

OKI Stream Database Glossary

Introduction

The OKI Stream Database Glossary is one of four products compiled by the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) to provide user-friendly access to a wide variety of information on surface water resources in the OKI region. The three related products are:

- the OKI Stream Database, which is a comprehensive spreadsheet on the watersheds of Butler, Clermont, Hamilton and Warren counties, Ohio
- a geographic information system (GIS) map of rivers, streams, watersheds and wastewater treatment plants in OKI's four Ohio counties as well Boone, Campbell and Kenton counties in Kentucky and Dearborn County in Indiana
- a Stream Database Guide, which addresses the terminology and concepts found in the OKI Stream Database spreadsheet

This glossary is designed for use with the GIS map and associated attribute tables, but also can add to the understanding of the OKI Stream Database spreadsheet. As a compilation of reliable sources, the spreadsheet consists largely of information culled from the *Ohio 2010 Integrated Water Quality Monitoring and Assessment Report*, a biennial document prepared by the Ohio EPA in compliance with Sections 303(d) and 305(b) of the Clean Water Act.

The GIS map and attribute tables are regional in scope, but rely heavily on two nationwide data sources: (1) National Hydrography Dataset, and (2) Watershed Boundary Dataset.

Glossary

305 (b) and 303 (d) Assessment Categories

Assessment categories are assigned by state environmental agencies and reflect U.S. EPA guidance for assessment under Section 305 (b) and listing under 303 (d) of the Clean Water Act. The 303 (d) list keeps track of rivers and streams that do not satisfy water quality standards. These impaired waters violate the standards even after point sources of pollution have installed the minimum required levels of pollution control technology. The 305 (b) assessment process determines which waters are assigned to the 303 (d) list, which in turn serves as a tool for prioritizing impaired waters for Total Maximum Daily Load (TMDL) studies.

The attainment or non-attainment of water quality standards for designated beneficial uses largely determines which assessment category is assigned to a waterway or its watershed. Three types of beneficial uses are designated for surface waters: aquatic life, recreation, and water supply. Rivers and streams are periodically monitored for parameters that indicate whether the surface waters are attaining water quality standards for their designated beneficial uses.

The following chart shows assessment categories and subcategories for Ohio. It is based on U.S. EPA guidance and bears similarities, but not exact duplication, of assessment categories and subcategories in

Kentucky and Indiana. When a stream, river or watershed is assigned to category 5 for any of its beneficial uses, it is placed on the 303 (d) list.

Table A-1. Category definitions for the 2010 Integrated Report and 303(d) list.

Category ¹		Subcategory	
0	No waters currently utilized for water supply		
1	Use attaining	h	Historical data
		x	Retained from 2008 IR
2	Not applicable in new (2010) Ohio system		
3	Use attainment unknown	h	Historical data
		i	Insufficient data
		x	Retained from 2008 IR
4	Impaired; TMDL not needed	A	TMDL complete
		B	Other required control measures will result in attainment of use
		C	Not a pollutant
		h	Historical data
		n	Natural causes and sources
		x	Retained from 2008 IR
5	Impaired; TMDL needed	M	Mercury
		h	Historical data
		x	Retained from 2008 IR

¹ Shading indicates categories defined by U.S. EPA; additional categories and subcategories are defined by Ohio EPA.

On the OKI Stream Database GIS map, 305 (b) and 303 (d) assessment categories are relevant to the Watersheds Layer and Large River Assessment Units Layer.

Agricultural Water Supply (AWS)– See Beneficial Use

Antidegradation

Ohio’s Antidegradation Rule is rule 3745-1-05 of the Ohio Administrative Code (OAC), which describes the conditions under which state permits may be issued for treated discharges that may lower the water quality in receiving rivers and streams. The rule divides Ohio’s surface waters among the following antidegradation categories:

1. General high quality waters

These are wetlands categorized as category 2 or 3 in accordance with OAC rule 3745-1-54 and other surface waters that are not specifically categorized as limited quality waters, superior high quality waters, outstanding state waters, or outstanding national resource waters.

