# STATUS OF WATER QUALITY
# MOHICAN RIVER WATERSHED

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Ohio water quality standards (WQS) use a tiered aquatic life use (ALU) designation system. Several ALU designations apply in the Mohican River watershed: warmwater habitat (WWH); coldwater habitat (CWH); exceptional warmwater habitat (EWH); modified warmwater habitat (MWH); and limited resource waters (LRW). A thorough discussion of each of these uses is located in Appendix C. Several uses were confirmed in previously undesignated streams during the 2007 field survey. In several locations, recommendations to change use designations were made. Those changes are discussed in the *Biological and Water Quality Study of the Mohican River and Selected Tributaries, 2007; Crawford, Morrow, Richland, Ashland, Wayne, Holmes, Coshocton and Knox Counties, Ohio* (Ohio EPA 2009) and have been incorporated into current rules (see http://www.epa.ohio.gov/portals/35/rules/01-24.pdf).

## B1 Aquatic Life Use Attainment

Based on the biological data collected in 2007, the EWH use designation was found to be appropriate for the Mohican River mainstem. Several streams supported viable coldwater fish and/or macroinvertebrate faunas. Streams where the CWH use was indicated included: Negro Run, Redhaw Creek, Oldtown Run, Quaker Springs Run, Newel Run, Katotawa Creek, Honey Creek (Black Fork tributary) from the headwaters to RM 4.19 (upstream from unnamed tributary), Pine Run, Switzer Creek, Slater Run and Honey Creek (Clear Fork tributary). One stream, Kiser Ditch, was deficient in typical warmwater habitat attributes and did not have adequately diverse biological communities to warrant the warmwater habitat use designation. Given the conditions encountered in Kiser Ditch, MWH was recommended. Conditions of all other tributary streams evaluated in 2007 (14 waterbodies) were adequate to recommend maintaining the WWH aquatic life use.

Figure B-1 shows the aquatic life use attainment status for each sampled site in the watershed.

