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## Welcome!

The mission of the Pennsylvania Department of Environmental Protection (DEP) is to protect Pennsylvania's air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. We will work as partners with individuals, organizations, governments and businesses to prevent pollution and restore our natural resources.

Please scroll down to view the Integrated Report, or use the top and side menus to jump to a topic. If problems are encountered while viewing content, please try opening the website using another web browser.

Disclaimer: The information contained in this report is based on the data contained in DEP information systems and reports at the time of publication. Most information pertains to the biennial reporting period (October 1, 2015 to September 30, 2017); however, some information may cover longer periods of record. Some datasets may be incomplete due to DEP's jurisdictional restrictions.

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PURPOSE


### PURPOSE

This report is the twenty-fourth in a series of reports prepared for [Clean Water Act \(CWA\)](#) Section 303(d) listing, and Section 305(b) reporting, which goes to the United States Environmental Protection Agency (EPA) for approval.

The narrative that follows contains the data and results used to satisfy the requirements of Sections 303(d) and 305(b). This report covers the current status of Pennsylvania's waters and summarizes various programs in place to protect and improve water quality.

Although reporting for the CWA has a long history, this is the first time an Integrated Report has been created in an entirely interactive format. This offers the ability to convey tremendous amounts of information, but in a way that is much easier to understand. DEP hopes that this will greatly increase transparency and public understanding of the programs in place to protect our waters. Click [here](#) to discover more DEP interactive websites, mapping applications, and story maps.

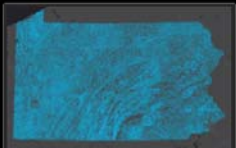


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WATERS

### PENNSYLVANIA WATER RESOURCES

Pennsylvania is a water rich state with approximately 86,000 miles of streams and rivers connecting over 500,000 acres of lakes, bays, and wetlands. Protection of these waters and the groundwater below is a daunting, but vital mission.



View Pennsylvania Streams and Rivers



View Pennsylvania Lakes, Bays, and Wetlands

### Atlas of Surface Waters in Pennsylvania

State Population	12,787,209*
State Surface Area (square miles)	45,333
Number of Water Basins (major basins)	6
Total Miles of Rivers and Streams	86,349*
Number of Significant, Publicly Owned Lakes (subset)	228
Acres of Significant, Publicly Owned Lakes (subset)	99,654
Square Miles of Delaware Estuary	17
Square Miles of Presque Isle Bay	6
Miles of Great Lakes Shore	63**
Acres of Freshwater Wetlands	376,473
Acres of Tidal Wetlands	56

\* 2015 US Census estimate  
 \*\* Lake Erie- Fourteen miles comprise the Presque Isle Peninsula.  
 \* DEP estimate based on 1:24,000 scale National Hydrography Dataset (NHD) stream coverage, which may change as the NHD is quality assured and corrected.

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**PROTECTED USES AND CATEGORIES**

USES AND CATEGORIES As part of the obligation to protect Pennsylvania's waters, DEP conducts use (e.g., Aquatic Life, Water Supply, Recreation and Fishing, etc.) assessments. For more information on Pennsylvania's protected uses see § 93.3 protected water uses.

When uses are assessed, the determination falls into one of several categories, shown to the right. Category 5 (and Salt) is the "list" of impaired waters that EPA officially approves, but in the process of developing this list, a full status of waters is created to satisfy Sections 305(b) and 314 reporting requirements. It is the integration of these requirements that creates the structure and function of DEP's Integrated Report.

DEP also produces a list of changes that were made from the previous (2016) Integrated Report. Click below to see a list of these changes.