2. Superior high quality waters

These are surface waters that possess exceptional ecological values and have been categorized as such by paragraph (E) of the Antidegradation Rule. Except as provided below, exceptional ecological values shall be based upon the presence of threatened or endangered species and a high level of biological integrity. The following factors shall be considered in determining exceptional ecological

value: providing habitat for Ohio or federal endangered species; providing habitat for Ohio threatened species; harboring stable populations of a declining fish species that coincide with the presence of suitable habitat for that species, or that coincide with an essential migration path between areas of suitable habitat for that species; and displaying a level of biological integrity equivalent to the exceptional warmwater habitat index of biotic integrity or invertebrate community index criteria values listed in OAC rule 3745-1-07.

Water bodies that exhibit a pattern of biological integrity equivalent to the Index of Biotic Integrity and, where applicable, Invertebrate Community Index scores of 56 or greater at most sites are characteristic of a near pristine aquatic habitat. Such waters, as well as other ecologically unique water bodies that have essentially undisturbed native faunas, but for which the biological criteria in OAC rule 3745-1-07 rule do not apply, may be considered as possessing exceptional ecological values without the presence of threatened or endangered species.

3. Outstanding state waters

These are waters that have special significance for the state because of their exceptional ecological values or exceptional recreational values, and that have been so categorized pursuant to paragraph (E) of the Antidegradation Rule. To qualify on the basis of exceptional ecological values they must meet the qualifications for superior high quality waters and be further distinguished as being demonstratively among the best waters of the state from an ecological perspective. To qualify on the basis of exceptional recreational values they must provide outstanding or unique opportunities for recreational boating, fishing or other personal enjoyment.

4. Outstanding national resource waters

These are surface waters that have a national ecological or recreational significance, and that have been so categorized pursuant to paragraph (E) of the Antidegradation Rule. National ecological significance (see OAC rule 3745-1-05 4) may include providing habitat for populations of federal endangered or threatened species or displaying some unique combination of biological characteristics in addition to those factors listed in paragraph (A)(10)(b) of this rule. National recreational significance may include designation in the national wild and scenic river system.

5. Limited quality waters

These are wetlands categorized as category 1 in accordance with OAC rule 3745-1-54 and other surface waters of the state specifically designated in OAC rules 3745-1-08 to 3745-1-30 as limited resource water, nuisance prevention, limited warmwater habitat, or modified warmwater habitat.

On the OKI Stream Database GIS map, antidegradation categories are relevant to the Streams Layer.

Aquatic Life Use – See Beneficial Use

Average Daily Flow

This is the monitored average daily flow of effluent discharged from a wastewater treatment pla

Beneficial Use

In Ohio, beneficial uses are described in paragraph B of Ohio Administrative Code rule 3745-1-07. Every stream or river in Ohio should have at least one beneficial use designated for aquatic life, recreation and water supply. Ohio's beneficial uses are described further in the table below:

1. Aquatic Life Habitat:		
WWH:	Warmwater Habitat	Waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the twenty-fifth percentile of the identified reference sites within their respective ecoregion.
EWH:	Exceptional Warmwater Habitat	Waters capable of supporting and maintaining an exceptional or unusual community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the seventy-fifth percentile of the identified reference sites on a statewide basis.
MWH:	Modified Warmwater Habitat	Waters that have been the subject of a use attainability analysis and have been found to be incapable of supporting and maintaining a balanced, integrated, adaptive community of warmwater organisms due to irretrievable modifications of the physical habitat.
SSH:	Seasonal Salmonid Habitat	Rivers, streams and embayments capable of supporting the passage of salmonids from October to May and are water bodies large enough to support recreational fishing. This use will be in effect the months of October to May.
CWH:	Coldwater Habitat	Waters which support trout stocking and management under the auspices of the Ohio Department of Natural Resources, Division of Wildlife, excluding waters in lake run stocking programs, lake or reservoir stocking programs, experimental or trial stocking programs, and put and take programs on waters without, or without the potential restoration of, natural coldwater attributes of temperature and flow. Or: Waters capable of supporting populations of native coldwater fish and associated vertebrate and invertebrate organisms and plants on an annual basis.
LRW:	Limited Resource Water	Waters that have been the subject of a use attainability analysis and have been found to lack the potential for any resemblance of any other aquatic life habitat.
2. Water Supply:		
PWS:	Public Water Supply	Waters that have been the subject of a use attainability analysis and have been found to lack the potential for any resemblance of any other aquatic life habitat.
AWS:	Agricultural Water Supply	Waters suitable for irrigation and livestock watering without treatment.
IWS:	Industrial Water Supply	Waters suitable for commercial and industrial uses, with or without treatment.
3. Recreation		
BW:	Bathing Water	Waters that, during the recreation season, are heavily used for swimming.
PCR:	Primary Contact Recreation	Waters that, during the recreation season, are suitable for one or more full-body contact recreation activities such as, but not limited to, wading, swimming, boating, water skiing, canoeing, kayaking, and scuba diving.
SCR:	Secondary Contact Recreation	Waters that result in minimal exposure potential to water borne pathogens because the waters are: rarely used for water based recreation such as, but not limited to, wading; situated in remote, sparsely populated areas; have restricted access points; and have insufficient depth to provide full body immersion, thereby greatly limiting the potential for water based recreation activities