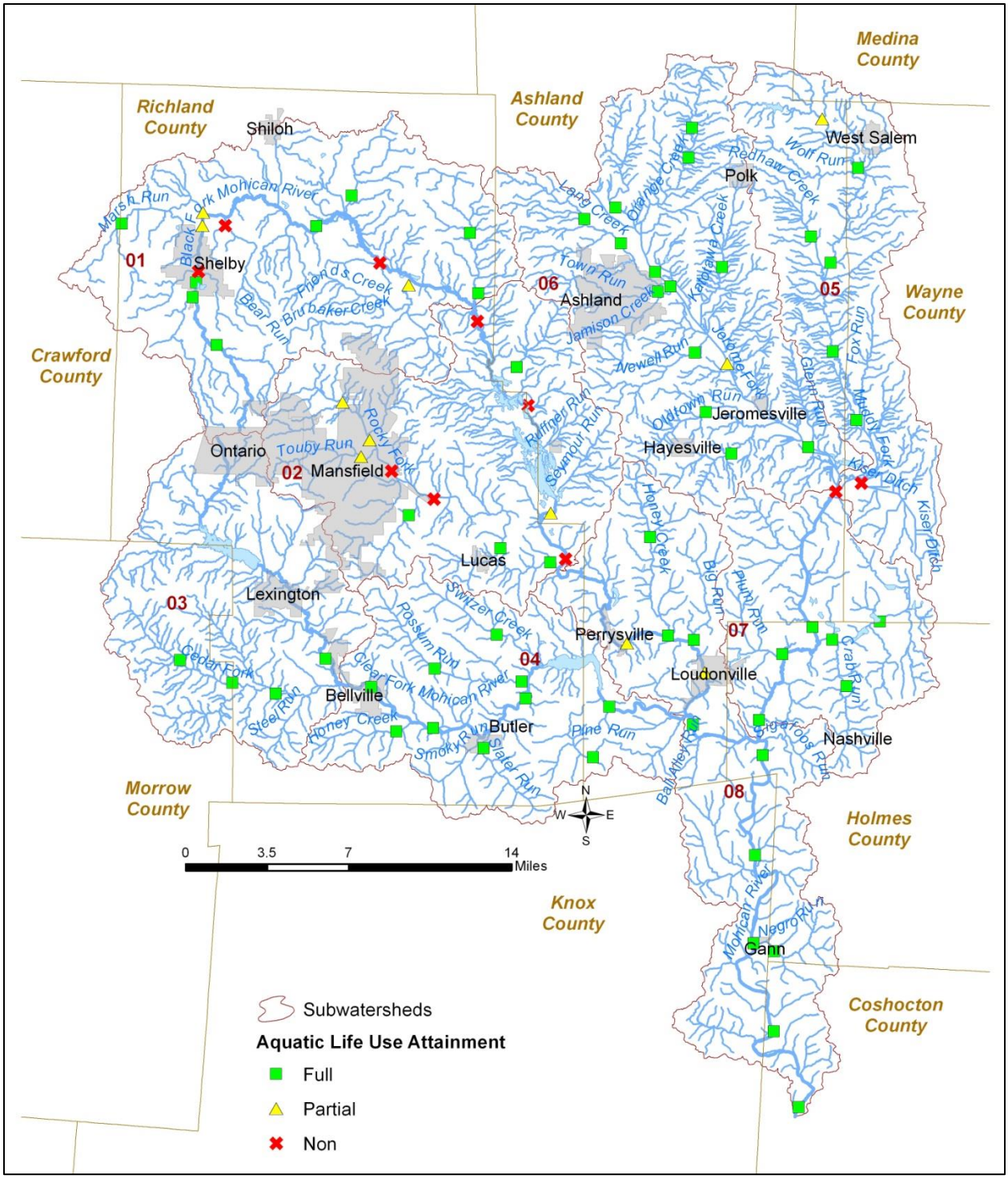



**Figure B-1. Aquatic life use attainment in the Mohican River watershed.**

**Table B-1. Aquatic life use attainment table for the Mohican River watershed.**

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.70 | SWAMP CREEK NE OF LEWISBURG @ LANE OFF EUPHEMIA-VERONA RD. | 200246 | EWH | | | | | 73.0 | | | |
| 27.00 | MOHICAN R. ADJ. WALLY RD. (ASHLAND CO. RD. 3175) | 300286 | EWH | 49 | 10.28 | 48 | | 87.0 | Full | | |
| 22.54 | MOHICAN R. @ KNOX TWP. RD. 211 | 300285 | EWH | 57 | 9.89 | 50 | | 85.0 | Full | | |
| 16.92 | MOHICAN R. AT GREER @ ST. RT. 514 | 601870 | EWH | 55 | 10.86 | | Exceptional | 83.0 | Full | | |
| 11.50 | MOHICAN R. AT BRINKHAVEN, UPST. U.S. RT. 62 | 200636 | EWH | 57 | 10.39 | 50 | | 91.0 | Full | | |
| 6.53 | MOHICAN R. AT TIVERTON @ TWP. RD. 365 | 300284 | EWH | 58 | 10.20 | 52 | | 86.0 | Full | | |
| 0.50 | MOHICAN R. NEAR MOUTH @ ST. RT. 715 | 200634 | EWH | 58 | 10.12 | 54 | | 82.0 | Full | | |
| 1.04 | NEGRO RUN @ PRIVATE DRIVE ADJ. ST. RT. 62 (DST TRIB) | 300280 | CWH | 52 | | | Exceptional | 76.0 | Full | | |
| 14.04 | LAKE FORK MOHICAN R. @ ST. RT. 95 | 300272 | WWH | 30 | 5.84 | 18 | | 47.5 | Non | Sedimentation/ siltation, direct habitat alterations, nutrient/ eutrophication biological indicators, dissolved oxygen, other flow regime alterations | Dam or impoundment, non-irrigated crop production, channelization |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.87 | LAKE FORK MOHICAN BELOW DAM NEAR MOHICANVILLE | 300745 | WWH | | | | | | | | |
| 7.33 | LAKE FORK MOHICAN R. @ ST. RT. 3 | 300270 | WWH | 50 | 8.90 | 42 | | 69.0 | Full | | |
| 0.95 | LAKE FORK MOHICAN R. @ WASHINGTON TWP. RD. 451 | 300160 | WWH | 51 | 9.59 | 50 | | 87.0 | Full | | |
| 0.13 | PLUM RUN @ HOLMES CO. RD. 22 | 300275 | WWH | 50 | | | Good | 75.5 | Full | | |
| 3.03 | ODELL LAKE OUTLET @ ST. RT. 226 | 300276 | WWH | 42 | | | Good | 44.0 | Full | | |
| 0.59 | ODELL LAKE OUTLET @ ST. RT. 179 | 300278 | WWH | 50 | 8.95 | 50 | | 68.5 | Full | | |
| 2.17 | CRAB RUN @ WASHINGTON TWP. RD. 473 | 300273 | WWH | 52 | | | Exceptional | 74.5 | Full | | |
| 23.29 | MUDDY FK. MOHICAN R. @ JACKSON TWP. RD. 101 | 300256 | WWH | 34 | | | Good | 73.5 | Partial | Other flow regime alterations | Dam or impoundment |
| 18.40 | MUDDY FK. MOHICAN R. S OF WEST SALEM @ FLEMING RD. | R02S03 | WWH | 50 | | | Good | 73.0 | Full | | |
| 13.40 | MUDDY FK. MOHICAN R. E OF REDHAW @ MARTIN RD. | R02S01 | WWH | 38 | 8.61 | | Good | 55.0 | Full | | |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.20 | MUDDY FK. MOHICAN R. @ HINER RD. (PERRY TWP. RD. 1550) | 300255 | WWH | 49 | 10.06 | 42 | | 70.5 | Full | | |
| 4.30 | MUDDY FK. MOHICAN R. @ FUNK RD. | 300159 | WWH | 40 | 7.66 | | | 44.0 | Full | | |
| 0.38 | KISER DITCH @ ST. RT 95 | 300261 | MWH-C | 24 | | | Very Poor | 32.5 | Non | High flow regime, dissolved oxygen, biochemical oxygen demand, sedimentation/ siltation | Dam or impoundment, channelization |
| 2.54 | REDHAW CREEK AT JACKSON TR 133 | 300264 | CWH | 54 | | | Very Good | 66.5 | Full | | |
| 12.98 | JEROME FORK AT ASHLAND @ U.S. RT. 42 | 611860 | WWH | 47 | 9.97 | 54 | | 50.0 | Full | | |
| 12.08 | JEROME FORK AT ASHLAND @ CO. RD. 1302 | 611870 | WWH | 42 | 9.01 | | Good | 52.5 | Full | | |
| 10.50 | JEROME FORK E OF ASHLAND @ ST. RT. 250 | R02S07 | WWH | | | | | | | | |
| 7.90 | JEROME FORK NW OF JEROMESVILLE @ TWP. RD. 1600 | R02W17 | WWH | 33 | 7.42 | | Good | 56.5 | Partial | Nutrient/ eutrophication biological indicators, sedimentation/ siltation | Channelization, municipal point source discharges |
| 2.56 | JEROME FORK SE OF JEROMESVILLE @ CO. RD. 175 | R02P03 | WWH | 41 | 7.71 | 48 | | 50.0 | Full | | |
| 4.31 | OLDTOWN RUN @ ASHLAND CO. RD. 1802 | 300254 | CWH | 52 | | | Exceptional | 53.5 | Full | | |
| 1.97 | QUAKER SPRINGS RUN @ ASHLAND CO. RD. 2000 | 300253 | CWH | 54 | | | Exceptional | 67.5 | Full | | |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.00 | NEWELL RUN @ MONTGOMERY TWP. RD. 655 | 300252 | CWH | 54 | | | Exceptional | 80.5 | Full | | |
| 3.49 | KATOTAWA CREEK @ MONTGOMERY TWP. RD. 1275 | 300247 | CWH | 48 | | | Exceptional | 83.0 | Full | | |
| 5.26 | LANG CREEK @ TWP. RD. 1006 | 300251 | WWH | 48 | | | Marginally Good | 63.0 | Full | | |
| 3.15 | LANG CREEK UPST. ASHLAND @ TWP. RD. 1104 | R02S10 | WWH | 48 | | | Very Good | 51.5 | Full | | |
| 0.28 | JAMISON CREEK 0.75 MI E OF ASHLAND @ CO. RD. 1302 | R02P09 | WWH | 54 | | | Good | 65.0 | Full | | |
| 6.32 | ORANGE CREEK @ ASHLAND CO. RD. 620 | 300249 | WWH | 50 | | | Good | 69.5 | Full | | |
| 4.85 | ORANGE CREEK @ ST. RT. 58 | 300248 | WWH | 48 | | | Marginally Good | 81.0 | Full | | |
| 1.91 | LEIDIGH MILL CREEK ADJ. ST. RT. 511 | 300250 | WWH | 46 | | | Good | 66.5 | Full | | |
| 57.72 | BLACK FK. MOHICAN R. AT STIVING RD. | 300218 | WWH | 42 | | | Good | 55.5 | Full | | |
| 53.88 | BLACK FK. MOHICAN R. ADJ PARK ST. (SHELBY RESERV. #2 INTAKE) | 300219 | WWH | 40 | 8.00 | | Very Good | 72.0 | Full | | |
| 51.32 | BLACK FK. MOHICAN R. N OF SHELBY @ LONDON WEST RD. | R01W33 | WWH | 38 | 6.90 | | Good | 64.5 | Partial | Direct habitat alterations, other flow regime alterations | Channelization, urban runoff/ storm sewers |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49.57 | BLACK FORK DST SHELBY WWTP @ CR 191 (PLYMOUTH-SPRINGMILL RD) | R01S04 | WWH | | | | | | | | |