[DEP'S 2016 to 2018 LISTING CHANGES](#)

CATEGORY 1
CATEGORY 2
<b>DESCRIPTION:</b> Waters where some, but not all uses are met. Attainment status of the remaining designated uses may be unknown because data are insufficient to categorize the water or it may be impaired.
<a href="#">Map of Category 2 Waters</a> <a href="#">View and Print Category 2 Waters</a>
CATEGORY 3
CATEGORY 4a
CATEGORY 4b
CATEGORY 4c
CATEGORY 5
CATEGORY 5alt

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303(d)

**SECTION 303(d) OF THE CWA REQUIRES STATES TO LIST THE IMPAIRED WATERS THAT REQUIRE THE DEVELOPMENT OF A TMDL, AND DESCRIBE THE DATA USED TO MAKE DECISIONS**

SUNRISE ON THE UPPER DELAWARE RIVER

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**LISTING DATA**

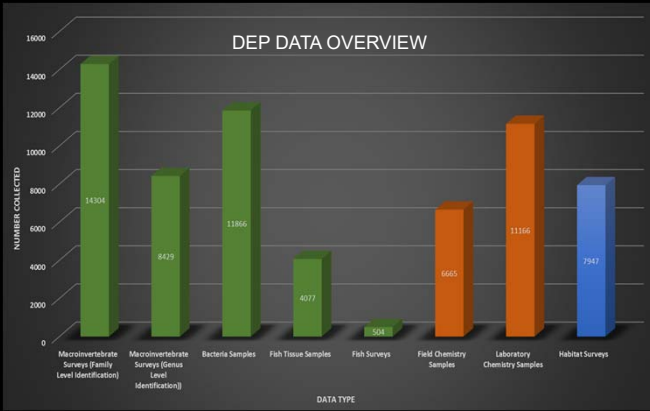
Just like Pennsylvania's waters, the datasets used to create this report are extensive. Most data used to build this report originate from DEP's [data collection protocols](#) and [assessment methods](#). Combined with a comprehensive assessment plan, these protocols and methods allow DEP to make sound decisions regarding water quality. Click below to see DEP's comprehensive monitoring and assessment plan.

[DEP'S COMPREHENSIVE ASSESSMENT PLAN](#)

DEP also readily accepts all outside datasets. By using a set of acceptance tiers, DEP ensures that all data are used according to their purpose and level of quality assurance. Click below to see DEP's data acceptance policy and the data solicitation report.

[DEP'S TIERED DATA ACCEPTANCE POLICY](#)

[DEP'S DATA SOLICITATION REPORT](#)



DATA TYPE	NUMBER COLLECTED
Macroinvertebrate Surveys (Family Level Identification)	14304
Macroinvertebrate Surveys (Genus Level Identification)	8429
Bacteria Samples	11866
Fish Tissue Samples	4077
Fish Surveys	5048
Field Chemistry Samples	6665
Laboratory Chemistry Samples	11154
Habitat Surveys	7941

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**EPA REQUESTED INFORMATION**

As part of 303(d), EPA may request additional information to support decisions states make. For 2018, EPA has requested additional information on the following topic:

**SUSQUEHANNA RIVER ASSESSMENTS**

DEP remains committed to continuing work on the Susquehanna River, and has created a [story map](#) detailing water quality concerns and the extensive work being conducted on the river. More information can also be viewed on [DEP's Susquehanna Updates page](#). This extensive work has lead to Aquatic Life Use assessment determinations on major portions of the river for 2018. Detailed information can be found in the Susquehanna River report, below. Use the map on the right to view the sections of the Susquehanna River that have been assessed for various protected Uses.

[SUSQUEHANNA RIVER REPORT](#)



View Susquehanna River Assessments

**SMALLMOUTH BASS UPDATE**

In cooperation with the Pennsylvania Fish and Boat Commissions (PFBC), DEP and PA Sea Grant funded a study to evaluate the effects of Largemouth Bass Virus (LMBV) on Smallmouth Bass. The [final report](#) suggests that LMBV was likely the leading cause of population declines in the Susquehanna River basin. Fortunately, [PFBC sampling data](#) shows recent population recovery within areas of concern.