All recreation and aquatic life uses are assessed by the Ohio EPA, but the only water supply use assessed is public drinking water. Ohio EPA also conducts a human health assessment, which is based on the level of selected contaminants found in fish species that are consumed by people. Human health is not listed in Ohio's administrative code as a beneficial use but the Ohio EPA analyzes fish tissue samples for six types of contaminants, including mercury and polychlorinated biphenyls (PCBs).

More information on beneficial uses can be found on the Ohio EPA website for Ohio Administrative Code rule 3745-1 at: http://www.epa.state.oh.us/dsw/rules/3745_1.aspx

Note: When visiting Ohio EPA's website you may notice that the Primary Contact Recreation use is split into three classes. This is a recent development, so the classifications are still being assigned to Ohio streams. The OKI Stream Database should report these classifications when they become available.

On the OKI Stream Database GIS map, beneficial use is relevant to the Streams Layer, Watersheds Layer and Large River Assessment Units Layer.

Cause of impairment

The Ohio EPA defines a cause of impairment as the most prominent "agent" deemed responsible for the observed aquatic life use impairment in a river or stream. A cause of impairment answers the question: *How does the impairment express itself in a river or stream?* Causes of impairment are important to Ohio EPA because the *Ohio 2010 Integrated Water Quality Monitoring and Assessment Report* states: "Causes will be the initial focus of restoration activities or TMDL (total maximum daily load) development within the watershed."

On the OKI Stream Database GIS map, cause of impairment is relevant to the Watersheds Layer and the Large River Assessment Units Layer.

Coldwater Habitat (CWH)– See Beneficial Use

Design Capacity

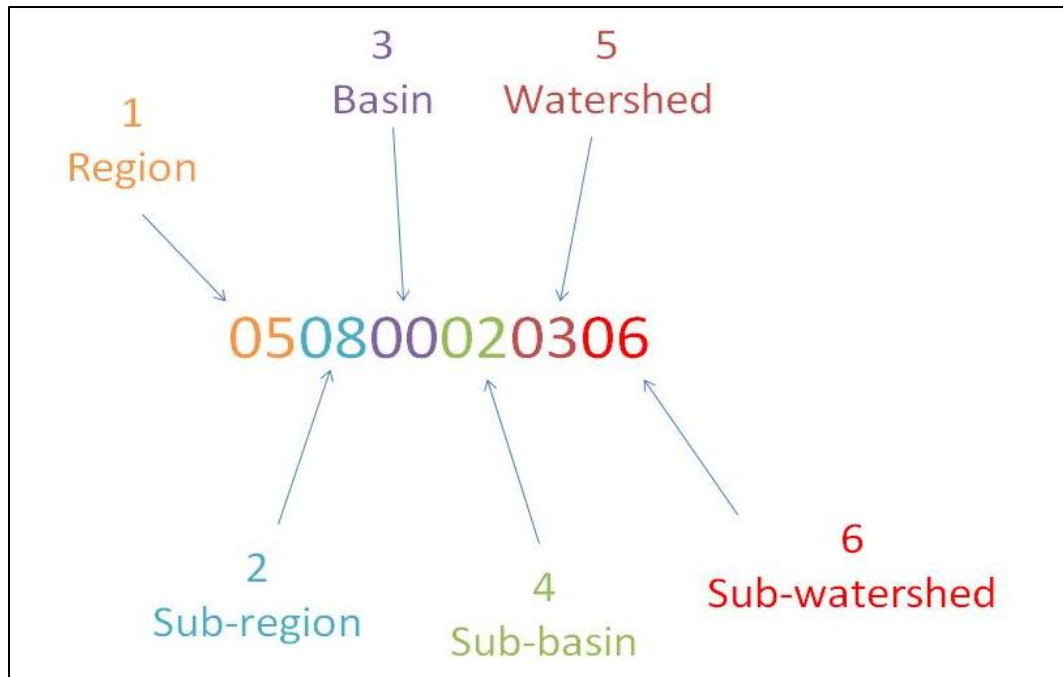
This is the maximum amount of sewage that a wastewater treatment plant is designed to treat in a day.