| 43.18 | BLACK FK. MOHICAN R. AT GANGES @ GANGES-FIVE POINTS RD. | R01S02 | WWH | 36 | 8.14 | 44 | | 72.5 | Full | | |
| 36.60 | BLACK FK. MOHICAN R. SE OF GANGES @ ST. RT. 13 | 200657 | WWH | 20 | 4.58 | 48 | | 35.5 | Non | Direct habitat alterations, turbidity, other flow regime alterations | Channelization, sediment resuspension (clean sediment) |
| 29.67 | BLACK FK. MOHICAN R. @ CHARLES RD. (WELLER TWP. RD. 89) | R01G01 | WWH | 19 | 5.26 | | Good | 57.5 | Non | Nutrient/ eutrophication biological indicators, sedimentation/ siltation | Crop production with subsurface drainage, channelization |
| 23.31 | BLACK FK. MOHICAN R. AT CRIDER RD. (RICHLAND CO. RD. 92) | 300231 | WWH | 21 | 5.22 | | | 56.0 | Non | Turbidity, other flow regime alterations, dissolved oxygen, direct habitat alterations | Dam or impoundment, non-irrigated crop production, channelization |
| 17.81 | BLACK FK. MOHICAN R. @ TWP. RD. 1265 | R01P19 | WWH | 40 | 9.99 | 14 | | 68.0 | Partial | Other flow regime alterations, nutrient/ eutrophication biological indicators, suspended algae | Dam or impoundment |
| 14.65 | BLACK FK. MOHICAN R. NW OF PERRYSVILLE @ ST. RT. 39 | R01P29 | WWH | 35 | 7.61 | | | 60.5 | Non | Dissolved oxygen, nutrient/ eutrophication biological indicators | Dam or impoundment |
| 7.00 | BLACK FK. MOHICAN R. AT | 200642 | WWH | 42 | 8.85 | 28 | | 83.0 | Partial | Natural conditions (flow or habitat) | Freshettes or major flooding |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PERRYSVILLE, DST. ST. RT. 39 | | | | | | | | | | |
| 2.53 | BLACK FK. MOHICAN R. DST. LOUDONVILLE @ ST. RT. 39 | R99Q08 | WWH | 39 | 8.37 | 28 | | 80.5 | Partial | Natural conditions (flow or habitat) | Freshettes or major flooding |
| 0.10 | TUBY RUN AT SHELBY @ FOOTBRIDGE NEAR MOUTH | R01S24 | WWH | 56 | | | Very Poor | 53.5 | Non | Total dissolved solids | Industrial point source discharge |
| 0.08 | TRIB TO BLACK FK. MOHICAN R (54.46) S OF SHELBY @ ST. RT. 61 | R01P10 | WWH | 44 | | | Good | 54.0 | Full | | |
| 1.68 | TRIB. TO BLACK FK. MOHICAN R. (25.16) @ ST. RT. 603 | 300233 | WWH | 48 | | | | 74.5 | Full | | |
| 0.19 | BIG RUN NW OF LOUDONVILLE @ CO. RD. 775 | 300281 | WWH | 42 | | | Good | 57.5 | Full | | |
| 5.19 | HONEY CREEK @ CO. RD. 2175 | 300283 | WWH | 46 | | | Exceptional | 64.0 | Full | | |
| 0.11 | HONEY CREEK NW OF LOUDONVILLE @ CO. RD. 775 | 300282 | WWH | 46 | | | Good | 61.0 | Full | | |
| 16.43 | ROCKY FK. MOHICAN R. N OF MANSFIELD @ BOWMAN RD (C.R. 215) | R01W16 | WWH | 32 | | | Good | 66.5 | Partial | Natural conditions (flow or habitat) | Natural sources |
| 14.23 | ROCKY FK. MOHICAN R. AT MANSFIELD @ LONGVIEW AVE. | R01P22 | WWH | 36 | | | Fair | 45.0 | Partial | Metals, nutrient/ eutrophication biological indicators | Sediment resuspension (contaminated sediment), |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | unspecified urban storm water |
| 12.49 | ROCKY FK. MOHICAN R. AT MANSFIELD @ ST. RT. 39 (PARK AVE. E) | 611900 | WWH | 28 | 5.03 | | Poor | 50.5 | Non | Nutrient/ eutrophication biological indicators | Unspecified urban storm water |
| 10.13 | ROCKY FK. MOHICAN R. DST MANSFIELD @ ST. RT. 39 | 601800 | WWH | 33 | 7.04 | | Poor | 88.5 | Non | Organic enrichment (sewage) biological indicators, nutrient/ eutrophication biological indicators | Municipal point source discharges, unspecified urban storm water |
| 4.38 | ROCKY FK. MOHICAN R. UPST. LUCAS @ SMART RD. (S. CROSSING) | R99Q11 | WWH | 37 | 7.42 | 32 | | 91.5 | Full | | |
| 0.57 | ROCKY FK. MOHICAN R. E OF LUCAS @ APPLEGATE RD. | R01W32 | WWH | 46 | 9.75 | | Good | 88.0 | Full | | |
| 1.33 | TRIB TO ROCKY FORK (10.70) @ MANSFIELD LUCAS RD. (C.R. 300) | 300237 | WWH | 44 | | | | 68.5 | Full | | |
| 1.00 | TOUBY RUN AT MANSFIELD @ BOWMAN ST. | 300238 | WWH | 36 | | | Fair | 48.5 | Partial | High flow regime, unknown | Unspecified urban storm water |
| 3.88 | WHETSTONE CREEK ADJ OLIVESBURG FITCHVILLE RD. | 300228 | WWH | 52 | | | | 63.0 | Full | | |
| 0.69 | WHETSTONE CREEK @ VANTILBURG RD. | 300225 | WWH | 46 | | | Good | 67.5 | Full | | |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (TWP. RD. 86) | | | | | | | | | | |
| 0.30 | BRUBAKER CREEK @ EBY RD. (TWP. RD. 230) | 300224 | WWH | 36 | 6.55 | | Good | 66.0 | Partial | Nutrient/ eutrophication biological indicators | Non-irrigated crop production |
| 0.95 | SHIPP CREEK @ ST. RT. 603 | 300222 | WWH | 52 | | | Marginally Good | 62.5 | Full | | |
| 0.48 | BEAR RUN @ LONDON WEST RD. (CO. RD. 58) | 300220 | WWH | 40 | | | Poor | 26.0 | Non | Direct habitat alterations, dissolved oxygen, organic enrichment (sewage) biological indicators | Non-irrigated crop production, channelization, manure runoff, unrestricted cattle access |
| 4.55 | MARSH RUN @ LONDON WEST RD. (CO. RD. 58) | 300221 | WWH | 42 | | | Good | 35.0 | Full | | |
| 0.17 | MARSH RUN N OF SHELBY @ ST. RT. 61 | R01W34 | WWH | 32 | 7.59 | | Good | 27.0 | Partial | Sedimentation/ siltation | Dam or impoundment, non-irrigated crop production, channelization |
| 35.68 | CLEAR FK. MOHICAN R. SW OF MANSFIELD @ MARION AVE. | R01S22 | WWH | | | | Good | | | | |
| 29.57 | CLEAR FK. MOHICAN R. @ LEXINGTON-ONTARIO RD. | R01S30 | WWH | | | | Marginally Good | | | | |
| 23.35 | CLEAR FK. MOHICAN R. @ RITTER RD., DST. I-71 | R99Q16 | WWH | 44 | 8.92 | 42 | | 86.5 | Full | | |
| 19.83 | CLEAR FK. MOHICAN R.@ ST. | R01G03 | WWH | 41 | 9.51 | | Good | 78.0 | Full | | |

