Second Report on Point Source Progress in Hypoxia Task Force States

October 2019

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1. INTRODUCTION

1.1 Background

Every summer, a large hypoxic zone forms in the Gulf of Mexico. This zone, in which the amount of dissolved oxygen is too low for many aquatic species to survive, is fueled primarily by excess nutrients, mainly nitrogen and phosphorus, from the Mississippi/Atchafalaya River Basin (MARB). The hypoxic zone is also affected by temperature and by salinity stratification, or layering, of Gulf waters that prevents mixing.

The Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (Hypoxia Task Force or HTF) is a federal, state, and tribal partnership established in 1997 to gain a better understanding of the causes and effects of the northern Gulf of Mexico hypoxic zone and to reduce its size, severity, and duration. HTF members are representatives from five federal agencies (the United States Environmental Protection Agency or U.S. EPA, United States Department of Agriculture, United States Department of Commerce, United States Department of the Interior, and United States Army Corps of Engineers); 12 states (Arkansas, Illinois, Indiana, Iowa, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Ohio, Tennessee, and Wisconsin); and a representative from the National Tribal Water Council.

In 2001, the HTF set a goal, subject to the availability of additional resources, to reduce or make significant progress toward reducing the five-year average areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers (km^2) by 2015. In 2007, the U.S. EPA Science Advisory Board's Hypoxia Advisory Panel estimated that a 45-percent reduction in total nitrogen (TN) and total phosphorus (TP) loads to the Gulf of Mexico would be needed for the HTF to reach its goal.

In 2008, the HTF released an Action Plan in which HTF states committed to developing state strategies for reducing nutrient loads to the Gulf of Mexico and water bodies within the MARB, with strong federal support. These strategies are each state's road map for prioritizing and targeting watersheds that contribute significant amounts of nitrogen and phosphorus to the Gulf and are a vehicle by which to coordinate with partners and stakeholders. The state strategies are complemented by a federal strategy outlining financial, scientific, and technical assistance for achieving the HTF's goal.

In 2015, the HTF committed to retaining its 2001 goal of reducing the areal extent of the hypoxic zone in the Gulf of Mexico to less than 5,000 km^2. Recognizing the enormity of the task of reducing nutrient loads on a subcontinental scale, however, the HTF extended the time for reaching that goal from 2015 to 2035. The HTF adopted an interim target of 20-percent reduction in TN and TP loads by the year 2025 as a milestone toward achieving the final hypoxic zone goal by 2035. As part of its revised Goal Framework, the HTF also committed to regularly tracking progress towards its 2025 interim target and 2035 goal.

1.2 Tracking Point Source Reduction Progress

For point sources, the HTF initially agreed to use two common measures to track progress toward the interim load reduction target: (1) the number of major sewage treatment plants, including publicly owned treatment works (POTWs), issued National Pollutant Discharge Elimination System (NPDES) permits with monitoring requirements for nitrogen and/or phosphorus; and (2) the number of major sewage treatment plants issued NPDES permits with numeric discharge limits for nitrogen and/or

phosphorus. The HTF chose those measures because data and methodology limitations at the time precluded swift adoption of a common approach for directly measuring load reduction.

In February 2016, the HTF released its first Report on Point Source Progress in Hypoxia Task Force States. That report used data as of September 30, 2014, to document that:

- 57 percent of major sewage treatment plants in HTF states monitored levels of both nitrogen and phosphorus;
- 74 percent of the plants monitored the level of at least one of those nutrients;
- 33 percent of the plants had a discharge limit for either nitrogen or phosphorus; and
- 5 percent of the plants had limits for both nutrients.

This second report on point source progress uses data as of September 30, 2017, to document further progress made by HTF states in adopting nutrient monitoring and discharge limits. This report also includes an additional common measure of point source progress that the HTF adopted in 2018, after developing a common reporting methodology: loads of nitrogen and phosphorus discharged by major sewage treatment plants. This new measure is based on 2017 calendar year data.

The HTF continues to examine options for deriving a point source-specific baseline for the 1980–1996 period that the HTF uses to generally measure progress in reducing basinwide nutrient loads. At a minimum, future progress reports will be able to show changes from the 2017 loads documented in this report.

Some of the HTF states use state-specific approaches to making and tracking progress toward reducing point source loads. Many of the states have made additional progress in establishing monitoring and permit limits since the data in this report were compiled shortly after September 30, 2017. In Appendix B, most of the states describe work they are doing to reduce point source nutrient loads beyond the common measures in this report and/or include more recent data on nutrient monitoring and permit limits.

In addition to reporting on point source progress, the HTF tracks progress on reducing loads from nonpoint sources. In May 2018, the HTF issued its first report on nonpoint source measures, which is available at https://www.epa.gov/ms-htf/report-nonpoint-source-progress-hypoxia-task-force-states.

For more information about the HTF, visit the following web pages:

- HTF website at https://www.epa.gov/ms-htf
- HTF 2017 Report to Congress at https://www.epa.gov/ms-htf/hypoxia-task-force-reports-congress

2. Data Sources and Methodology

2.1 Nutrient Monitoring and Permit Limits

To document state progress on establishing nitrogen and phosphorus monitoring requirements and discharge limits at major sewage treatment plants, the HTF uses a common data system, U.S. EPA's Integrated Compliance Information System (ICIS). ICIS retains NPDES permit data that facilities submit to states and U.S. EPA in their monthly Discharge Monitoring Reports (DMRs) (see U.S. EPA's Enforcement and Compliance History Online at https://echo.epa.gov/, the public interface with ICIS). ICIS also contains limit and monitoring requirement records associated with NPDES permits. For more information about states sharing data with U.S. EPA, see the NPDES eReporting web page at https://www.epa.gov/compliance/npdes-ereporting.

