Deer Creek (@ RM 10.33)	0.55	Secondary*
Hiram WWTP	3PB00020*HD	Portage	Unnamed Trib. to Silver Creek (@ RM 1.10)	1.43	Secondary*

*****these facilities do not treat for phosphorus, and therefore are considered secondary treatment facilities.

Table 2. Upper Mahoning River basin sampling sites

RIVER	RM	LOCATION	DRAIN AREA	SAMPLE TYPE	ISSUE	COUNTY	TOPO	STORET
Barrel Run	5.31	Giddings Rd.	5.1	C,F,M	Geometric	Portage	Atwater	
Barrel Run	3.65	Tallmadge Rd.	10.2	C,F,M	Geometric	Portage	Atwater	
Beaver Run	1.19	Center Rd.	4.8	C,F,M	Geometric	Columbiana	Homeworth	
Beech Creek	10.50	Bayton St.	4.0	C,F,M	Geometric	Stark	Limaville	
Beech Creek	8.34	Beech St.	8.6	C,F,M	Geometric	Stark	Limaville	
Beech Creek	3.54	Vine St.	17.4	C,F,M	Geometric	Stark	Limaville	
Camp Creek	3.16	St. Rt. 305	4.2	C,F,M	Geometric	Portage	Garrettsville	
Chocolate Run	0.11	Eagle Creek Rd.	4.4	C,F,M	Geometric	Trumbull	Southington	
Deer Creek	10.87	Waterloo Rd	3.5	C,F,M	Geometric	Portage	Atwater	
Deer Creek	4.48	McCallum Rd	27.9	C,F2,MT	Upst. of Limaville (Unsewered Comm)	Stark	Limaville	
Deer Creek	2.90	Atwater Ave.	30.1	C,F2,MT	Sentinel	Stark	Limaville	
Deer Creek	0.60	Deer Creek Reservoir, near dam and WTP intake	0.0	PDWS, Lake	Lake, PDWS	Stark	Alliance	OH-0124-348L1
Eagle Creek	22.44	St. Rt. 700	5.2	C,F,M	Reference	Portage	Mantua	N02S02
Eagle Creek	17.61	Brosius Rd	32.0	C,F2,MT	Dwnst Garrettsville WWTP	Portage	Garrettsville	N02P07
Eagle Creek	15.04	Hopkins Rd.	36.0	C,F2,MT	Geometric	Portage	Garrettsville	N02P03
Eagle Creek	10.10	Silica Sand Rd.	74.0	C,F2,MT	Geometric	Portage	Garrettsville	
Eagle Creek	5.60	Newton Falls Braceville	97.6	C,F2,MT	Sentinel	Trumbull	Southington	N02P08
Fish Creek	3.56	Johnson Rd	3.0	C, F, M	Upst. WWTP	Mahoning	Alliance	N01S05
Fish Creek	2.00	Courtney Rd.	4.5	C,F,M	Geometric and Dwnst. WWTP	Mahoning	Alliance	
Fish Creek	0.36	Lexington Rd.	9.0	C,F,M	Geometric	Mahoning	Alliance	
Harmon Brook	0.49	Peck Rd.	4.1	C,E,F,M,S	Geometric and Dwnst Ravenna, headwater sediment	Portage	Ravenna	
Hinkley Creek	0.70	State Route 5	10.8	C,E,F,M,S	Dwnst of Ravenna	Portage	Ravenna	
Island Creek	2.65	12th St. Rd.	4.2	C,F,M	Geometric	Mahoning	Alliance	
Kale Creek	13.08	lane off St. Rt. 225	4.1	C,F,M	Geometric	Portage	Deerfield	
Kale Creek	11.27	Williams Rd	9.1	C,F,M	Geometric	Portage	Deerfield	N02W09
Kale Creek	6.05	Whippoorwill Rd.	14.4	C,F,M	Geometric	Portage	Deerfield	N02W08
Kale Creek	3.38	Newton Falls Rd.	21.9	C,F2,MT	Sentinel	Trumbull	Newton Falls	N02W07
Little Beech Creek	1.83	lane off St. Rt. 619	9.0	C,F,M	Geometric	Stark	Limaville	