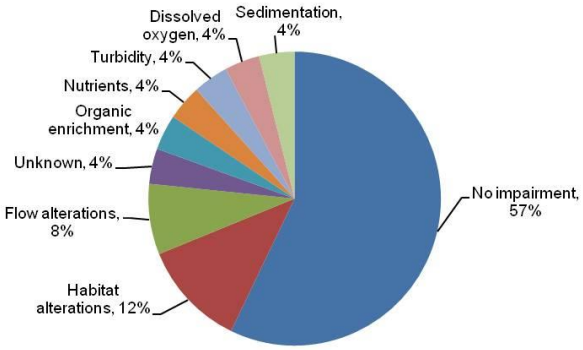
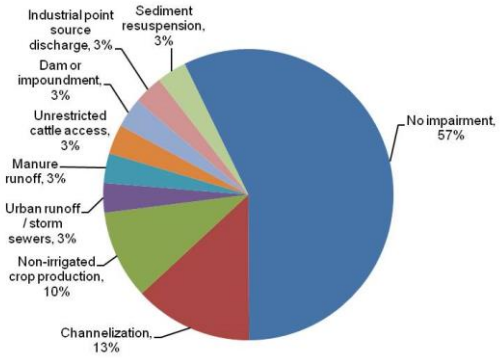
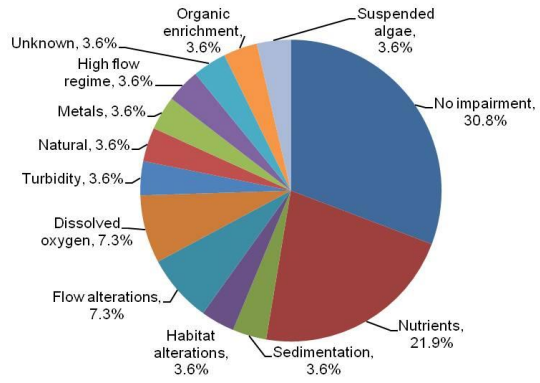
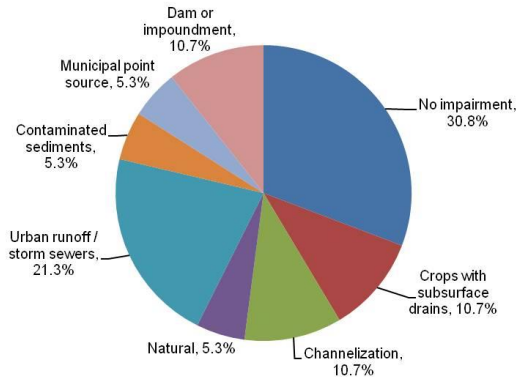
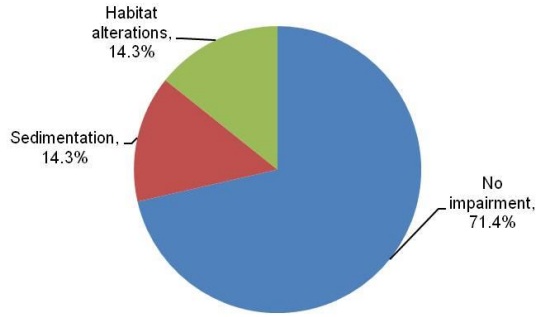
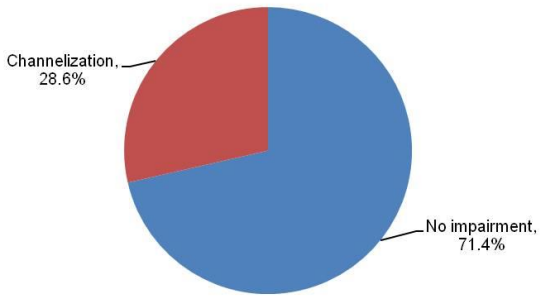
| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | RT. 13 | | | | | | | | | | |
| 16.17 | CLEAR FK. MOHICAN R. NEAR BUTLER @ CUTNAW RD. | R01W07 | WWH | 39 | 8.43 | 48 | | 82.0 | Full | | |
| 10.55 | CLEAR FK. MOHICAN R. @ BUNKER HILL RD. (RICHLAND C.R. 350) | 300240 | WWH | 45 | 8.96 | 54 | | 76.5 | Full | | |
| 4.03 | CLEAR FK. MOHICAN R. @ ST PK COVERED BRIDGE (FOREST RD 58) | R01S26 | WWH | 53 | 10.43 | 36 | | 83.0 | Full | | |
| 5.71 | PINE RUN @ McCURDY RD. (ASHLAND CO. RD. 3275) | 300241 | CWH | 48 | | | Exceptional | 85.0 | Full | | |
| 2.83 | SWITZER CREEK ADJ. PLEASANT VALLEY RD. (RICHLAND CO RD 303) | 300242 | CWH | 48 | | | Very Good | 73.0 | Full | | |
| 4.57 | OPOSSUM RUN @ RHINEHART RD. (RICHLAND CO. RD. 398) | 300244 | WWH | 48 | | | Exceptional | 76.5 | Full | | |
| 0.35 | OPOSSUM RUN @ ST. RT. 95 | 300243 | WWH | 40 | | | Good | 77.0 | Full | | |
| 0.82 | SLATER RUN @ ST. RT. 97 (CLEVELAND ST.) | 300245 | CWH | 52 | | | Exceptional | 73.0 | Full | | |
| 0.80 | HONEY CREEK @ DURBIN RD. | 300246 | CWH | 50 | | | Exceptional | 75.0 | Full | | |

| RM | Stream Name | Station ID | Aquatic Life Use | IBI | MIwb | ICI | Macro Narrative | QHEI | Attainment Status | Causes | Sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (JEFFERSON TWP. RD. 404) | | | | | | | | | | |
| 8.25 | CEDAR FORK W OF BELLVILLE @ WEST POINT RD. | R99Q23 | WWH | 48 | | | Exceptional | 81.0 | Full | | |
| 5.60 | CEDAR FORK @ WIRICK RD. | 300239 | WWH | 44 | | | Very Good | 78.5 | Full | | |
| 3.25 | CEDAR FORK W OF BELLVILLE @ ST. RT. 546 | R99Q21 | WWH | 48 | 8.79 | 54 | | 81.5 | Full | | |