For this report, U.S. EPA downloaded nutrient monitoring and limits data from ICIS through September 30, 2017, which is the end of the federal fiscal year and U.S. EPA's deadline for states to complete data entry to ICIS for that federal fiscal year. Those data provide a common baseline for this report.

To obtain the number of NPDES permits with monitoring requirements and discharge limits for nitrogen or phosphorus, U.S. EPA first downloaded the complete list of facilities for each HTF state labeled with Standard Industrial Classification (SIC) Code 4952, Sewerage Systems, as well as facilities with no SIC Code but labeled as POTWs in the Facility Type Indicator field. U.S. EPA then filtered out any "nonmajor" facilities. Generally, a "major" POTW has a design flow of 1.0 million gallons per day (MGD) or more. In aggregate, those facilities typically discharge a very large proportion of the municipal wastewater volume discharged in a state. This effort provided the universe of major municipal sewage treatment and resource recovery facilities in each state.

For this report, U.S. EPA applied an additional geographic filter within state boundaries to include only major sewage treatment plants that discharge to the MARB.[1] Some permitted facilities in Indiana, Ohio, Minnesota, and Wisconsin discharge to the Great Lakes or Hudson Bay watersheds and were thus excluded from the analysis; as were facilities in Louisiana and Mississippi that discharge to the Gulf of Mexico via the Pearl River and other non-MARB rivers.

From the universe of major sewage treatment plants discharging to the MARB, U.S. EPA tallied the number of facilities with discharge monitoring and limits for various forms of nitrogen (excluding ammonia) and phosphorus.[2] Appendix C documents the parameters included in counts of nutrient monitoring and limit requirements. This process mirrors the approach U.S. EPA and the Association of Clean Water Administrators apply to each state nationwide to document major POTWs with nutrient monitoring and limit requirements.

[1] The geographic boundary of MARB was downloaded from the United States Geological Survey at https://water.usgs.gov/GIS/dsdl/ds641_nasqan_wbd12.zip.

[2] Permit authorities generally limit ammonia because of its near-field toxic effect. Ammonia treatment often involves a process that yields other forms of nitrogen, which are then discharged.

2.2 Nutrient Loading

The U.S. EPA ICIS data system also contains data on facility wastewater discharge flows and monitored pollutant concentrations. U.S. EPA has developed a Water Pollutant Loading Tool (Loading Tool) that uses those flow and concentration data to calculate facilities' pollutant discharge loads or, for facilities that do not monitor nitrogen or phosphorus, estimates loads using typical pollutant concentrations and facility discharge flows.[3] In 2012, EPA submitted its draft methodology for estimating nutrient discharges for independent peer review by the USGS. Since then the HTF Point Source Workgroup (Workgroup) worked with the USGS to refine the Loading Tool methodology for using monitoring data to calculate nutrient discharges, and for estimating nutrient loads when monitoring data are not available. The HTF has search pages and methodology in the Loading Tool available at https://echo.epa.gov/trends/loading-tool/everyday-searches. For more information about the methodology the HTF uses, see the Hypoxia Task Force Search Help page at https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help.

In addition to loads from major sewage treatment plants, the Workgroup explored the possibility of including loads from other sources. Tracking loads from facilities in industries that use large volumes of cooling water, such as steam electric power generating stations or petroleum refineries, is confounded by a lack of data on *influent* nutrient loads, making it difficult to distinguish loads that are added from loads that are simply passed through those plants. Once the Workgroup excluded industries using high volumes of cooling water, its analyses showed the remaining industries discharge, in aggregate, much lower loads than major sewage treatment plants. Similarly, minor (smaller) sewage treatment plants contribute insignificant loads compared to major sewage treatment plants. Therefore, to streamline data analysis and verification, this report focuses on nutrient loads from major sewage treatment plants.

2.3 Data Verification and Reconciliation

U.S. EPA worked with the 12 HTF states to compare their NPDES program data to the data in ICIS. In general, state data on monitoring and limits matched the data in ICIS and any discrepancies identified were reconciled.

For this report, the Loading Tool's standard procedure for calculating or estimating facility loads could not be used for some facilities because of limitations (e.g., the Loading Tool accesses discharge data in ICIS only from certain facility outfalls). For those facilities, loads were calculated using appropriate data or estimated values as individually detailed in Appendix A at the end of each state's data as "Notes for values marked with †".

[3] USEPA (United States Environmental Protection Agency). 2018. *Rationale for Re-evaluating the POTW Typical Pollutant Concentrations Used in the Nutrient Model*. Accessed March 2018. https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.