Exceptional Warmwater Habitat (EWH) – See Beneficial Use

Hydrologic Unit Code (HUC)

Hydrologic Unit Codes (HUCs) are a systematic method of naming every watershed or drainage basin in the United States. HUC watershed boundaries define areas that are drained by streams or rivers, and typically follow topographic features such as ridge lines. There are six levels of HUC watersheds based on size and partitioning. Each HUC watershed is assigned a series of two-digit codes that make up an entire Hydrologic Unit Code. The first two digits represent the largest watershed, the next two digits

represent a smaller division of that watershed, and so on. If a set of digits consists of only zeros, then that level is considered to be equivalent to the level above it. A sample code is illustrated below:



Level 1

Level 1 consists of major geographic regions, of which there are 21. These regions contain the drainage area of a major river, or series of rivers.

Level 2

Level 2 consists of sub-regions which are sub-divisions of the first level. Sub-regions can be the area drained by a river system, a reach of a river and its tributaries, a closed basin, or a group of streams forming a coastal drainage area.

Level 3

Level 3 consists of basins that sub-divide or are equivalent to the sub-regions. These basins used to be called accounting units, and are sometimes referred to as such. Notice the occurrence of a double zero. As stated before, this indicates that the basin in this case is identical to the sub-region.

Level 4

Level 4 areas are called sub-basins or cataloging units, and consist of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature.

Level 5

Level 5 watersheds range between 40,000 and 250,000 acres.

Level 6

This is the smallest level, and is similar to level 5 except that it is smaller. These can be considered sub-watersheds, and they are typically 10,000 to 40,000 acres.

The OKI Stream Database and associated GIS map use the level six, 12-digit sub-watershed codes to organize data. They are commonly referred to as HUC 12 watersheds, denoting the number of digits in their Hydrologic Unit Codes. Ohio EPA also relies on HUC 12 watersheds to assess the water quality of surface waters and surrounding drainage areas throughout the state.

Additional information can also be found at:

<http://water.usgs.gov/GIS/huc.html>

<http://imnh.isu.edu/digitalatlas/hydr/huc/huctxt.htm>

On the OKI Stream Database GIS map, Hydrologic Unit Code is relevant the Watersheds Layer.

Human Health (HH) – See Beneficial Use

Industrial Water Supply (IWS)– See Beneficial Use

Large River Assessment Unit (LRAU)

The 12-digit watersheds reported on by the Ohio EPA exclude any sections of what are considered large river main stems. These waters are reported separately in Ohio as Large River Assessment Units (LRAUs). These units consist of 25- to 45-mile sections of river.

Each large river unit is assigned a 12-digit Hydrologic Unit Code (HUC) that resembles the HUC codes for watersheds. Any 12-digit code that has a 90 as its fifth level is considered a Large River Assessment Unit. LRAU codes are in no way part of the HUC system. Ohio EPA assigns them for convenience. Information in the LRAU Layer is very similar to information in the Watershed Layer.