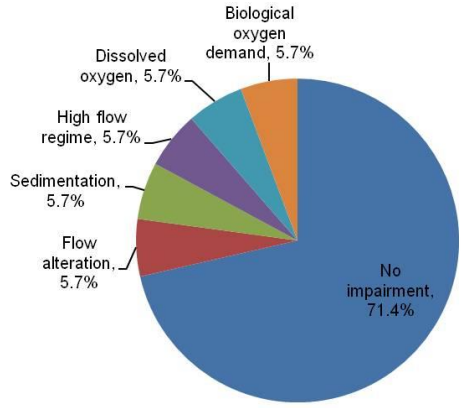
## B1.1 Causes and Sources of Impairment

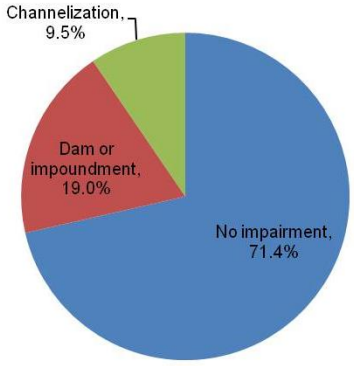
Causes and sources of impairment varied between subwatersheds. A pie chart showing the proportion of occurrence of each cause and source for each subwatershed is shown in Table B-2. There was no aquatic life use impairment in the Possum Run-Clear Fork Mohican River subwatershed (05040002 04), so pie charts are not shown.

**Table B-2. Proportions of causes and sources contributing to aquatic life use impairment in each subwatershed.**

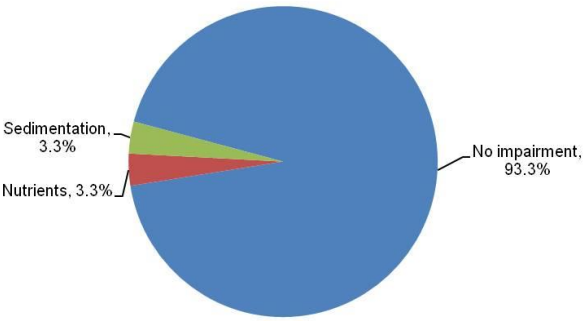
| Causes | Sources |
|---|---|
| **Headwaters Black Fork Mohican River (01)** | |
|  |  |
| **Rocky Fork-Black Fork Mohican River (02)** | |
|  |  |
| **Headwaters Clear Fork Mohican River (03)** | |
|  |  |