3. Status of HTF States in Reducing Point Source Loads

3.1 Summary Status Report

Tables 1, 2, and 3 provide a snapshot of point source nitrogen and phosphorus monitoring requirements and discharge limits as of September 30, 2017 and loads as of December 31, 2017. Table 1 presents the total number and percentage of major sewage treatment plants discharging to the MARB that monitor discharge for nitrogen and/or phosphorus. Table 2 presents the number and percentage of major sewage treatment plants discharging to the MARB with nitrogen and/or phosphorus discharge limits. Table 3 presents the total annual loads of nitrogen and phosphorus from major sewage treatment plants. Appendix A contains the complete facility-by-facility NPDES permit data used to prepare these summary tables. Some notable findings include the following:

- Across all 12 HTF states, 70 percent of permits for major sewage treatment plants discharging to the MARB included monitoring requirements for both nitrogen and phosphorus, an increase from 56 percent in 2014. Eighty-six percent of the permits for major sewage treatment plants included monitoring requirements for at least one nitrogen or phosphorus parameter, an increase from 71 percent in 2014 (see Figure 1).
- Thirty-two percent of the permits for major sewage treatment plants in HTF states that discharge to the MARB have limits for nitrogen or phosphorus, an increase from 27 percent in 2014; most of those permits have phosphorus limits. Four percent of the permits for major sewage treatment plants include limits for both nitrogen and phosphorus (see Figure 2).
- Based on the methodology and data described in Section 2.2, the 1,199 major sewage treatment plants in HTF states that discharge to the MARB contributed 287,708,571 pounds of nitrogen and 44,972,256 pounds of phosphorus to nutrient loads in the MARB. For context, the United States Geological Survey (USGS) calculates that total MARB nutrient loads to the Gulf in Water Year 2017 were approximately 3,320,000,000 pounds of nitrogen and 314,000,000 pounds of phosphorus (see Figure 3).[4]

Table 1. Number and percentage of major sewage treatment plants discharging to the MARB with nitrogen and/or phosphorus monitoring requirements for monitoring-only purposes or for compliance with a discharge limit

State	Universe # in 2017	Monitoring both N *and* P # in 2017		Monitoring N only # in 2017		Monitoring P only # in 2017		Total permits with nutrient monitoring (N *or* P) # in 2017	
Arkansas	77	55	**71%**	1	**1%**	7	**9%**	63	**82%**
Illinois	213	166	**78%**	5	**2%**	28	**13%**	199	**93%**
Indiana	107	12	**11%**	0	**0%**	92	**86%**	104	**97%**
Iowa	103	90	**87%**	1	**1%**	0	**0%**	91	**88%**
Kentucky	88	81	**92%**	0	**0%**	6	**7%**	87	**99%**

[4] USGS (United States Geological Survey). 2017. *Trends in Annual Water-Quality Loads to the Gulf of Mexico through 2017*. Accessed March 2019. https://nrtwq.usgs.gov/mississippi_loads/#/GULF.

State	Universe # in 2017	Monitoring both N *and* P # in 2017		Monitoring N only # in 2017		Monitoring P only # in 2017		Total permits with nutrient monitoring (N *or* P) # in 2017	
Louisiana	99	26	**26%**	0	**0%**	2	**2%**	28	**28%**
Minnesota	62	56	**90%**	0	**0%**	6	**10%**	62	**100%**
Mississippi	26	24	**92%**	0	**0%**	1	**4%**	25	**96%**
Missouri	123	78	**63%**	3	**2%**	0	**0%**	81	**66%**
Ohio	132	129	**98%**	0	**0%**	0	**0%**	129	**98%**
Tennessee	114	100	**88%**	2	**2%**	1	**1%**	103	**90%**
Wisconsin	55	26	**47%**	0	**0%**	29	**53%**	55	**100%**
Total of 12 States (2014)[a]	1,175	662	**56%**	10	**1%**	167	**14%**	839	**71%**
Total of 12 States (2017)[b]	1,199	843	**70%**	12	**1%**	172	**14%**	1,027	**86%**

Notes: N = nitrogen; P = phosphorus.

[a] Because of limitations in geospatial data at the time, the 2016 report included all major sewage treatment plants in the 12 HTF states. Currently available geospatial data allow this report to show major sewage treatment plants that discharged to the MARB as of September 30, 2014, which reduced the universe of facilities reported.

[b] The difference in the universe of MARB-discharging facilities (1,175 using data as of September 30, 2014, for the 2016 report; 1,199 using data as of September 30, 2017, for this report) primarily reflects increased electronic data reporting and more complete facility data in U.S. EPA's ICIS rather than an increased number of new facilities with permits.

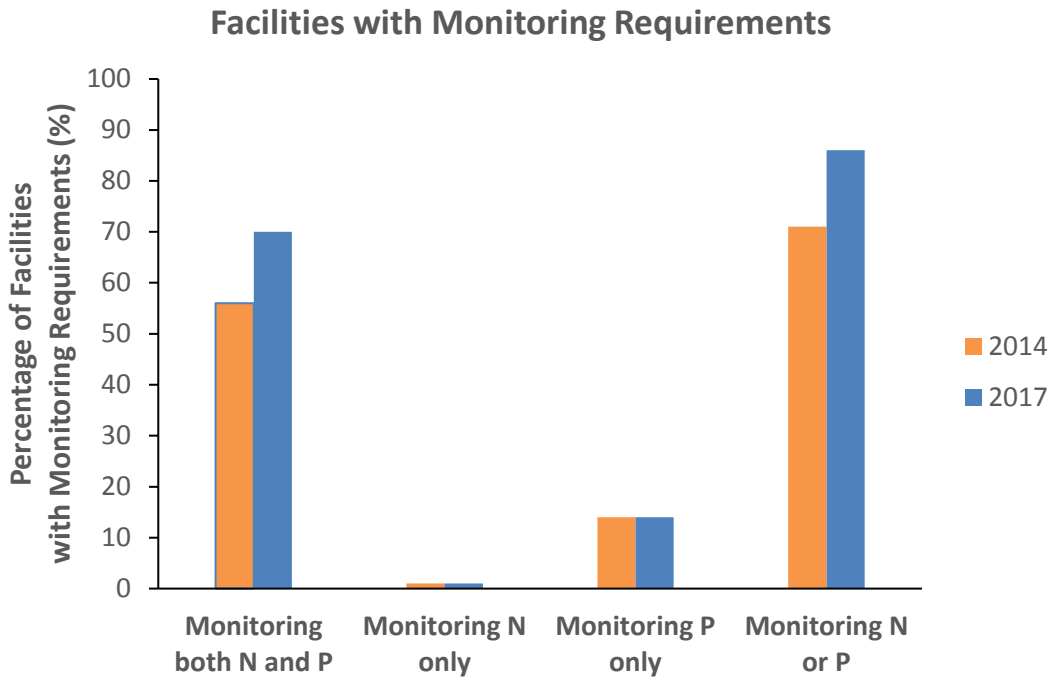


Figure 1. The percentage of major sewage treatment plants with nitrogen (N) and/or phosphorus (P) monitoring requirements, by reporting year.