RIVER	RM	LOCATION	DRAIN AREA	SAMPLE TYPE	ISSUE	COUNTY	TOPO	STORET
Mahoning Creek	0.70	Parkman Rd.	3.7	C,F,M	Geometric, Dwnst. PM Estates MHP	Portage	Garrettsville	N02P05
Mahoning River	102.24	Bridgewater Rd. (Winona Road)	3.2	C,F,M	Geometric	Columbiana	Hanoverton	
Mahoning River	100.57	King Rd.	8.0	C,F,M	Geometric	Columbiana	Hanoverton	N01S14
Mahoning River	97.69	Rochester Rd. (Georgetown-Damascus Road)	19.8	C,F2,MT	Geometric	Columbiana	Hanoverton	
Mahoning River	93.23	Knox School Rd.	52.7	CN,F2,MT,S,D	Reference, Sentinel, Nutrient, PDWS	Columbiana	Alliance	N01S01
Mahoning River	91.11	U.S. Rt. 62	63.0	C,F2,MT	Geometric	Columbiana	Alliance	
Mahoning River	85.51	Webb Ave.	89.0	PDWS, C, F2, MT,S	Sentinel and PDWS	Stark	Alliance	602420
Mahoning River	84.80	Gaskill Drive	91.0	C, F2, MT	Dwnst. Ryan's Run, Historical discharges/brine	Stark	Alliance	N01S12
Mahoning River	72.74	Berlin Reservoir	0.0	Lake only	Lake	Portage	Deerfield	
Mahoning River	70.70	Below Berlin Dam	248.0	C,F2,MT	Sentinel	Mahoning	Deerfield	N01S11
Mahoning River	62.68	Pritchard-Ohltown Rd.	274.0	C,F2,MT	Geometric	Trumbull	Newton Falls	602310
Mahoning River	58.13	Upst Newton Falls, Adj W River Rd, end Starr Rd	305.0	PDWS, C, F2, MT	PDWS, Access for boat at boat ramp further north	Trumbull	Newton Falls	
Mahoning River	57.35	Broad Street Bridge in Newton Falls	306.0	C,F2,MT		Trumbull	Newton Falls	
Mahoning River	56.53	Dwnst. Dam & WWTP	307.0	C,F2,MT	Dwnst. Newton Falls WWTP and dam	Trumbull	Newton Falls	N02S12
Mahoning River	54.73	Dwnst. Turnpike	417.0	C,F2,MT	Sentinel	Trumbull	Newton Falls	N02S11
Mahoning River	45.70	upst. Leavittsburg dam	542.0	C,F2,MT	Reference	Trumbull	Newton Falls	N03S64
Mahoning River	39.1	@ 3rd Island, DST Summit St	594.0	C,MT,S	Upstream Thomas Steel	Trumbull	Warren	
Mahoning River	39.06	@ Thomas Steel Mixing Zone	594.0	C,MT,S	Thomas Steel Mixing Zone	Trumbull	Warren	
Mahoning River	38.2	@ E. Market Street	594.0	C,MT,S	Downstream Thomas Steel	Trumbull	Warren	
Mill Creek	6.28	W. Calla Rd	9.9	C,F,M	Geometric	Mahoning	Damascus	
Mill Creek	3.64	Leffingwell Rd.	19.1	C,F2,MT	Sentinel	Mahoning	Damascus	
Mill Creek (aka Garfield Ditch)	8.75	intersection of St. Rt. 154/St. Rt. 14, SR 165	4.0	C,F,M	Geometric	Mahoning	Damascus	

