



Stream Length with Any Other Impairment

This EnviroAtlas national map displays the kilometers of streams, coasts, and canals within each 12-digit hydrologic unit (HUC) that are impaired by any cause not included in the other impaired waters maps for 2015–2016. The causes include PCBs; salinity; habitat alterations; dioxins; total toxics; toxic inorganics; ammonia; toxic organics; flow alterations; oil and grease; taste, color, or odor; trash; biotoxins; radiation; chlorine; cause unknown; or other cause.

Why are impaired streams important?

Stream impairments can be due to a variety of causes, including chemical pollutants, physical conditions such as siltation, or biological contaminants such as bacteria. This map shows streams that are impaired by any cause not included in other EnviroAtlas impaired streams maps. These impairments can harm human health, impact domestic and industrial water supplies, reduce biodiversity, and lessen the recreational and aesthetic value of waterways.

Some impairments in this map are caused by contaminants like toxic chemicals, grease, or trash. These can come from [non-point sources](#)—usually stormwater runoff from cities and farms—or [point sources](#). Contaminants may be released accidentally, or enter waterways when waste is stored or disposed of improperly. Sources include industrial facilities, pesticide use, power plants, leaking landfills, wastewater treatment plants, mines, automobile emissions, runoff from roads, or hazardous waste sites. The most common source in this data layer, polychlorinated biphenyls (PCBs), are toxic industrial chemical compounds that were banned in the 1970s but still persist in sediments. Dioxins, another long lasting contaminant, are produced by burning trash or as byproducts from manufacturing. Both PCBs and dioxins accumulate in fish that can harm people when eaten. Another common cause included in this map is salts from human activities like road de-icing, fertilizers, wastewater, mining or drilling, and irrigation. Saltwater from the ocean can also intrude into groundwater in coastal areas. Most freshwater plants cannot tolerate high levels of salt, and salinity can make water unusable for drinking or irrigation. This map also includes many less common contaminants, such as ammonia, [biotoxins](#), oil and grease, chlorine, radiation, and trash.

Other impairments are the result of changes to the structure of streams that disrupt habitat and change water temperatures. Habitat alterations are one of the most commonly reported



Photo: Trash from Anacostia River, G. Bausmith, U.S. EPA

causes in this map. Removing vegetation, dredging and straightening streams, replacing stream banks with concrete, or installing walls can destroy habitat, increase temperatures and pollutant loads, increase flashiness (response to storms), and change water table levels. Dams can impede fish migration and spawning. Flow reduction is caused by withdrawing water for irrigation, domestic, or industrial use, or impounding water for dams. Flow reduction reduces oxygen levels, raises water temperatures, and concentrates pollution and sediments. Habitat changes reduce the numbers and diversity of aquatic species.

Waterways can also be impaired for taste, color, and odor. This does not always mean the water is unsafe to use for drinking, swimming, or fishing, but it can indicate that pollutants are present. It also makes drinking water unpleasant for users and discourages people from using water for recreation.

Section 303(d) of the Clean Water Act requires states to identify impaired waters—waters that do not support state-designated uses, such as fishing, irrigation, industrial uses, or drinking water supply, due to pollution or other impairments. States must establish a [Total Maximum Daily Load \(TMDL\)](#), which caps the amount of each pollutant allowed in the water body based on its use.

How can I use this information?

The map, Stream Length with Any Other Impairment, provides information about the length of streams or other waters with impairments in a 12-digit HUC. Information

about the extent and causes of impairments could guide projects for improving water quality or inform decisions about how best to protect water resources.

Users can view this information along with other EnviroAtlas layers, such as impervious surface and riparian buffers, to identify possible sources of impairments and potential remediation strategies. The map can be combined with layers on recreation or domestic water consumption to show how impairments relate to water use. This map can be compared with the stream length layer to find out what percent of stream length in a HUC is impaired.

How were the data for this map created?

The May 1, 2015 303(d) Listed Impaired Waters National Hydrography Dataset (NHD) Indexed Dataset was obtained from the EPA's [WATERS](#) Geospatial Data Downloads web page. This dataset includes features based on [NHDPlusV2](#) flowlines and a table listing impaired waters. The impairment causes were summarized into broad categories. For this layer, all causes not included in other EnviroAtlas impaired streams maps were selected. The flowline features were split where they crossed 12-digit HUC boundaries, and the lengths of all waters impaired by other sources were summed for each 12-digit HUC.

What are the limitations of these data?

All national data layers, such as the 303(d) Listed Impaired Waters NHD Indexed Dataset, are inherently imperfect; they are an estimation of the truth based on the best available science. Calculations based on these data are therefore also estimations and the mapped data should be used to inform further investigation. Periodic updates to EnviroAtlas will reflect improvements to nationally available data.

Selected Publications

Bunn, S.E., and A.H. Arthington. 2002. [Basic principles and ecological consequences of altered flow regimes for aquatic biodiversity](#). *Environmental Management* 30:492–507.

Kaushal, S.S., P.M. Groffman, G.E. Likens, K.T. Bell, W.P. Stack, V.R. Kelly, L.E. Band, and G.T. Fisher. 2005. [Increased salinization of fresh water in the northeastern United States](#). *Proceedings of the National Academy of Sciences of the United States of America* 102:13517–13520.

Postel, S.L., and B.H. Thompson. 2005. [Watershed protection: Capturing the benefits of nature's water supply services](#). *Natural Resources Forum* 29:98–108.

U.S. Environmental Protection Agency. 2012. [Summaries of Water Pollution Reporting Categories](#). United States Environmental Protection Agency, Office of Water, Watershed Branch. Accessed April 2021.

U.S. Environmental Protection Agency. 2017. [Introduction to the Clean Water Act](#). U.S. Environmental Protection Agency - Watershed Academy Web. Accessed April 2021.

Walsh, C. J., A. H. Roy, J. W. Feminella, P. Cottingham, P.W. Groffman, and R.P. Morgan II. 2005. [The urban stream syndrome: current knowledge and the search for a cure](#). *Journal of the North American Benthological Society* 24:706–723.

Weber, R., C. Gaus, M. Tyskland, et al. 2008. [Dioxin- and POP-contaminated sites—contemporary and future relevance and challenges](#). *Environmental Science and Pollution Research* 15:363–393.

This layer only represents waters on a state's approved 303(d) list. It does not include waters that have an approved TMDL in place, are expected to attain water quality standards, or have not yet been added to the 303(d) Listed Impaired Waters NHDPlus Indexed Dataset. The extent of monitoring and the methods used vary from state to state. Because the total lengths of waters in a 12-digit HUC may vary, this information should be considered in conjunction with data on stream density and total lengths of streams and coastlines to better understand the extent of impairment in a HUC. Accuracy information for the source data sets can be found on their respective web sites.

How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. The dataset used to calculate the impairment counts, which provides greater detail on specific water bodies and the causes and sources of impairment, can be found on EPA's [WATERS](#) Geospatial Data Downloads website.

Where can I get more information?

There are numerous resources on water quality and impairment; a selection is listed below. The EPA Office of Water provides information on [Section 303\(d\)](#) of the Clean Water Act. For additional information on how the data were created, access the [metadata](#) for the data layer from the layer list drop down menu on the interactive map. To ask specific questions about this data layer, please contact the [EnviroAtlas Team](#).

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