Table 2. Number and percentage of major sewage treatment plants discharging to the MARB with numeric discharge limits for nitrogen and/or phosphorus

State	Universe # in 2017	Limits both N *and* P # in 2017		Limits N only # in 2017		Limits P only # in 2017		Total permits with nutrient limits (N *or* P) # in 2017	
Arkansas	77	7	**9%**	2	**3%**	9	**12%**	18	**23%**
Illinois	213	0	**0%**	0	**0%**	61	**29%**	61	**29%**
Indiana	107	0	**0%**	0	**0%**	63	**59%**	63	**59%**
Iowa	103	3	**3%**	22	**21%**	2	**2%**	27	**26%**
Kentucky	88	0	**0%**	0	**0%**	27	**31%**	27	**31%**
Louisiana	99	0	**0%**	0	**0%**	0	**0%**	0	**0%**
Minnesota	62	0	**0%**	0	**0%**	49	**79%**	49	**79%**
Mississippi	26	9	**35%**	0	**0%**	0	**0%**	9	**35%**
Missouri	123	0	**0%**	2	**2%**	8	**7%**	10	**8%**
Ohio	132	4	**3%**	0	**0%**	36	**27%**	40	**30%**
Tennessee	114	19	**17%**	1	**1%**	6	**5%**	26	**23%**
Wisconsin	55	0	**0%**	0	**0%**	55	**100%**	55	**100%**
Total of 12 States (2014)[a]	1,175	52	**4%**	10	**1%**	252	**21%**	314	**27%**
Total of 12 States (2017)[b]	1,199	42	**4%**	27	**2%**	316	**26%**	385	**32%**

Notes: N = nitrogen; P = phosphorus.

[a] Because of limitations in geospatial data at the time, the 2016 report included all major sewage treatment plants in the 12 HTF states. Currently available geospatial data allow this report to show major sewage treatment plants that discharged to the MARB as of September 30, 2014, which reduced the universe of facilities reported.

[b] The difference in the universe of MARB-discharging facilities (1,175 using data as of September 30, 2014, for the 2016 report; 1,199 using data as of September 30, 2017, for this report) primarily reflects increased electronic data reporting and more complete facility data in U.S. EPA's ICIS rather than an increased number of new facilities with permits.

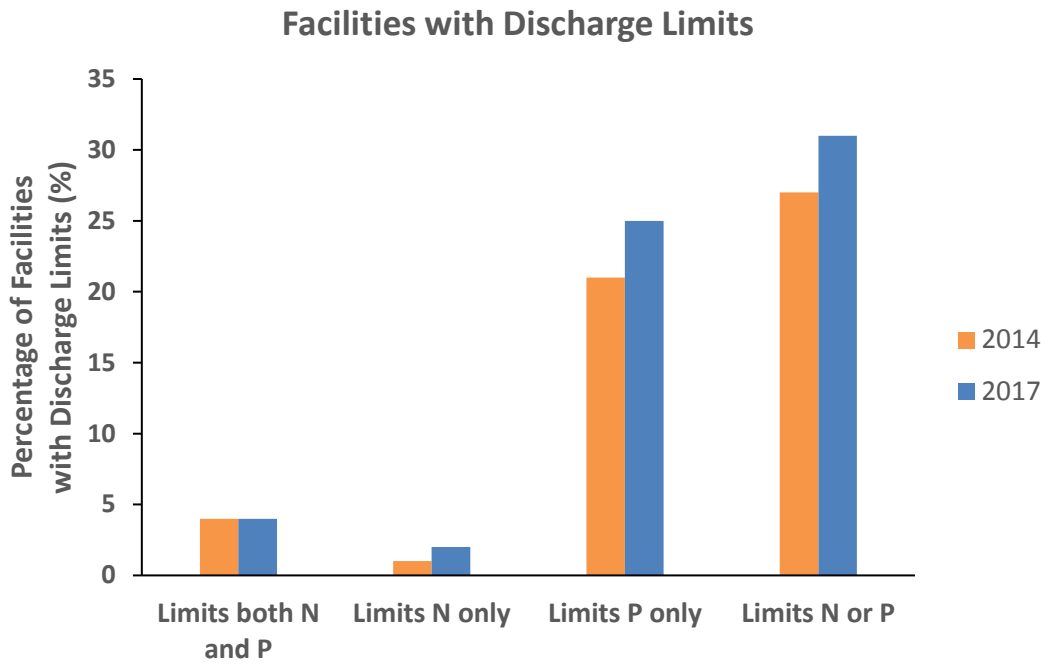


Figure 2. The percentage of major sewage treatment plants with nitrogen (N) and/or phosphorus (P) discharge limits, by reporting year.