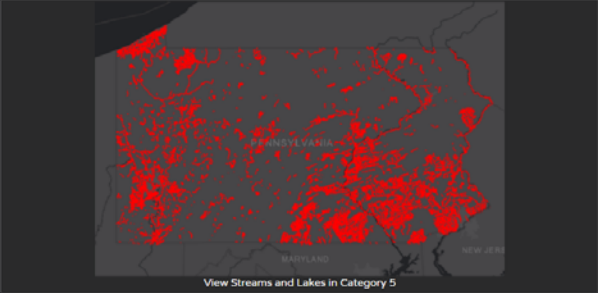
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303(d) - CATEGORY 5

303(d) CATEGORY 5

Additionally, Section 303(d) is the list of impaired waters that require the development of a TMDL (Category 5). Once a TMDL is created these waters will be placed in Category 4a until water quality standards are achieved.

Starting in 2016, DEP created an [Integrated Report Viewer](#) that allows users to view the status of waters under all categories. This has significantly increased the usability and transparency of this report; however, users may still download the table in the Uses and Categories section of this report. Click on the map to the right to view all category 5 waters.



View Streams and Lakes in Category 5

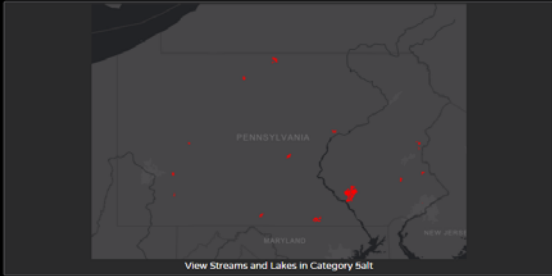
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303(d) - CATEGORY 5alt

303(d) CATEGORY 5alt

A recent addition to the listing categories is 5alt, otherwise known as restoration alternatives. This category was first created during the 2016 Integrated Report. Category 5alt is a list of waters across Pennsylvania where the implementation of restoration activities will begin immediately without developing a TMDL. These are watersheds that have implementation places and active public engagement. The goal of category 5alt is to restore water quality before TMDLs are implemented, which brings possible advantages to the regulated community. However, restoration alternatives do not replace the need for a TMDL. If water quality standards are not achieved within a reasonable amount of time using restoration alternatives, then a TMDL will be completed.

Click on the map to the right to view category 5alt waters. Category 5alt may also be downloaded as a table in the Uses and Categories section of this report.



View Streams and Lakes in Category 5alt

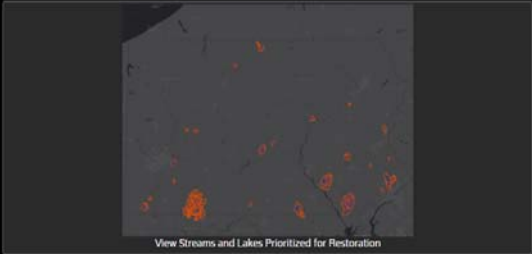
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**303(d) RESTORATION PRIORITIZATION**

As part of Section 303(d), states are required to set prioritization ranking for impaired waterbodies. DEP conforms with this requirement by creating a list of waterbodies that are identified as restoration priorities. For more information on how waters are selected as restoration priorities, DEP has created a [restoration prioritization strategy](#).

Click on the map to the right to view the current set of restoration priorities. These priorities, along with cause(s) of impairment, may also be viewed in table format below:

[RESTORATION PRIORITIES TABLE](#)