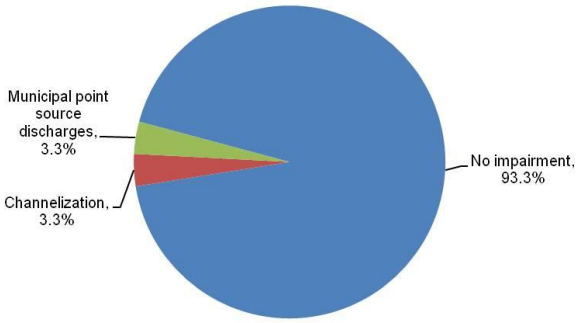
**Muddy Fork Mohican River (05)**



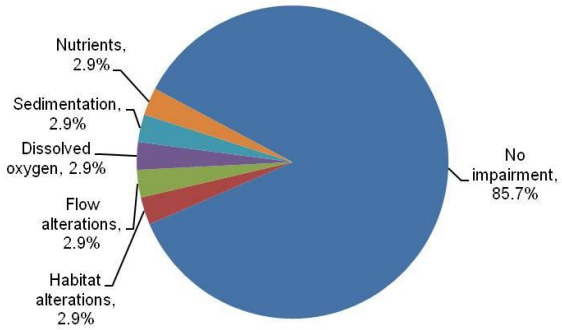



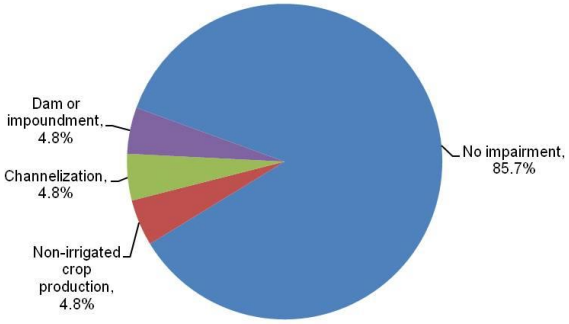

**Jerome Fork-Mohican River (06)**

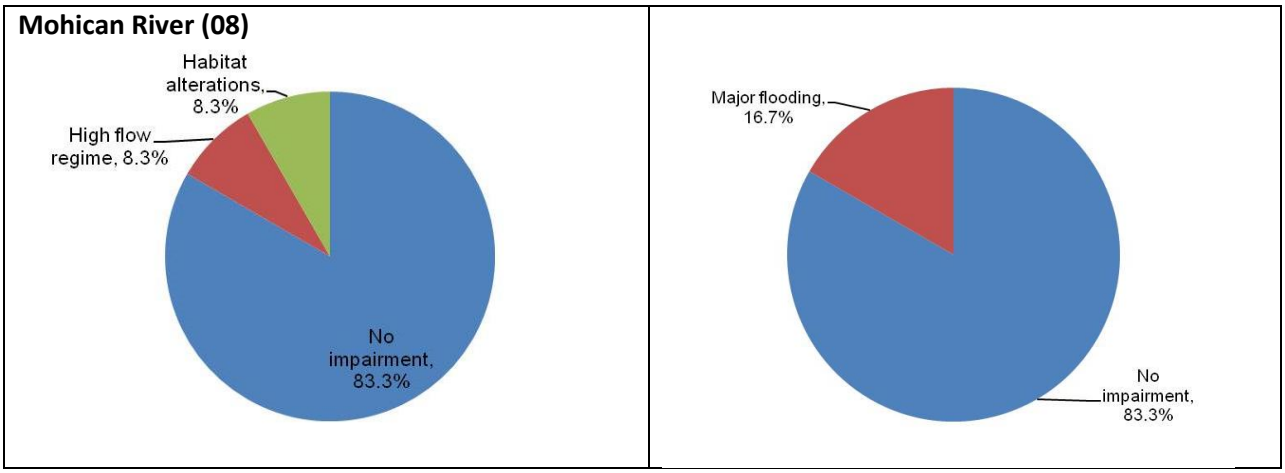



**Lake Fork Mohican River (07)**






## B1.2 Water and Sediment Chemistry

### Water Chemistry

The most common cause of aquatic life use impairment in the Mohican River watershed was nutrient enrichment, as evidenced by biological indicators and by elevated total phosphorus and nitrate/nitrite values in water column chemistry. In particular, locations where water chemistry results indicate nutrients are a problem include Rocky Fork below the Mansfield WWTP, Jerome Fork below the Ashland WWTP and Black Fork below the confluence of the Rocky Fork. At these locations, the seasonal geometric mean computed for both phosphorus and nitrate/nitrite exceeded respective target values. Results in Black Fork below the Shelby WWTP also indicated a problem, but only nitrate/nitrite exceeded the target level. Habitat and flow alterations were the next two most common causes of aquatic life use impairment.

Channelization, dams or impoundments and urban runoff / storm sewers were the most common sources of aquatic life use impairment in the watershed. When natural habitat and hydrologic regimes are modified by anthropogenic influences, they often reduce a stream's ability to assimilate pollutants such as nutrients. These sources can directly contribute to aquatic life use impairment both by reducing assimilative capacity and by increasing pollutant loading to streams.

### Sediment Chemistry

Only half (12 of 24) of the sites selected for analysis of sediment chemistry had samples collected. A general lack of sediment in the basin can be attributed to the types of soil, habitat and land use that minimize erosion and stream morphology and gradient that prevents deposition. Lack of sediment can also be attributed to a major flood in late August that flushed fine grained material out of the streams. In some instances, sites where contamination was documented in the past no longer had sediment present. An example of this is Tuby Run in Shelby, where sediment containing polychlorinated biphenyls (PCBs) and chlorinated insecticides was collected in 1993, but no sediment was found in 2007.

All sediment samples were tested for a series of metals and the results were compared to Ohio Sediment Reference Values considered representative of background condition. Only two of the sites had metal concentrations documented above reference.

Marsh Run in the upper reach of the Black Fork (05040002 01) had levels of nickel and zinc slightly above reference and a level of cadmium about two times above reference. Marsh Run drains mostly agricultural land, but the sampling location at State Rt. 61 is susceptible to storm water runoff from a nearby industrial park where the former Wilkens Air Force station was located.

Rocky Fork at Longview Ave. in the middle reach of the Black Fork (05040002 02) had several metals that were considerably above reference, including cadmium, chromium, copper, lead, mercury, nickel and zinc. This site is located below AK Steel and known to be area of contamination. It should be noted that concentrations of chromium and copper that were above probable effect concentrations in 1993 showed considerable improvement.

All sediment samples were also tested for a series of organic compounds, including polycyclic aromatic hydrocarbons (PAHs), PCBs and chlorinated insecticides. Only three of the sites had any organic compounds detected. The results were compared to consensus based eco-toxic levels where harmful effects are either unlikely (threshold effect concentration) or likely (probable effect concentration) to be observed.

Rocky Fork at Longview Ave. had concentrations of total dichlorodiphenyltrichloroethane (DDT) and PCB between threshold and probable effect levels, but similar to results for metals, they showed a considerable decline compared to 1993. Again, the AK Steel facility is the suspected source of these contaminants.

Jerome Fork at County Rd. 1302 below the City of Ashland (05040002 06) had low levels of phthalate and PAHs detected. These compounds are commonly detected in urban areas because PAHs are a by-product of incomplete combustion of fossil fuels (i.e., automobile exhaust) and phthalates are an additive used to soften plastics. The total DDT concentration was between threshold and probable effect levels. This compound was widely used to control mosquito populations until it was banned in the United States in 1973, but it is extremely persistent in the environment.

Black Fork at State Rt. 95 above the Village of Perrysville (05040002 08) had a total PCB concentration between threshold and probable effect levels. This result was unexpected, but it is suspected that the material was flushed out of the Rocky Fork, where PCB contamination is known to exist.

## B2 Recreation Use Attainment

Bacteria criteria were impaired at most locations sampled in 2007 and 2008. Bear Run had the highest geometric mean of all locations. Figure B-2 shows sites sampled and their attainment statuses. Table B-3 shows sampled sites and the attainment status for each site.