RIVER	RM	LOCATION	DRAIN AREA	SAMPLE TYPE	ISSUE	COUNTY	TOPO	STORET
Naylor Ditch	3.63	Heritage Drive	4.5	C,F,M	Geometric	Columbiana	Damascus	
Naylor Ditch	1.35	12th St. Rd.	8.3	C,F,M	Geometric	Columbiana	Alliance	
Nelson Ditch	1.11	State Route 305	2.7	C	Chem only site	Portage	Garrettsville	
Nelson Ditch	0.01	mouth, access upst. Nicholson Rd.	3.9	C,F,M	Geometric	Portage	Garrettsville	
S. Fk. Eagle Creek	3.86	Windham Rd. *Coord.w/Eileen for Access	7.5	C,E,F2,MT,S	Reference, Ravenna Training and Logistics Site, headwater sediment	Portage	Windham	
S. FK. Eagle Creek	2.30	St. Rt. 303	23.5	C,E,F2,MT,S	Dwnst of Ravenna and WWTP	Portage	Windham	
Silver Creek (Trib to Eagle Creek)	2.26	St. Rt. 305	8.8	C,F2,MT	Reference and Dwnst. Hiram WWTP	Portage	Mantua	N02S04
Silver Creek (Trib to Eagle Creek)	0.79	St. Rt. 82	11.2	CN,D,F2,MT,S	Reference, Nutrient and Upst. Hiram WWTP	Portage	Garrettsville	N02S03
Silver Creek (Trib to W Br Mahoning R)	3.46	Tallmadge Rd.	5.5	C,F,M	Geometric	Portage	Deerfield	
Silver Creek (Trib to W Br Mahoning R)	2.03	Calvin Rd.	9.3	C,F,M	Geometric	Portage	Deerfield	
Sulphur Ditch	0.30	Dwnst. Alliance WWTP, end of Allied Rd	0.8	C	Down WWTP	Mahoning	Alliance	N01S07
Tinker Creek	5.45	Center Rd.	4.4	C,F,M	Geometric	Portage	Garrettsville	
Tinker Creek	2.50	Nicholson Rd.	11.2	C,F,M	Geometric	Portage	Garrettsville	
Trib to W Br Mahoning River	0.60	Newton Falls Road	23.5	C,E,F2,MT,S	Dwnst of Ravenna (Load Line 4)	Portage	Windham	
Trib. to Kale Creek (RM 5.29)	1.08	Whippoorwill Rd.	3.4	C,F,M	Geometric	Portage	Deerfield	
Trib. to Mahoning R. (RM 91.21)	2.39	12th Str.	4.5	C,F,M	Geometric, Dwnst. Beloit WWTP	Mahoning	Alliance	
Trib. to Mahoning R. (RM 97.11)	1.15	Gilson Rd. (Georgetown Road)	4.3	C,F,M	Geometric	Columbiana	Hanoverton	
Trib. to Mahoning R. (RM 98.71)	4.59	Shelton Rd. (Whitacre Road)	5.3	C,F,M	Geometric	Columbiana	Damascus	
Trib. to Mill Creek (RM 3.67)	1.10	Western Reserve Rd.	3.7	C,F,M	Geometric	Mahoning	Damascus	
Trib. to W. Br. Mahoning R. (RM 0.01)	2.10	St. Rt. 534	4.1	C,E,F,M,S,D	Geometric and Dwnst Ravenna, headwater sediment	Trumbull	Newton Falls	

RIVER	RM	LOCATION	DRAIN AREA	SAMPLE TYPE	ISSUE	COUNTY	TOPO	STORET
Trib. to W. Br. Mahoning R. (RM 8.28)	0.27	Gilbert Rd.	5.1	C,F,M	Geometric	Portage	Windham	
Turkey Broth Creek	3.36	St. Rt. 534	4.9	C,F,M	Geometric	Mahoning	Lake Milton	
W. Br. Mahoning R.	27.92	Cooley Rd.	5.0	C,F,M	Geometric	Portage	Ravenna	
W. Br. Mahoning R.	24.35	St. Rt. 88	9.4	C,E,F,M,S	Geometric and Dwnst Ravenna, headwater sediment	Portage	Ravenna	
W. Br. Mahoning R.	20.94	Newton Falls Rd.	21.8	CN, D, E,F2,MT,S	Sentinel, Nutrient and Dwnst Ravenna	Portage	Ravenna	
W. Br. Mahoning R.	13.30	Kirwin Reservoir	77.0	PDWS only	PDWS only	Portage	Windham	
W. Br. Mahoning R.	11.39	Wayland Rd.	81.7	C,E,F2,MT,S	Sentinel and Dwnst Ravenna	Portage	Windham	
W. Br. Mahoning R.	3.15	6th Street Park	101.0	C,E,F2,MT,S	Dwnst of Ravenna	Trumbull	Newton Falls	
W. Br. Mahoning R.	0.40	County Rd 114A	103.0	C,F2,MT	Sentinel	Trumbull	Newton Falls	N02P12
Willow Creek	8.13	Porter Rd.	3.5	C,F,M	Geometric	Portage	Deerfield	
Willow Creek	3.74	Notman Rd.	7.2	C,F,M	Sentinel	Portage	Deerfield	