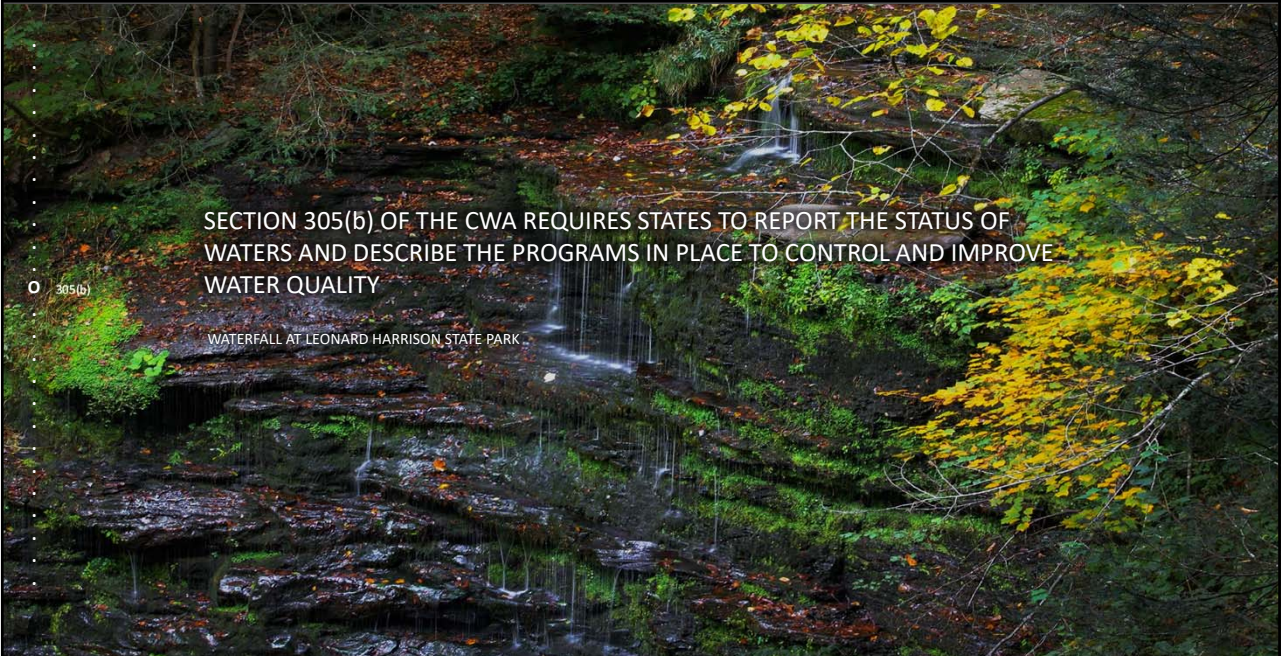


View Streams and Lakes Prioritized for Restoration

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**SECTION 305(b) OF THE CWA REQUIRES STATES TO REPORT THE STATUS OF WATERS AND DESCRIBE THE PROGRAMS IN PLACE TO CONTROL AND IMPROVE WATER QUALITY**

WATERFALL AT LEONARD HARRISON STATE PARK



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### STREAM ASSESSMENT STATUS

The current status of Pennsylvania streams and the amount assessed varies based on the use. All Wadeable streams have been assessed at least once for Aquatic Life and are currently on the second round of assessment. DEP continues to work towards 100% assessment of all uses. Click on the charts to the right to see the leading sources and causes of impairment across the state.

**STREAM ASSESSMENTS** Macroinvertebrates currently serve as the primary data source for Aquatic Life assessments across Pennsylvania. Consequently, much of Pennsylvania has been assessed for Aquatic Life using thousands of macroinvertebrate samples. Click on the link below to learn more about DEP's macroinvertebrate dataset and how it's used to measure water quality in streams.

[MACROINVERTEBRATE STORY MAP](#)

Use	Attaining (%)	Impaired (%)	Unassessed (%)
Fish Consumption	~10	~5	~85
Recreation	~15	~10	~75
Water Supply	~95	~5	~0
Aquatic Life	~80	~15	~5

Status Descriptions

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### LAKE ASSESSMENT STATUS

As part of Section 305(b), Section 314 of the CWA requires states to report on the status of significant publicly owned lakes. DEP's definition of a significant publicly owned lake is a waterbody with public access and a hydraulic residence time of 14 days or more. To meet this reporting goal, DEP employs several [lake data collection methods](#) and uses those methods to create assessment determinations for various Uses. View the chart to the right to see the current assessment status of uses on significant publicly owned lakes.

**LAKE ASSESSMENTS** DEP along with its partners assesses other lakes that are not considered publicly owned or significant. Currently, 523 lakes totaling 123,008 acres have assessments for at least one of four uses. Please visit the [Integrated Report Viewer](#) to view the assessment status of these additional lakes.