Table 3. Total calculated and estimated annual load of nitrogen and phosphorus from major sewage treatment plants discharging to the MARB in 2017 and percentage of load calculated from discharge monitoring report (DMR) data[5]

State	Universe	2017 N loads (lb/yr)	% N Load from DMR data	2017 P loads (lb/yr)	% P Load from DMR data
Arkansas	77	9,593,294	4%	1,332,586	78%
Illinois	213	70,097,850	81%	11,403,056	69%
Indiana	107	21,272,760	13%	2,506,475	98%
Iowa	103	21,019,474	96%	3,808,526	96%
Kentucky	88	11,304,936	59%	1,974,571	75%
Louisiana	99	18,253,110	14%	2,951,739	15%
Minnesota	62	24,732,312	89%	816,486	93%
Mississippi	26	1,804,005	98%	443,982	99%
Missouri	123	27,918,794	47%	8,452,364	72%
Ohio	132	32,359,515	77%	4,767,663	82%
Tennessee	114	40,959,625	94%	6,135,658	93%
Wisconsin	55	8,392,896	9%	379,150	55%
All States (2017)	1,199	287,708,571	66%	44,972,256	76%

Notes: lb/yr= pounds per year; N = nitrogen; P = phosphorus.

[5] See Section 2.2 for the methodology and data EPA used to calculate or estimate nutrient loads. Appendix A documents how EPA used the Water Pollutant Loading Tool methodology and data in ICIS or state-sourced data to calculate or estimate loads from each facility.

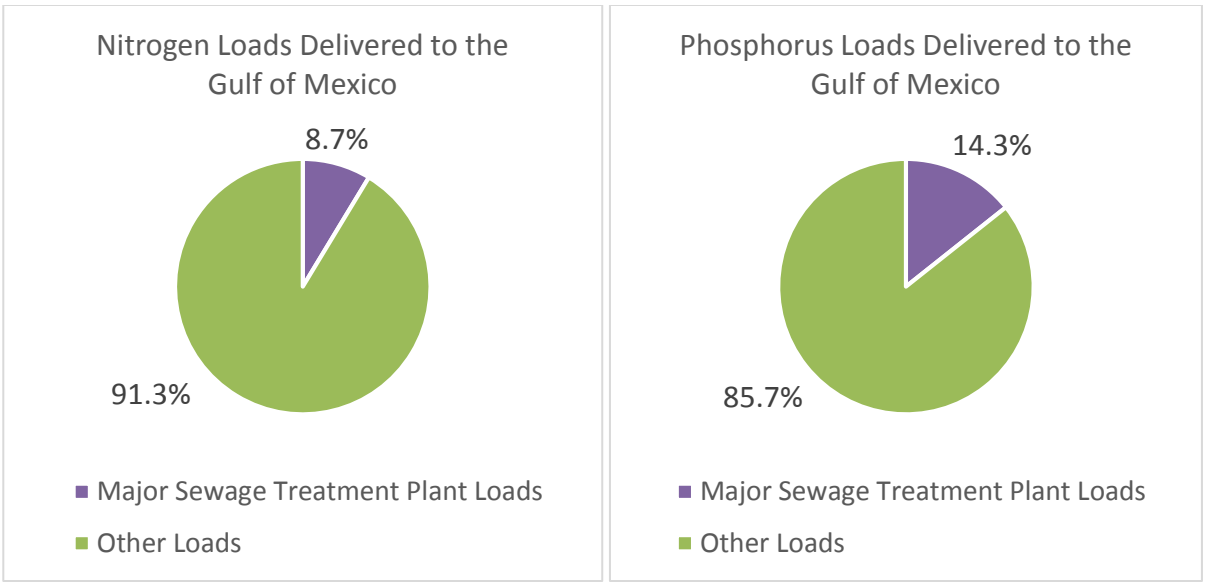


Figure 3. Calculated or estimated 2017 nutrient loads from major sewage treatment plants (*purple*) discharging to the MARB vs. all other nutrient loads based on USGS-calculated total MARB nutrient loads in 2017 (*green*).

3.2 State-Specific Supplemental Information

The HTF recognizes that the three common measures used in this report might not fully reflect all the work that states have done to reduce point source nutrient discharges. Also, while this report reflects a snapshot of progress as of September 30, 2017, states have made additional progress on establishing monitoring requirements and limits for point sources since then. Appendix B includes supplemental information provided by many of the HTF states to further document their work to reduce point source nutrient loads.

4. NEXT STEPS

4.1 Develop a Point Source Baseline

The HTF continues to explore the feasibility of estimating baseline point-source nutrient loads for the HTF states using a 1992 dataset compiled by USGS.[6] Those 1992 USGS data appear to be the best common data across the 12 HTF states that fall within the 1980–1996 averaging period serving as the overall baseline for HTF load tracking.

4.2 Continue Making Progress on Monitoring and Permit Limits for Nitrogen and Phosphorus

HTF states continue to work to increase the number of major sewage treatment plants with discharge monitoring requirements for nitrogen and phosphorus. Increased discharge monitoring will help to calculate accurate load reductions and identify facilities for which additional permit limits for nitrogen and/or phosphorus are appropriate. Some states now include, and other states are exploring, influent monitoring in their NPDES permits to better track load reduction within treatment plants and identify opportunities to optimize treatment.

4.3 Continue Reporting on Point Source Progress

The HTF intends to continue to release periodic reports on progress made in reducing point-source contributions to nutrient loads. Those reports will document progress on the number of major sewage treatment plants with monitoring requirements and, as appropriate, permit limits for nitrogen and/or phosphorus; nutrient loads discharged from major sewage treatment plants and, potentially, other sources; and other state work to reduce point source nutrient loads.