Large River Assessment Units comprise a layer on the OKI Stream Database GIS map.

Modified Warmwater Habitat (MWH)– See Beneficial Use

National Pollution Discharge Elimination System (NPDES)

The National Pollution Discharge Elimination System (NPDES) is a provision of the Clean Water Act, which prohibits the discharge of pollutants into waters of the United States unless a special permit is issued by the U.S. EPA or a state environmental agency. Each permit is identified with a unique number. The Wastewater Treatment Plant Layer contains NPDES and plant information for all major and some minor public sewage treatment facilities in the OKI region.

Active NPDES permits in Ohio can be found at: http://www.epa.ohio.gov/dsw/permits/npdes_info.aspx. For wastewater treatment plants in Kentucky and Indiana, NPDES permits can be obtained from the Kentucky Division of Water and the Indiana Department of Environmental Management.

On the OKI Stream Database GIS map, the National Pollution Discharge Elimination System is relevant to the Wastewater Treatment Plants Layer.

Outstanding State Water (OSW) – See Antidegradation

Primary Contact Recreation (PCR)– See Beneficial Use

Public Water Supply (PWS)– See Beneficial Use

Public Water Supply Nitrate Watch List

The Public Water Supply Nitrate Watch List indicates source waters where water quality is impacted by nitrate levels, but not enough to be considered impaired. This occurs when a single detection of greater than 8 mg/L of nitrate is found in a watershed or Large River Assessment Unit.

On the OKI Stream Database GIS map, the Public Water Supply Nitrate Watch List is relevant to the Watersheds Layer and the Large River Assessment Units Layer.

Public Water Supply Pesticide Watch List

The Pesticide Watch List indicates source waters where water quality is impacted by pesticide levels, but not enough to be considered impaired. This occurs when a maximum instantaneous value is greater than four times the appropriate Water Quality Criteria is found for a particular pesticide, or the running quarterly average is greater than the Water Quality Criteria for a particular pesticide.

On the OKI Stream Database GIS map, the Public Water Supply Nitrate Watch List is relevant to the Watersheds Layer and the Large River Assessment Units Layer.

Recreational Use– See Beneficial Use

Secondary Contact Recreation (SCR)– See Beneficial Use

Source of Impairment

A source of impairment indicates nearby activity creating the cause of impairment. More specifically, the source of impairment is where the most prominent agent of impairment originates. It addresses the question: *Where does the impairment come from?*

On the OKI Stream Database GIS map, source of impairment is relevant to the Watersheds Layer and Large River Assessment Units Layer.

State Resource Water (SRW) – See Antidegradation

Stewardship Organization

Stewardship organizations are the variety of groups and agencies involved in local water quality and water conservation efforts. A column in the OKI Stream Database names the stewardship organizations

that are most closely tied to associated watersheds. A database Stewardship Table provides links to the organization websites.

On the OKI Stream Database GIS map, Stewardship Organization is relevant to the Watersheds Layer and the Large River Assessment Units Layer.

Superior High Quality Water (SHQW) – See Antidegradation

Total Maximum Daily Load (TMDL)

A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet state water quality standards. The Ohio EPA's TMDL Program focuses on identifying and restoring impaired or threatened water bodies.

Under section 303(d) of the Clean Water Act, states are required to develop lists of impaired waters that are too polluted or otherwise degraded to meet the state's water quality standards. The federal law requires that states establish priority rankings for the impaired waters and develop Total Maximum Daily Loads (TMDLs) for these waters.

A watershed with a TMDL in progress should be in one of these phases: Assessment Phase, Load Analysis Phase, Nearing Completion, Some Implementation Proceeding, and Final Report Approved by U.S. EPA and Being Implemented. If a TMDL is not in progress but one is required, the state is expected to say when the TMDL process should begin. For more information, go to the following websites:

<http://www.epa.ohio.gov/dsw/tmdl/index.aspx#Ohio%27s%20303%28d%29%20List%20and%20Schedule>
<http://www.epa.gov/waterscience/standards/rules/303.htm>

On the OKI Stream Database GIS map, Total Maximum Daily Load (TMDL) is relevant to the Watersheds Layer and the Large River Assessment Units Layer.