Use	Attaining (%)	Impaired (%)	Unassessed (%)
Fish Consumption	~10	~5	~85
Recreation	~15	~10	~75
Water Supply	~95	~5	~0
Aquatic Life	~80	~15	~5

Status Descriptions

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### LAKE TROPHIC STATUS

As part of the Section 305(b) reporting, Section 314 requires states to report the trophic status of significant publicly owned lakes. DEP bases overall lake trophic status on average seasonal values of phosphorus, Secchi depth, and chlorophyll-a. These values are used to calculate the Carlson's Trophic State Index (TSI) for each parameter. TSI scores of 40 and below indicate oligotrophic (not productive) conditions, scores between 40 and 50 indicate mesotrophic (moderately productive) conditions, scores between 50 and 65 indicate eutrophic (productive) conditions, and scores greater than 65 indicate hypereutrophic (excessively productive) conditions.

LAKE TROPHIC STATUS Click on the map below to see trophic status of each significant publicly owned lake.

View Trophic Status of Significant Publicly Owned Lakes

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### GROUNDWATER STATUS

The Legacy Ambient and Fixed Station Network Groundwater Quality Monitoring Program began in the mid-1980s to characterize general background and assess changes in groundwater quality in the state. Because of resource constraints, monitoring efforts have been limited since the late 1990s and only ~11% of the state had been monitored. Under a joint funding agreement with DEP in 2005, the United States Geological Survey (USGS) conducted a larger groundwater survey. Over 24,000 wells were included in the project. For more information and to access the full report, please visit the USGS [reports webpage](#). Through this work, several sources of groundwater contamination have been identified and prioritized. More information is located in the [Sources of Groundwater Contamination and Prioritization Document](#).

GROUNDWATER A new project was initiated in 2014 to sample at select stations throughout the state on a regular basis. This effort is referred to as the "Expanded" (or "Statewide") Ambient and Fixed Station Network Groundwater Quality Monitoring Program to distinguish it from the original "Legacy" effort. From this information, DEP has begun to better understand the status of groundwater in Pennsylvania. Use the map to the right to see the current status of select parameters in Pennsylvania's groundwater from the new, expanded network.

### GROUNDWATER QUALITY LEVELS

Use the dropdown menu to select a parameter of interest.



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**CONTROL PROGRAMS**

DEP has a series of programs in place to control sources of water quality impacts. Click on each program to see an overview of how the program protects water quality, how much the program invests in protecting water, and to visit important links related to that program.

CONTROL PROGRAMS

**NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)**

**MINING**

**PROGRAM OVERVIEW:** DEP's Office of Active and Abandoned Mining Operations is responsible for the policies and implementation of programs that regulate or minimize the impact from the extraction of coal and noncoal (industrial minerals). To control impacts to water, the six District Mining Offices issue NPDES discharge permits for active mining operations. In addition, the offices also issue the General Permit for Stormwater associated with mining activities requiring mining operators to implement best management practices for erosion and sediment control, stabilize all areas where earth disturbance is conducted, and manage post-construction stormwater rate and volume.

**PROGRAM STATISTICS:** Info about the program investment in water quality.

[VIEW AND PRINT FULL PROGRAM DESCRIPTION](#)

**OIL AND GAS**

**SAFE DRINKING WATER**

**RADIATION PROTECTION**

**WETLANDS PROTECTION**

**WATER QUALITY STANDARDS**

**STORAGE TANKS**

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**RESTORATION PROGRAMS**

DEP also has a series of programs in place to restore water quality. Primary funding sources come from the 319 grant (\$1,000,000 annually) and Pennsylvania's Growing Greener funds (\$3,000,000 annually). Click on each program to see an overview of how the program restores water quality and to visit that program's website.