[6] Maupin, M.A., and T. Ivahnenko. 2011. Nutrient loadings to streams of the continental United States from municipal and industrial effluent. *Journal of the American Water Resources Association* 47(5):950–964. https://doi.org/10.1111/j.1752-1688.2011.00576.x. Skinner, K.D., and M.A. Maupin. 2019. *Point-Source Nutrient Loads to Streams of the Conterminous United States, 2012: U*.S. Geological Survey Data Series 1101. https://doi.org/10.3133/ds1101.

Some loading values are estimated because of incomplete flow or concentration data reported to ICIS.

- Values in unmarked cells are based on actual flow and concentration measurements and calculated by the Water Pollutant Loading Tool (Loading Tool).
- Values marked with an asterisk (*) are estimated by the Loading Tool based on typical pollutant concentrations (TPCs) for total nitrogen (TN) and total phosphorus (TP).
- Values marked with a dagger (†) were calculated independently. The data and methods used to calculate most of those values are specified at the end of each state's data in tables titled "Notes for values marked with †."[7]

Each table lists the sewage treatment plants in numerical order by National Pollutant Discharge Elimination System (NPDES) permit number (NPDES ID).

The data in the following tables reflect the status of nutrient monitoring, limits, and loads in each of the MARB drainage areas of the 12 HTF states at a common point in time: September 30, 2017, for monitoring and limits and December 31, 2017, for loads. While these data reflect a common snapshot of state progress, states have made additional progress since late 2017. Some states have included information on more recent progress in their state supplements (Appendix B).

Arkansas

Table A-1. Major sewage treatment plants in Arkansas with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Arkansas facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
FAYETTEVILLE, CITY OF	AR0020010	✓	✓		✓	239,471*	3,205
FORREST CITY, CITY OF	AR0020087	✓	✓			69,220*	15,046
SILOAM SPRINGS, CITY OF	AR0020273	✓	✓		✓	111,050*	3,737

[7] Nutrient loads from some facilities in Illinois, Iowa, and Missouri were calculated using publicly available, non-U.S. EPA data specified in those states' respective sections. Those calculations follow the methods used in U.S. EPA's Loading Tool and are not detailed in these tables.

Arkansas facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
N LITTLE ROCK WW UTILITY–FAULKNER LAKE	AR0020303	✓	✓			201,116*	59,368
N LITTLE ROCK WW UTILITY–FIVE MILE CREEK WWTP	AR0020320	✓	✓			193,076*	41,972
ARKADELPHIA, CITY OF	AR0020605	✓	✓			57,782*	733
BATESVILLE WATER UTILITIES–BATESVILLE WASTEWATER TREATMENT PLANT	AR0020702	✓	✓			216,821*	60,664
MOUNTAIN HOME, CITY OF–WWTP	AR0021211	✓	✓	✓		87,257*	23,410
ALMA, CITY OF	AR0021466	✓	✓			35,678*	6,985
VAN BUREN, CITY OF–MAIN PLANT	AR0021482	✓	✓			92,884*	67,307
OSCEOLA, CITY OF	AR0021580					65,392*	13,330*
SEARCY, CITY OF–WWTF	AR0021601	✓	✓			139,919*	18,700
CABOT WATER & WASTEWATER COMMISSION	AR0021661	✓	✓			102,189*	13,602
DEQUEEN, CITY OF	AR0021733	✓	✓	✓	✓	80,489*	2,798
GREEN FOREST, CITY OF–WWTP	AR0021741	✓	✓	✓	✓	86,209*	1,921
FORT SMITH, CITY OF–MASSARD WWTP	AR0021750	✓	✓			356,196*	53,793
RUSSELLVILLE WATER & SEWER SYSTEM, CITY CORPORATION	AR0021768	✓		✓		224,015*	36,721*
NASHVILLE, CITY OF	AR0021776	✓	✓			27,371*	1,469
BERRYVILLE, CITY OF–BERRYVILLE WASTEWATER TREATMENT PLANT	AR0021792		✓		✓	54,899*	1,977
LITTLE ROCK WASTEWATER–ADAMS FIELD WWTF	AR0021806	✓	✓			763,732*	33,909
MONTICELLO, CITY OF–WEST PLANT	AR0021822	✓	✓			141,839*	1,686
MONTICELLO, CITY OF–EAST PLANT	AR0021831	✓	✓			170,559*	9,985
WYNNE, CITY OF	AR0021903	✓	✓			38,483*	7,955