C – Chemistry Site
CN - Chemistry Nutrient site, therefore include dissolved phosphorous, and water column Chlorophyll a.
PDWS – Chemistry site for Drinking Water assessment. Normal suite of parameters plus pesticides, specifically atrazine, simazine, cyanizine, metachlor, and metribuzin.
E – Chemistry site for propellants and explosives
F – Fish Site
F2 – Two-pass fish site (for reference and nutrient sites, or drainage area 20 sq. miles or greater)
L - Lake Site
M – Macroinvertebrate site
MT – Macroinvertebrate quantitative site (for reference and nutrient sites, or drainage area 20 sq. miles pr greater)
S – Sediment site
D – Datasonde site
O – Organics site

Table 3. Upper Mahoning River sites by HUC with latitude and longitude

HUC_11_14	RIVER	RM	DRAIN AREA	LATITUDE	LONGITUDE	SAMPLE TYPE	TOPO
05030103 010 010	Beaver Run	1.19	4.8	40.85770000000	-81.02070000000	C,F,M	Homeworth
05030103 010 010	Mahoning River	102.24	3.2	40.82810000000	-80.93540000000	C,F,M	Hanoverton
05030103 010 010	Mahoning River	100.57	8.0	40.84280000000	-80.95160000000	C,F,M	Hanoverton
05030103 010 010	Mahoning River	97.69	19.8	40.85340000000	-80.98760000000	C,F2,MT	Hanoverton
05030103 010 010	Trib. to Mahoning R. (RM 97.11)	1.15	4.3	40.84300000000	-80.98960000000	C,F,M	Hanoverton
05030103 010 010	Trib. to Mahoning R. (RM 98.71)	4.59	5.3	40.87960000000	-80.93120000000	C,F,M	Damascus
05030103 010 020	Fish Creek	3.56	3.0	40.93655669450	-81.03187788410	C, F, M	Alliance
05030103 010 020	Fish Creek	2.00	4.5	40.93686314690	-81.05490878790	C,F,M	Alliance
05030103 010 020	Fish Creek	0.36	9.0	40.92740000000	-81.06940000000	C,F,M	Alliance
05030103 010 020	Mahoning River	93.23	52.7	40.88380000000	-81.03130000000	CN,F2,MT,S,D	Alliance
05030103 010 020	Mahoning River	91.11	63.0	40.90150000000	-81.04840000000	C,F2,MT	Alliance
05030103 010 020	Mahoning River	85.51	89.0	40.93265094320	-81.09497780300	PDWS, C, F2, MT,S	Alliance
05030103 010 020	Mahoning River	84.80	91.0	0.00000000000	0.00000000000	C, F2, MT	Alliance
05030103 010 020	Naylor Ditch	3.63	4.5	40.90140000000	-80.97540000000	C,F,M	Damascus
05030103 010 020	Naylor Ditch	1.35	8.3	40.88910000000	-81.01230000000	C,F,M	Alliance
05030103 010 020	Sulphur Ditch	0.30	0.8	40.93223929930	-81.02521419870	C	Alliance
05030103 010 020	Trib. to Mahoning R. (RM 91.21)	2.39	4.5	40.90612558660	-81.01317344660	C,F,M	Alliance
05030103 010 030	Beech Creek	10.50	4.0	40.87690000000	-81.15280000000	C,F,M	Limaville
05030103 010 030	Beech Creek	8.34	8.6	40.88650000000	-81.17570000000	C,F,M	Limaville
05030103 010 030	Beech Creek	3.54	17.4	40.93070000000	-81.14670000000	C,F,M	Limaville
05030103 010 030	Little Beech Creek	1.83	9.0	40.94390562610	-81.16051491500	C,F,M	Limaville
05030103 020 010	Deer Creek	10.87	3.5	41.02380000000	-81.15610000000	C,F,M	Atwater
05030103 020 010	Deer Creek	4.48	27.9	40.97405367490	-81.17200270730	C,F2,MT	Limaville
05030103 020 010	Deer Creek	2.90	30.1	40.97990000000	-81.14810000000	C,F2,MT	Limaville
05030103 020 010	Deer Creek	0.60	0.0	40.96910086570	-81.12108614240	PDWS, Lake	Alliance
05030103 020 020	Willow Creek	8.13	3.5	41.05330000000	-81.12340000000	C,F,M	Deerfield
05030103 020 020	Willow Creek	3.74	7.2	41.02560000000	-81.07950000000	C,F,M	Deerfield
05030103 020 030	Island Creek	2.65	4.2	40.97320000000	-81.01270000000	C,F,M	Alliance
05030103 020 030	Mahoning River	72.74	0.0	41.02171054770	-81.00223261910	Lake only	Deerfield
05030103 020 040	Mill Creek	6.28	9.9	40.97230000000	-80.95430000000	C,F,M	Damascus
05030103 020 040	Mill Creek	3.64	19.1	40.99990000000	-80.96840000000	C,F2,MT	Damascus