RESTORATION PROGRAMS

**TMDLs**

**RESTORATION ALTERNATIVES**

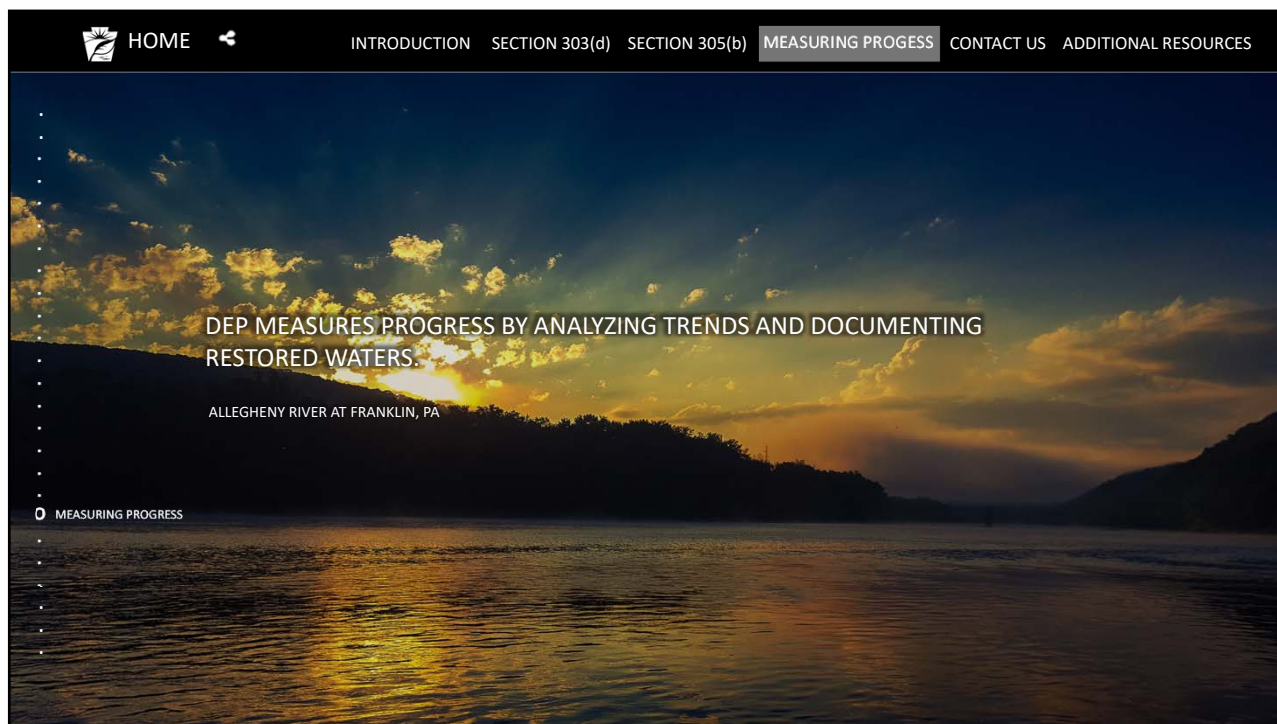
**PROGRAM OVERVIEW:** Beginning with the 2016 Integrated Report, the EPA and states launched a new vision for meeting the goals of CWA Section 303(d). The new vision includes 6 goals: Engagement, Integration, Protection, Prioritization, Alternatives, and Assessment. Detailed information regarding these goals and the new vision are found on the [EPA website](#). To implement the Alternatives portion of the vision, EPA has provided a new tool to achieve water quality standards in the form of Category 5alt. An alternative restoration approach is a near-term plan of actions with a clear schedule and set of milestones. In certain impairment situations, restoration alternatives can be more immediately beneficial or even more feasible to achieving water quality standards. An important aspect of having watersheds selected as restoration alternatives is that they are in areas where state and local governments and watershed groups are actively engaged in activities to restore waters.

[VIEW AND PRINT FULL PROGRAM DESCRIPTION](#)

**GROWING GREENER**

**NONPOINT SOURCE (SECTION 319)**

**ABANDONED MINE LANDS**



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### TRENDS

DEP has sentinel monitoring stations throughout Pennsylvania that are specifically designed record trend data. This monitoring program is called the Water Quality Network (WQN). More information on these stations can be found on DEP's [WQN mapping application](#). From the data collected at these stations, trend reports like the one the Susquehanna River Basin Commission (SRBC) creates for the [Chesapeake Bay](#) are made. A statewide trend report for the 2018 dataset can be viewed below:

**2018 STATEWIDE TREND REPORT**

In previous versions of the Integrated Report it was difficult to provide information on so many sites at one time. Fortunately, this interactive format allows DEP to share trend data much more efficiently. In the map to the right, trend values are normalized by flow and are reported in pounds per acre. This allows sites with different watershed sizes to be compared. This dataset is also available in [tabular format](#).