Arkansas facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MARION, CITY OF	AR0021971	✓	✓			60,377*	21,266
HUNTSVILLE, CITY OF	AR0022004	✓	✓	✓	✓	48,078*	1,534
WEST HELENA, CITY OF–WATER UTILITIES	AR0022021	✓	✓			35,630*	5,535
WEST MEMPHIS, CITY OF–UTILITIES	AR0022039	✓	✓			165,013*	29,171
SPRINGDALE WATER & SEWER COMMISSION	AR0022063		✓		✓	588,448*	11,506
BEEBE WATER AND SEWER COMMISSION	AR0022101	✓	✓			56,940*	11,386
CLARKSVILLE LIGHT & WATER	AR0022187	✓	✓			46,197*	16,291
DERMOTT, CITY OF–SOUTH POND	AR0022250					25,960*	4,355*
DECATUR, CITY OF	AR0022292	✓	✓	✓	✓	78,481*	1,915
CAMDEN, CITY OF	AR0022365	✓	✓			99,940*	2,642
HEBER SPRINGS WATER AND SEWER COMMISSION D/B/A HEBER SPRINGS WATER	AR0022381	✓	✓	✓	✓	55,786*	7,459
BENTONVILLE, CITY OF	AR0022403	✓	✓	✓	✓	351,408	1,346
GREENWOOD, CITY OF	AR0022454	✓	✓			36,412*	3,717
BLYTHEVILLE, CITY OF–WEST WWTF	AR0022560	✓	✓			22,423*	3,987
BLYTHEVILLE, CITY OF–SOUTH WWTF	AR0022578	✓	✓			32,596*	3,246
FORT SMITH, CITY OF–"P" STREET WWTP	AR0033278					270,537*	23,677
PINE BLUFF WASTEWATER UTILITY	AR0033316	✓	✓			196,952*	143,370*†
NORTH LITTLE ROCK WASTEWATER UTILITY–MAUMELLE WATER MANAGEMENT	AR0033626					73,409*	14,964*
EL DORADO WATER UTILITIES–SOUTH PLANT	AR0033723	✓	✓			96,747*	2,868

Arkansas facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PARAGOULD LIGHT, WATER AND CABLE WWTP	AR0033766	✓	✓			144,217*	24,174
HOT SPRINGS, CITY OF	AR0033880	✓	✓		✓	212,631*	17,421
EL DORADO WATER UTILITIES–NORTH PLANT	AR0033936	✓	✓			81,718*	1,351
DUMAS, CITY OF	AR0033987					37,608*	6,436
BRYANT, CITY OF	AR0034002	✓	✓			74,778*	10,345
MALVERN, CITY OF	AR0034126					79,690*	16,244*
HOT SPRINGS VILLAGE POA–MILL CREEK WWTP	AR0034291	✓	✓		✓	28,208*	781
HARRISON, CITY OF	AR0034321		✓			77,080*	12,607
STUTTGART, CITY OF	AR0034380	✓	✓			68,275*	26,529
TRUMANN, CITY OF–WWTP	AR0035602		✓			19,027*	9,655
BENTON, CITY OF	AR0036498	✓	✓			182,571*	18,106
MENA, CITY OF	AR0036692					53,656*	912
NEWPORT, CITY OF	AR0037044					45,130*	1,900
SHERWOOD, CITY OF– NORTH FACILITY	AR0037176	✓	✓			18,963*	1,212
JONESBORO, CITY OF–CITY WATER & LIGHT (CWL) WESTSIDE WWTP	AR0037907					60,285*	12,289*
N. LITTLE ROCK WW UTILITY–WHITE OAK BAYOU	AR0038288					124,157*	24,320*
HOPE, CITY OF–BOIS D'ARC WWTP	AR0038466	✓	✓			30,422*	6,072
LITTLE ROCK WASTEWATER UTILITY–FOURCHE CREEK WWTP	AR0040177	✓	✓			307,175*	65,420
VAN BUREN MUNICIPAL UTILITIES COMMISSION–NORTH PLANT	AR0040967	✓	✓			45,420*	11,603

Arkansas facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
JACKSONVILLE WASTEWATER UTILITY–J. ALBERT JOHNSON REGIONAL TREATMENT FACILITY	AR0041335		✓			156,455*	25,376
ASHDOWN, CITY OF	AR0042951					23,818*	3,996*
HELENA MUNICIPAL WATER AND SEWER SYSTEM	AR0043389					38,792*	7,367*
ROGERS, CITY OF	AR0043397		✓		✓	378,246*	4,885
CITY WATER & LIGHT PLANT OF THE CITY OF JONESBORO–EASTSIDE WWTP	AR0043401					301,070*	81,439
WARREN WATER & SEWER, CITY OF	AR0043427	✓	✓			51,401*	2,680
MAGNOLIA, CITY OF–BIG CREEK WWTP	AR0043613	✓	✓			84,054*	6,211
WALNUT RIDGE, CITY OF–WWTP	AR0046566	✓	✓			21,637*	3,459
CONWAY CORPORATION–TUCKER CREEK WWTP	AR0047279					133,255*	75,590
CLINTON, CITY OF–WEST WASTE WA	AR0048747	✓	✓	✓	✓	58,260*†	11,876*†
BARLING, CITY OF	AR0048801	✓	✓			56,310*	5,205
CLINTON, CITY OF–EAST WWTF	AR0048836	✓	✓			16,651*	271
NORTHWEST AR CONSERVATION AUTHORITY	AR0050024	✓	✓		✓	86,080*	430
FAYETTEVILLE/WEST SIDE WWTP	AR0050288		✓		✓	296,710*	2,576*†
LITTLE ROCK WW UTILITY–LITTLE MAUMELLE WWTP	AR0050849	✓	✓			87,489*	8,590
CONWAY CORPORATION–TUPELO BAYOU WWTP	AR0051951	✓	✓			215,074*	34,750
Total	**77**	**56**	**62**	**9**	**16**	9,593,294	1,332,586

Notes: lbs. = pounds; N = nitrogen; P = phosphorus.

Table A-2. Notes for values marked with †

Arkansas facility name	NPDES ID	Note
PINE BLUFF WASTEWATER UTILITY	AR0033316	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#AR0033316 to calculate annual load in 2017.
CLINTON, CITY OF–WEST WASTE WA	AR0048747	Flow and N, P loads data absent in 2017. Facility Design Flow (Permit Application) of 1.50 MGD from https://echo.epa.gov/trends/loading-tool/reports/dmr-pollutant-loading?permit_id=AR0048747 was used to substitute flow, and TPCs for TN (12.75 mg/L) and TP (2.599 mg/L) were used by selecting medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
FAYETTEVILLE/WEST SIDE WWTP	AR0050288	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#AR0050288 to calculate annual load in 2017.