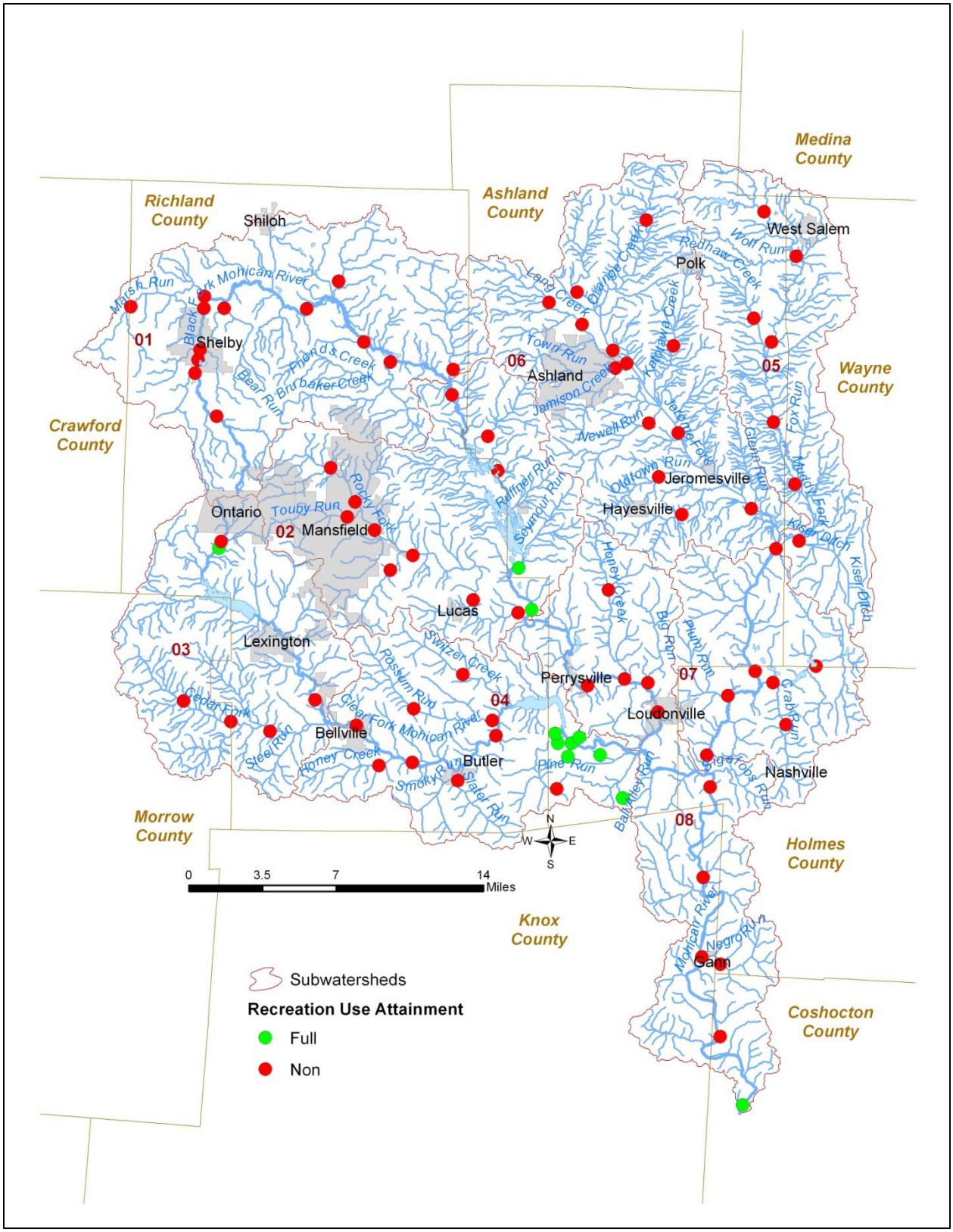



**Figure B-2. Recreation use attainment in the Mohican River watershed.**

**Table B-3. Recreation use attainment in the Mohican River watershed.**

| Nested Subwatershed (05040002) | Site Location | River Mile | Attainment Status |
|---|---|---|---|
| 01 01 | Marsh Run at CR 58, London West Rd. | 4.55 | Non |
| 01 01 | Marsh Run at Shelby water intake from Bistline Rd. | 0.13 | Non |
| 01 02 | Black Fork Mohican River at Stivings Rd | 57.72 | Non |
| 01 02 | Black Fork Mohican River at Shelby water intake from Park Ave. | 53.88 | Non |
| 01 02 | Black Fork Mohican River at CR 58, London West Rd. | 51.32 | Non |
| 01 02 | Tuby Run at mouth | 0.01 | Non |
| 01 02 | Tributary to Black Fork (RM 54.46) at SR 61 | 0.08 | Non |
| 01 02 | Bear Run at CR 58, London West Rd. | 0.48 | Non |
| 01 03 | Brubaker Creek at TR 230, Eby Rd. | 0.3 | Non |
| 01 04 | Whetstone Creek at TR 86, Vantilburg Rd | 0.69 | Non |
| 01 05 | Black Fork Mohican River at CR 207, Ganges Five Points Rd. | 43.4 | Non |
| 01 05 | Black Fork Mohican River adjacent to Geisinger Rd. RM 37.5 | 36.55 | Non |
| 01 05 | Shipp Creek at SR 603 | 0.95 | Non |
| 02 01 | Black Fork Mohican River at TR 89, Charles Rd. | 29.67 | Non |
| 02 01 | Black Fork Mohican River at CR 92, Crider Rd., downstream from I-71 | 23.3 | Non |
| 02 01 | Tributary to Black Fork (RM 25.16) at SR 603 | 1.6 | Non |
| 02 03 | Rocky Fork Mohican River at CR 215, Bowman Rd., upstream from tributaries | 16.43 | Non |
| 02 03 | Rocky Fork Mohican River at Longview Ave | 14.23 | Non |
| 02 03 | Touby Run at Bowman St | 1 | Non |
| 02 04 | Rocky Fork Mohican River at SR 39 | 12.49 | Non |
| 02 04 | Rocky Fork Mohican River at SR 39, downstream from Mansfield WWTP | 10.13 | Non |
| 02 04 | Rocky Fork Mohican River at TR 355, Smart Rd. (south) | 4.38 | Non |
| 02 04 | Rocky Fork Mohican River at TR 431, Applegate Rd. | 0.57 | Non |
| 02 04 | Tributary to Rocky Fork (RM 10.70) at Mansfield-Lucas Rd. | 1.3 | Non |
| 02 05 | Black Fork Mohican River at Mifflin TR 1265 | 17.81 | Full |
| 02 05 | Black Fork Mohican River at SR 39 | 14.7 | Full |
| 03 01 | Clear Fork Mohican River at Marion Ave SW of Mansfield | | Full |
| 03 02 | Cedar Fork at CR 29, West Point Rd. | 8.25 | Non |
| 03 02 | Cedar Fork at TR 2, Wirick Rd | 5.6 | Non |
| 03 02 | Cedar Fork at SR 546 | 3.25 | Non |
| 03 03 | Clear Fork Mohican River at Lexington-Ontario Rd | | Non |
| 03 03 | Clear Fork Mohican River at TR 348, Ritter Rd., downstream from I-71 | 23.35 | Non |
| 04 01 | Clear Fork Mohican River at SR 13 | 19.83 | Non |
| 04 01 | Clear Fork Mohican River at TR 392, Cutnaw Rd. | 16.17 | Non |
| 04 01 | Honey Creek at TR 404, Durbin Rd | 0.8 | Non |
| 04 02 | Opossum Run at CR 398, Rhinehart Rd | 4.57 | Non |
| 04 02 | Opossum Run at SR 95 | 0.35 | Non |
| 04 03 | Clear Fork Mohican River at CR 350, Bunker Hill Rd. | 10.55 | Non |
| 04 03 | Slater Run at SR 97, Cleveland St | 0.82 | Non |
| 04 04 | Tributary to Pine Run (RM 1.63) adjacent to TR 799 | | Full |
| 04 04 | Pine Run at CR 3275, McGurdy Rd | 5.71 | Non |
| 04 05 | Clear Fork Mohican River at Forest Rd. | 4.03 | Full |
| 04 05 | Tributary to Clear Fork (RM 4.10) upstream from covered bridge | | Full |
| 04 05 | Tributary to Clear Fork (RM 4.00) downstream from covered bridge | | Full |