Watershed Action Plan (WAP) Status

A watershed action plan (WAP) describes the issues associated with a watershed, and sets goals to address these issues. These plans are created on a local community scale, with an emphasis on intercommunity cooperation within the watershed. The Ohio EPA says the WAP "is an itemization of the problems, priorities and activities the local watershed group would like to address." (*A Guide to Developing Local Watershed Action Plans in Ohio* (Ohio EPA, Division of Surface Water, 1997) The U.S. EPA uses the terminology of watershed management plan, which "defines and addresses existing or future water quality problems from both point sources and nonpoint sources of pollutants." (*Handbook for Developing Watershed Plans to Restore and Protect Our Waters*, U.S. EPA, Office of Water, 2008)

Watershed action plans must be submitted to the state for review, and then must obtain state endorsement. The watershed action plans in the region are listed in the OKI Stream Database along

with their endorsement status, and are hyperlinked to an Ohio Department of Natural Resources ftp site where copies of the plans can be downloaded.

The following describes how Watershed Action Plan (WAP) status is defined:

1. **Full State Endorsement:**

The WAP has undergone review by Ohio Department of Natural Resources (ODNR), Ohio Environmental Protection Agency (Ohio EPA), Ohio State University Extension, and other state officials as warranted, and all agree that the WAP has been developed according to Ohio EPA's *A Guide to Developing Local Watershed Action Plans in Ohio*, including Appendix 8, and meets the U.S. EPA Nonpoint Source Program and Grants Guidelines for States and Territories. In short, the inventory is thorough, the scope is comprehensive, and actions are measurable, geographically and temporally specific, and will address identified water quality problems. The watershed entity receives an endorsement letter signed by the chiefs of ODNR Division of Soil and Water Conservation (DSWC) and Ohio EPA Division of Surface Water (DSW).

2. **Conditional Endorsement:**

Until recently, "conditional endorsement" was applied as a single designation and included WAPs that were either partially endorsable or close to full endorsement. Those WAPs classified with one of the following designations are considered "conditionally endorsed" for the purpose of grant or program eligibility. Both categories of conditional endorsement are intended to be temporary, and may be revoked with insufficient progress toward full endorsement.

A. **Full Endorsement Pending:**

State reviewers agree that the WAP is close to achieving Full Endorsement in that the inventory is generally complete, the scope is sufficiently comprehensive, and most actions are measurable and closely related to identified water quality problems. Comments may be numerous yet relatively minor, and reviewers anticipate comments can be addressed in a relatively short timeframe. The watershed entity will receive a letter stating, "full endorsement is pending" (previously "conditional endorsement") with comments and suggested revisions from DSWC and DSW staff. When re-submitted, the WAP will NOT undergo a fresh review. Instead, previous reviewers will check whether revisions have satisfactorily addressed concerns as expressed in the comment letter.

B. **Partial Endorsement:**

The WAP is not comprehensive in addressing all major causes and sources of water quality impairment, or sections of the plan do not meet requirements related to specificity and measurable outcomes. However, a portion of the plan does merit Full State Endorsement criteria. The watershed entity will receive a letter signed by DSWC and DSW staff granting "partial endorsement" (previously "conditional endorsement") specifying the portions of the plan meeting full endorsement criteria, e.g., one or more specific sub-watersheds. The letter will also include

comments and instructions for revising the plan in order to achieve full state endorsement. Partial Endorsement may necessitate a fresh review of the WAP, or portions therein, depending on the extensiveness of additions or revisions needed.

3. **No Endorsement**

The WAP does not meet criteria for State Endorsement. The extensiveness or content of comments suggest that the WAP's planning process or the WAP document itself requires fundamental improvement.

On the OKI Stream Database GIS map, Watershed Action Planning (WAP) Status is relevant to the Watersheds Layer.

Water Supply Uses– See Beneficial Use

Warmwater Habitat (WWH)– See Beneficial Use