HUC_11_14	RIVER	RM	DRAIN AREA	LATITUDE	LONGITUDE	SAMPLE TYPE	TOPO
05030103 020 040	Mill Creek (aka Garfield Ditch)	8.75	4.0	40.94490000000	-80.94660000000	C,F,M	Damascus
05030103 020 040	Trib. to Mill Creek (RM 3.67)	1.10	3.7	40.99870000000	-80.94740000000	C,F,M	Damascus
05030103 020 040	Turkey Broth Creek	3.36	4.9	41.03390000000	-80.94780000000	C,F,M	Lake Milton
05030103 030 010	Mahoning River	70.70	248.0	41.04825099170	-81.00138384610	C,F2,MT	Deerfield
05030103 030 010	Mahoning River	62.68	274.0	41.13420000000	-80.96750000000	C,F2,MT	Newton Falls
05030103 030 010	Mahoning River	58.13	305.0	41.17754350510	-80.97010654050	PDWS, C, F2, MT	Newton Falls
05030103 030 010	Mahoning River	57.35	306.0	0.00000000000	0.00000000000	C,F2,MT	Newton Falls
05030103 030 010	Mahoning River	56.53	307.0	41.19679684920	-80.96616133630	C,F2,MT	Newton Falls
05030103 030 020	Kale Creek	13.08	4.1	41.07270000000	-81.04630000000	C,F,M	Deerfield
05030103 030 020	Kale Creek	11.27	9.1	41.07354733390	-81.03122584390	C,F,M	Deerfield
05030103 030 020	Kale Creek	6.05	14.4	41.11340000000	-81.00690000000	C,F,M	Deerfield
05030103 030 020	Kale Creek	3.38	21.9	41.13689275800	-80.99585121110	C,F2,MT	Newton Falls
05030103 030 020	Trib. to Kale Creek (RM 5.29)	1.08	3.4	41.11340000000	-81.01540000000	C,F,M	Deerfield
05030103 030 030	Harmon Brook	0.49	4.1	41.18060000000	-81.21480000000	C,E,F,M,S	Ravenna
05030103 030 030	W. Br. Mahoning R.	27.92	5.0	41.22600000000	-81.20170000000	C,F,M	Ravenna
05030103 030 030	W. Br. Mahoning R.	24.35	9.4	41.19340000000	-81.20620000000	C,E,F,M,S	Ravenna
05030103 030 030	W. Br. Mahoning R.	20.94	21.8	41.16160000000	-81.19740000000	CN, D, E,F2,MT,S	Ravenna
05030103 030 040	Barrel Run	5.31	5.1	41.08100000000	-81.18800000000	C,F,M	Atwater
05030103 030 040	Barrel Run	3.65	10.2	41.09840000000	-81.18760000000	C,F,M	Atwater
05030103 030 050	Hinkley Creek	0.70	10.8	41.15196585250	-81.16780587340	C,E,F,M,S	Ravenna
05030103 030 060	W. Br. Mahoning R.	13.30	77.0	41.14123321660	-81.09929845770	PDWS only	Windham
05030103 030 070	Silver Creek (Trib to W Br Mahoning R)	3.46	5.5	41.09920000000	-81.10630000000	C,F,M	Deerfield
05030103 030 070	Silver Creek (Trib to W Br Mahoning R)	2.03	9.3	41.11880000000	-81.10600000000	C,F,M	Deerfield
05030103 030 080	Trib to W Br Mahoning River	0.60	23.5	41.16619119840	-81.06384214210	C,E,F2,MT,S	Windham
05030103 030 080	Trib. to W. Br. Mahoning R. (RM 0.01)	2.10	4.1	41.21180000000	-80.97930000000	C,E,F,M,S,D	Newton Falls
05030103 030 080	Trib. to W. Br. Mahoning R. (RM 8.28)	0.27	5.1	41.15320000000	-81.03570000000	C,F,M	Windham
05030103 030 080	W. Br. Mahoning R.	11.39	81.7	41.15740000000	-81.07130000000	C,E,F2,MT,S	Windham
05030103 030 080	W. Br. Mahoning R.	3.15	101.0	41.18532508450	-80.99890580000	C,E,F2,MT,S	Newton Falls
05030103 030 080	W. Br. Mahoning R.	0.40	103.0	41.20723298500	-80.96029109810	C,F2,MT	Newton Falls

