

Chapter 2

Water Quality Conditions in Mahoning and Trumbull Counties

Water can indicate the health of a watershed's ecosystem by studying and identifying the organisms found within it and it can summarize the land use activities within a watershed when analyzed for contaminants and their sources. This chapter highlights current water quality conditions of the water courses in the watersheds of Mahoning and Trumbull Counties. Information presented in this chapter was drawn from official water quality reports, community plans, and watershed action plans.

2.1 Clean Water Act Applications and Reporting

The Clean Water Act (CWA) contains a comprehensive reporting program protecting the Nation's valuable water resources. Sections 305 (b) and 303 (d) of the CWA, required states to create summaries of surface water conditions (305(b) reports) and develop a list of water bodies not meeting state water quality standards (303(d) list). The 305(b) report was to be a routine check on improvements states were making towards the CWA's goals. To address impaired waters listed in the 303(d) document, the state creates measures to improve conditions via the development of total maximum daily loads (TMDLs), water quality specific permitting, and nonpoint source pollution control measures.

Under Federal guidance, the Ohio EPA developed a watershed based method of reporting, "Integrated Water Quality Monitoring and Assessment Report" (Integrated Report). This new reporting method, combines the 305 (b) water quality reports with the 303 (d) list of impaired waters, satisfying CWA reporting requirements for both Section 303 (b) and Section 303 (d). Beginning in 2002, the Integrated Report summarizes the water quality conditions using a watershed's 12-digit Hydrologic Unit Code (HUC).

2.2 Ohio Water Quality Standards

Since the passage of the 1972 Federal Water Pollution Control Act, the Ohio EPA has seen substantial improvement in the overall water quality of its inland streams and rivers. Driven by the growing concern for ecosystem stability, Ohio's water quality standards are based on a set of criteria concentrating on beneficial use designations and biological indices found in Ohio Administrative Code (OAC) section [3745-1-07](#).

Beneficial use designations are based on how humans use a water system and how well the water system is able to nourish a dependent biological community. The designations are made up of two broad groups: Non-Aquatic Life Habitat and Aquatic Life Habitat.

2.2.1 Non-Aquatic Life Habitat

Non-Aquatic Life Habitat uses are broken down into two categories¹:

1. Water Supply:

- **Public Water Supply (PWS)** are waters that, with conventional treatment, are suitable for human consumption and meet federal regulations for drinking water;
- **Agricultural Water Supply (AWS)** are waters that are suitable for irrigation and livestock watering without treatment;
- **Industrial Water Supply (IWS)** are those waters suitable for commercial and industrial uses, with or without treatment.

2. Recreation (uses in effect only during the recreation seasons, May 1st through October 15th):

- **Bathing Waters (BW)** are waters suitable for swimming where lifeguard and/or bathhouse facilities are present, and include any additional areas where water quality is approved by the director;
- **Primary Contact Recreation (PCR)** are waters suitable for full-body contact recreation such as, but not limited to, swimming, canoeing, and scuba diving; and
- **Secondary Contact Recreation (SCR)** includes those waters suitable for partial body contact recreations such as, but not limited to, wading.

¹ Ohio EPA Division of Surface Water, OAC Chapters 3745-1-07.

Under the CWA, an antidegradation rule is required and must be a part of the State's Water Quality Standards. Antidegradation refers to provisions that must be followed before authorizing any increased activity on a water body that may result in a lowering of water quality, including an increase in the discharge of a regulated pollutant, or activities that may significantly alter the physical habitat. This rule establishes a procedure to determine that a discharge is necessary before authorizing it and, along with water quality criteria and beneficial use designations, provides the overall structure of the water quality standards program. The antidegradation rule must protect the existing use of the water body, and only allow a lowering of water quality when it is necessary to support important social and economic development. The state has established procedures and requirements to ensure that the concepts outlined by the federal regulations are met. These requirements include public participation activities, intergovernmental coordination, determination of important social and economic development, and alternative analysis and greater protection for exceptional quality streams. Under the antidegradation rule, rivers were categorized as General High Quality Waters, Superior High Quality Waters, Outstanding State Waters, or Outstanding National Resource Waters. General High Quality Waters are category 2 or 3 wetlands in accordance with Ohio EPA rule 3745-1-54 of the OAC and surface waters not categorized as one of the following three categories:

- **Superior High Quality Waters** are water systems having exceptional ecological values. Ecological values are based upon the combination of the presence of federal and/or state threatened or endangered species and a high level of biological integrity;
- **Outstanding State Waters** are water systems having special significance to the state due to exceptional ecological and/or recreational values; and
- **Outstanding National Resource Waters** are water systems having a national ecological or recreational significance. National ecological significance may include providing habitat for populations of federal endangered or threatened species or displaying some unique combination of biological characteristics.

National recreation significance may include designation in the national wild and scenic river system.

The Ohio EPA lists all designated Superior and Outstanding State Waters in OAC Section 3745-1-05, Tables 5-4 through 5-7. Mill Creek, a waterway that traverses through Mahoning County's largest Metropolitan Park, is recognized as a General High Quality Water because it is not found within the Superior High Quality Waters, Outstanding State Waters, or Outstanding National Resource Waters tables located in OAC 3745-1-05 (Tables 5-4 through 5-7). According to Table 5-4, Baughman Creek, a tributary to the Grand River in Trumbull County, is listed as a Superior High Quality Water. A portion of the Grand River in Ashtabula County is designated as an Outstanding State Water based on exceptional ecological value (Table 5-5). Though this segment is not located within Eastgate's planning area, it is important to note the segment is located downstream of Trumbull County. Therefore, any activity within Trumbull County's stretch of the Grand River poses a threat to the outstanding portion of the river.