| Nested Subwatershed (05040002) | Site Location | River Mile | Attainment Status |
|---|---|---|---|
| 04 05 | Tributary to Horsetail Run (RM 0.92) adjacent to Park Rd. off SR 97 | | Full |
| 04 05 | Unnamed tributary to Big Lyons Falls to Clear Fork (RM 4.53) | | Full |
| 04 05 | Unnamed tributary to Little Lyons Falls to Clear Fork (RM 4.67) | | Full |
| 04 05 | Switzer Creek at Moffet Rd. (TR 371) | | Non |
| 05 01 | Muddy Fork Mohican River at Jackson TR 101 | 23.29 | Non |
| 05 01 | Muddy Fork Mohican River at Fleming Rd. | 18.37 | Non |
| 05 02 | Muddy Fork Mohican River at Martin Rd. | 13.43 | Non |
| 05 02 | Redhaw Creek at Jackson TR 133 | 2.54 | Non |
| 05 03 | Muddy Fork Mohican River at TR 1550, Hiner Rd. | 8.2 | Non |
| 05 03 | Muddy Fork Mohican River at Plain TR 16, Funk Rd | 4.3 | Non |
| 05 03 | Kiser Ditch at SR 95 | 0.38 | Non |
| 06 01 | Lang Creek at TR 1006 from US 250 | 5.26 | Non |
| 06 01 | Lang Creek at TR 1104 | 3.15 | Non |
| 06 01 | Jamison Creek at CR 1302 | 0.3 | Non |
| 06 02 | Orange Creek at CR 620 | 6.32 | Non |
| 06 02 | Leidigh Mill Creek at Driveway from SR 511 | 1.91 | Non |
| 06 03 | Katotawa Creek at TR 1275 | 3.49 | Non |
| 06 04 | Oldtown Run at CR 1802 | 4.31 | Non |
| 06 04 | Quaker Springs Run at CR 2000 | 1.97 | Non |
| 06 05 | Jerome Fork at US 42 | 12.98 | Non |
| 06 05 | Jerome Fork at CR 1302, downstream from Ashland WWTP via Lang Ck | 12.08 | Non |
| 06 05 | Jerome Fork at TR 1600 | 7.9 | Non |
| 06 05 | Newell Run at TR 655 | 1 | Non |
| 06 06 | Jerome Fork at CR 175 | 2.56 | Non |
| 07 01 | Odell Lake Outlet at SR 226 | 3.03 | Non |
| 07 01 | Odell Lake Outlet at SR 179 | 0.59 | Non |
| 07 01 | Crab Run at Washington TR 473 | 2.17 | Non |
| 07 02 | Lake Fork at SR 95 | 14.04 | Non |
| 07 02 | Lake Fork at SR 3 | 7.43 | Non |
| 07 03 | Lake Fork at Washington TR 451 | 0.95 | Non |
| 07 03 | Plum Run at CR 22 | 0.13 | Non |
| 08 01 | Honey Creek at CR 2175 | 5.19 | Non |
| 08 01 | Honey Creek at CR 775 | 0.11 | Non |
| 08 02 | Black Fork Mohican River at SR 39, downstream from Perrysville WWTP | 6.9 | Non |
| 08 03 | Black Fork Mohican River at SR 39, Loudonville | 2.53 | Non |
| 08 03 | Big Run at CR 775 | 0.19 | Non |
| 08 05 | Negro Run at driveway from US 62, downstream from tributary | 1.04 | Non |
| LRAU | Mohican River at SR 715, MWCD Mohawk Area | 0.47 | Full |
| LRAU | Mohican River at TR 211, downstream from Lake Fork | 22.54 | Non |
| LRAU | Mohican River at SR 514, Nashville Rd. | 16.4 | Non |
| LRAU | Mohican River at Canal St., downstream from Brinkhaven dam | 11.66 | Non |
| LRAU | Mohican River at TR 365, upstream from Flat Run, Cavallo Station | 6.53 | Non |

## B3 Public Drinking Water Supply Use Attainment

Shelby and Mansfield obtain public drinking water from surface water supplies, as shown in Table B-4. The drinking water supply for Mansfield is fully supporting the use; there were insufficient data to assess use support for the other two nested subwatersheds.

**Table B-4. Public drinking water supply use attainment in the Mohican River watershed.**

| Community | Stream | Nitrate Status | Atrazine Status | Impairment (Y/N) |
|---|---|---|---|---|
| *Marsh Run (05040002 01 01)* | | | | |
| Shelby | Marsh Run Creek | Watch List | Insufficient data | Insufficient data |
| *Headwaters Black Fork Mohican River (05040002 01 02)* | | | | |
| Shelby | Black Fork Mohican River | Insufficient data | Insufficient data | Insufficient data |
| *Headwaters Clear Fork Mohican River (05040002 03 01)* | | | | |
| Mansfield | Clear Fork Mohican River | Full support | Full support | No |

## B4 Human Health Use Attainment

Fish tissue samples were collected in Jerome Fork Mohican River, Black Fork Mohican River, Rocky Fork Mohican River, Clear Fork Mohican River and the Mohican River mainstem. Use support was analyzed in nested subwatersheds in which fish tissue data were collected, as shown in Table B-5.

**Table B-5. Human health use (fish tissue contaminants) attainment in the Mohican River watershed.**

| Waters Sampled | Impairment (Y/N) | Pollutants (Concentration) |
|---|---|---|
| *Headwaters Black Fork Mohican River (05040002 01 02)* | | |
| Black Fork Mohican River | Insufficient data | |
| *Village of Pavonia-Black Fork Mohican River (05040002 02 01)* | | |
| Black Fork Mohican River | Yes | Historical data (not specified) |
| *Seymour Run-Black Fork (05040002 02 02)* | | |
| Black Fork Mohican River | No | |
| *Headwaters Rocky Fork (05040002 02 03)* | | |
| Rocky Fork Mohican River | Yes | Historical data (not specified) |
| *Outlet Rocky Fork (05040002 02 04)* | | |
| Rocky Fork Mohican River | Yes | Historical data (not specified) |
| *Charles Mill-Black Fork Mohican River (05040002 02 05)* | | |
| Black Fork Mohican River | Yes | Historical data (not specified) |
| *Headwaters Clear Fork Mohican River (05040002 03 01)* | | |
| Clear Fork Reservoir | Yes | PCBs (67 ppb) |
| *Switzer Creek-Clear Fork Mohican River (05040002 04 05)* | | |
| Pleasant Hill Lake | Yes | PCBs (74 ppb) |
| *Jerome Fork-Mohican River (05040002 06 05)* | | |
| Jerome Fork | Insufficient data | |
| *Town of Perrysville-Black Fork Mohican River (05040002 08 02)* | | |
| Black Fork Mohican River | Insufficient data | |
| *Big Run-Black Fork Mohican River (05040002 08 03)* | | |
| Black Fork Mohican River | Insufficient data | |
| *Mohican River (Large River Assessment Unit)* | | |
| Mohican River | Yes | PCBs (139 ppb) |