Beyond Pennsylvania, USGS has created a [national dataset](#) of trends that can be viewed and downloaded through an interactive map.

Select a water quality parameter to see trends in flow normalized yield (lbs/acre).

Total Nitrogen

TRENDS

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**RESTORATION EFFORTS**

DEP manages and tracks restoration efforts throughout Pennsylvania. Two major restoration efforts include stream restoration projects and wetland replacement projects. They reflect the current data DEP has access to through permit tracking systems. Click on the maps to the right to view these efforts. These datasets and other restoration implementations (e.g., MS4 tracking application) are reported through [DEP's Open Data Portal](#).

DEP also partners with outside organizations to restore water quality in lakes. Click below to see the current lake restoration efforts.

[LAKE RESTORATION EFFORTS](#)

[View Stream Restoration Projects](#)

[View Wetland Replacement Projects](#)

RESTORATION EFFORTS

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**RESTORED WATERS**


DEP documents the restoration of waters through a delisting process that is approved by EPA. DEP delistings can consist of removal of one or more causes of impairment, full restoration of water quality standards, or even corrections in previous assessment determinations/delineations. Click below to see DEP's impairment delistings for the 2018 Integrated Report.

[2018 IMPAIRMENT DELISTINGS](#)

Overall, restoring waters to the point they can be removed from the impaired categories (4a, 4b, 4c, 5, and Salt) requires a tremendous amount of resources, dedication, and strong partnerships. Some of DEP's greatest successes have come from treating abandoned mine drainage, which makes up the majority of restored waters to date. Click on the map to the right to see all waters that have been restored to water quality standards.

[View Restored Waterbodies](#)

RESTORED WATERS

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**STAY INFORMED AND PARTICIPATE**


**eComment**  
Public participation for this Integrated Report will be from **May 29<sup>th</sup>, 2018 to July 12<sup>th</sup> 2018**. DEP encourages the public to provide constructive comments during this period. To submit comments, and see comments from other individuals, please visit the eComment tool [here](#). Persons in need of accommodations as provided for in the Americans With Disabilities Act of 1990 should contact DEP's Water Quality Division at 717-787-9637 or through the Pennsylvania AT&T Relay Service at 800-654-5984 (TTD) to discuss how DEP may accommodate their needs.

**eNotice**  
DEP developed an electronic notification system for the public to use to stay up-to-date with many types of environmental topics. This tool is called eNOTICE and you may register to receive free notifications of important actions DEP takes. It's easy. Go [here](#) to register to receive notices that are important to you!

**DEP Newsletter**  
DEP publishes a biweekly newsletter that features information about hot topics, recent actions, regulatory updates, webinars and upcoming events. To subscribe to this free newsletter, click [here](#).

**Contact Us...**  
For questions or assistance please contact the Division of Water Quality at 717-787-9637 or send an email to [RA-WQAssessments@pa.gov](mailto:RA-WQAssessments@pa.gov).

**CONTACT US**

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**COMMENT AND RESPONSE DOCUMENT**

After the public comment period, DEP compiles and responds to the comments provided. The comment/response document is closed during the public participation period (**May 29<sup>th</sup>, 2018 to July 12<sup>th</sup> 2018**). It will be available shortly after the comment period once approved for release. Click the link below to view the comment/response document.

**COMMENT/RESPONSE DOCUMENT**

**COMMENT AND RESPONSE**

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### ADDITIONAL RESOURCES

WEBSITES

Please visit other DEP websites to learn more about how DEP protects water quality and how the public can get involved.

[WATER](#) [EDUCATION](#) [BAY PROGRAM](#) [STORMWATER](#)

SOCIAL MEDIA

Use the share button at the top to share this report with others, and click on the buttons below to follow the latest PA DEP activities.

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ADDITIONAL RESOURCES