2.2.2 Aquatic Life Habitat

Complimenting the Non-Aquatic Life Habitat category are Aquatic Life Habitat use designations. These designations are broken down into five categories defined by the Ohio Water Quality Standards that apply to Northeast Ohio. The following is a summary of each category²:

- **Warmwater Habitat (WWH)** – these are waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms;
- **Exceptional Warmwater Habitat (EWH)** – these waters can support and maintain an exceptional or unusual community of aquatic organisms characterized by a high diversity of species, especially by those who are highly intolerant and/or rare, threatened, endangered, or of a special status (i.e. declining species);

² Complete, legal definitions of each Aquatic Life Habitat use designation are found in OAC Section 3745-1-07.

- **Coldwater Habitat (CWH)** – these waters support cold water organisms and/or those which are stocked with salmonids with the intent to facilitate a put-and-take fishery on a year-round basis;
- **Modified Warmwater Habitat (MWH)** – waters in this category have been found to be incapable of supporting and maintaining a balanced, integrated, adaptive community of warmwater organisms due to extensive modifications of the physical habitat; and
- **Limited Resource Water (LRW)** – are small water systems with drainage areas less than 3 square (sq.) miles that have been irretrievably altered to the extent that no aquatic life can be supported. The Ohio EPA will apply this designation to streams having “natural background conditions” which often preclude other types of biology from being present.

Embedded within the Ohio EPA’s Water Quality Standards are tables summarizing Ohio’s water quality and categories on a drainage basin level. Each drainage basin table includes surveyed water body segments, a life use designation (Aquatic and Non-Aquatic), water supply, and a recreation use summary. According to the tables for the Grand River, Little Beaver Creek, and the Mahoning River (includes the Pymatuning drainage basin) drainage basins (OAC 3745-1-10, 3745-1-15, 3745-1-25 respectively), the water segments surveyed all have a non-aquatic use designation of both industrial and agricultural water supplies with primary contact recreation. All assessed river and stream segments located within the Mahoning and Trumbull County portions of the Grand River, Pymatuning, Mahoning River, and Little Beaver Creek Watersheds have Warmwater Habitat aquatic life use designations, apart from a Grand River stream segment located in Farmington Township, Trumbull County. An Exceptional Warmwater Habitat designation was assigned to that segment of the Grand River.

2.2.3 Attainment Designation

Aquatic Life beneficial use designations were designed to protect aquatic life in our water bodies. When assessing stream health, biological indices are used to measure current biological communities compared to expectations for its assigned use designation. Those biological indices include the Index of Biological Integrity (IBI), Modified Index of Well-being

(MIwb), and the Invertebrate Community Index (ICI). Attainment of the stream's use designation, i.e. WWH, is based on a measurement of the current biological community by means of the indices, and is assigned one of the following:

- **Full Attainment** – all three indices meet applicable criteria specified by Ohio water quality standards;
- **Partial Attainment** – at least one of the indices does not attain and biological community performance is fair; and
- **Non-Attainment** – all indices fail to attain, or any index indicates poor or very poor performance.

Table 2-1 TMDL Reports and Supporting Documents

Biological and Water Quality Study of the Mahoning River Basin . Ashtabula, Columbiana, Portage, Mahoning, Stark and Trumbull Counties, Ohio, Lawrence and Mercer Counties, Pennsylvania., May 1996.
Biological and Water Quality Study of the Grand and Ashtabula River Basins , including Arcola Creek, Cowles Creek and Conneaut Creek . Ashtabula, Geauga, Lake and Trumbull Counties, Ohio. January 1997.
Biological and Water Quality Study of the Mahoning River and Hines Run . Mahoning River Corridor of Opportunity, CASTLO Property, 2002. Mahoning County, Ohio. December 2002.
Biological and Water Quality Study of the Mahoning River , Mahoning River Corridor of Opportunity, Former Youngstown Sheet and Tube - Campbell Works Coke Plant, 2003. Mahoning County, Ohio. December 2003.
Biological and Water Quality Study of the Mahoning River and Yellow Creek , 2006. Mahoning County, Ohio. November 2006.
Biological and Water Quality Survey of the Mahoning River near Thomas Steel Strip Corporation in Warren. Trumbull County, Ohio. October 2007.
2008 Study Plan for the Pymatuning/Yankee/Little Yankee Watersheds, HUCs 0503010201, 0503010203, and 0503010206 (Ashtabula and Trumbull Counties, Ohio)
Biological and Water Quality Study of the upper Mahoning River and Selected Tributaries , 2006. Columbiana, Mahoning, Portage, Stark and Trumbull Counties, Ohio. November 2008
Biological and Water Quality Study of Crab Creek, 2008. Mahoning County, Ohio. October, 2008
Biological and Water Quality Study of the Upper Grand River Watershed , 2007. Ashtabula, Geauga, Portage and Trumbull Counties, Ohio.
Biological and Water Quality Study of the Lower Mahoning River and Selected Tributaries, 2015