HUC_11_14	RIVER	RM	DRAIN AREA	LATITUDE	LONGITUDE	SAMPLE TYPE	TOPO
05030103 040 010	Eagle Creek	22.44	5.2	41.28210000000	-81.14460000000	C,F,M	Mantua
05030103 040 010	Silver Creek (Trib to Eagle Creek)	2.26	8.8	41.30950000000	-81.12970000000	C,F2,MT	Mantua
05030103 040 010	Silver Creek (Trib to Eagle Creek)	0.79	11.2	41.29400000000	-81.12400000000	CN,D,F2,MT,S	Garrettsville
05030103 040 020	Camp Creek	3.16	4.2	41.31000000000	-81.09670000000	C,F,M	Garrettsville
05030103 040 020	Eagle Creek	17.61	32.0	41.28724492910	-81.07965211130	C,F2,MT	Garrettsville
05030103 040 020	Eagle Creek	15.04	36.0	41.27420000000	-81.05080000000	C,F2,MT	Garrettsville
05030103 040 020	Mahoning Creek	0.70	3.7	41.26450000000	-81.05050000000	C,F,M	Garrettsville
05030103 040 030	S. Fk. Eagle Creek	3.86	7.5	41.22800000000	-81.04880000000	C,E,F2,MT,S	Windham
05030103 040 030	S. FK. Eagle Creek	2.30	23.5	41.23404662010	-81.02504268490	C,E,F2,MT,S	Windham
05030103 040 040	Nelson Ditch	1.11	2.7	41.31004970590	-81.02055514790	C	Garrettsville
05030103 040 040	Nelson Ditch	0.01	3.9	41.29860000000	-81.01450000000	C,F,M	Garrettsville
05030103 040 040	Tinker Creek	5.45	4.4	41.30180000000	-81.05730000000	C,F,M	Garrettsville
05030103 040 040	Tinker Creek	2.50	11.2	41.29820000000	-81.01270000000	C,F,M	Garrettsville
05030103 040 050	Eagle Creek	10.10	74.0	41.26920000000	-81.01190000000	C,F2,MT	Garrettsville
05030103 040 050	Eagle Creek	5.60	97.6	41.26080183160	-80.95443804740	C,F2,MT	Southington
05030103 040 060	Chocolate Run	0.11	4.4	41.25270000000	-80.88280000000	C,F,M	Southington
05030103 040 060	Mahoning River	54.73	417.0	41.21052069690	-80.94380721310	C,F2,MT	Newton Falls
05030103 040 060	Mahoning River	45.70	542.0	41.24000000000	-80.88330000000	C,F2,MT	Newton Falls
05030103 050	Mahoning River	39.1	594.0	41.24140000000	-80.82860000000	C,MT,S	Warren
05030103 050	Mahoning River	39.06	594.0	41.24250000000	-80.82810000000	C,MT,S	Warren
05030103 050	Mahoning River	38.2	594.0	41.23530000000	-80.82140000000	C,MT,S	Warren

C – Chemistry Site
CN - Chemistry Nutrient site, therefore include dissolved phosphorous, and water column Chlorophyll a.
PDWS – Chemistry site for Drinking Water assessment. Normal suite of parameters plus pesticides, specifically atrazine, simazine, cyanizine, metachlor, and metribuzin.
E – Chemistry site for propellants and explosives
F – Fish Site
F2 – Two-pass fish site (for reference and nutrient sites, or drainage area 20 sq. miles or greater)
L - Lake Site
M – Macroinvertebrate site
MT – Macroinvertebrate quantitative site (for reference and nutrient sites, or drainage area 20 sq. miles or greater)
S – Sediment site
D – Datasonde site
O – Organics site