Note: mg/L = milligrams per liter; MGD = million gallons per day.

Illinois

Nutrient loads from facilities marked with double asterisks (**) were calculated by Illinois Environmental Protection Agency (IEPA) using publicly available data from Discharge Monitoring Reports (DMRs), the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC), or IEPA records following the methods used in U.S. EPA's Loading Tool.

Table A-3. Major sewage treatment plants in Illinois with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PLANO, CITY OF	IL0020052	✓	✓		✓	35,379	1,398
WOOD DALE, CITY OF	IL0020061	✓	✓			62,110	10,772
**GENEVA, CITY OF	IL0020087		✓			124,811†	15,868†
**WAUCONDA, VILLAGE OF	IL0020109	✓			✓	123,141†	3,165†
HARVARD, CITY OF	IL0020117	✓	✓		✓	8,331	3,324
MILAN, VILLAGE OF	IL0020214	✓	✓			52,895	11,402
MANHATTAN, VILLAGE OF	IL0020222	✓	✓		✓	22,421	1,353

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
FLORA, CITY OF	IL0020273	✓	✓			34,419	5,670
HAMPSHIRE, VILLAGE OF	IL0020281	✓			✓	33,942	2,075
ANTIOCH, VILLAGE OF	IL0020354	✓	✓		✓	92,685	4,032
CARY, VILLAGE OF	IL0020516	✓	✓			115,688	14,878
FRANKFORT, VILLAGE OF	IL0020532		✓			38,122*	5,583*
NEW LENOX, VILLAGE OF	IL0020559	✓			✓	180,828	5,840
**PRINCETON, CITY OF	IL0020575		✓			30,728†	7,754†
FOX RIVER GROVE, VILLAGE OF	IL0020583	✓	✓			40,765	3,431
LITCHFIELD, CITY OF	IL0020621	✓	✓			65,420	7,076
MARENGO, CITY OF	IL0020729	✓			✓	30,416	1,754
DANVILLE SANITARY DISTRICT	IL0020788	✓	✓			355,566	16,003
LINDENHURST SANITARY DISTRICT	IL0020796	✓	✓		✓	35,034	2,387
FOX METRO WATER RECLAMATION DISTRICT	IL0020818	✓	✓			2,044,198	227,941
FOX LAKE, VILLAGE OF	IL0020958	✓	✓		✓	521,231	16,442
MARSEILLES WWTP, CITY OF	IL0021059	✓	✓			59,586	7,159
MCHENRY, CITY OF	IL0021067	✓	✓			47,243	6,919
CASEYVILLE TOWNSHIP	IL0021083	✓	✓		✓	101,568	4,047
MORRIS, CITY OF	IL0021113	✓	✓			76,358	7,580
**CREST HILL, CITY OF	IL0021121					47,409†	15,695†
BLOOMINGDALE, VILLAGE OF	IL0021130	✓	✓			128,104	67,877
SOUTH BELOIT, CITY OF	IL0021156	✓	✓			132,527	31,305
SWANSEA, VILLAGE OF	IL0021181	✓	✓		✓	36,448	5,292
CREVE COEUR, VILLAGE OF	IL0021237	✓	✓			41,991	5,973
LOCKPORT, CITY OF	IL0021261	✓	✓			36,626	4,217
GREATER PEORIA SANITARY AND SEWAGE DISTRICT	IL0021288	✓	✓			390,550	101,842
PARIS, CITY OF	IL0021377	✓	✓			39,065	19,764
GLENBARD WASTEWATER AUTHORITY	IL0021547	✓	✓			629,130	78,156

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**BARRINGTON, VILLAGE OF	IL0021598		✓			86,107†	15,215†
O'FALLON, CITY OF	IL0021636	✓	✓			85,826	16,305
CHARLESTON, CITY OF	IL0021644	✓	✓			119,069	14,798
JACKSONVILLE, CITY OF	IL0021661	✓	✓			192,850	57,381
LAKE IN THE HILLS SANITARY DISTRICT	IL0021733	✓	✓		✓	54,438	4,772
KANKAKEE RIVER METRO AGENCY	IL0021784					630,241*	94,587*
GENESEO, CITY OF	IL0021814	✓	✓			60,136	8,450
BENSENVILLE, VILLAGE OF	IL0021849		✓		✓	127,935	4,294
BELLEVILLE, CITY OF	IL0021873	✓	✓		✓	230,358	10,594
SPRINGFIELD METRO SANITARY DISTRICT SUGAR CREEK	IL0021971	✓	✓			330,618	37,179
SPRINGFIELD SD SPRING CREEK	IL0021989	✓	✓		✓	1,033,083	51,684
STREATOR, CITY OF	IL0022004	✓	✓			96,617	9,194
LAKE COUNTY PUBLIC WORKS DEPARTMENT DES PLAINS	IL0022055	✓	✓		✓	395,881	46,905
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS NEW CENTURY	IL0022071	✓	✓		✓	85,037	6,321
RANTOUL, VILLAGE OF	IL0022128	✓	✓		✓	115,824*	5,475
WATSEKA, CITY OF	IL0022161	✓	✓			8,366	12,644
MOMENCE, CITY OF	IL0022179	✓	✓			71,916	22,441
PANA, CITY OF	IL0022314	✓	✓		✓	37,945	7,514
BENTON, CITY OF	IL0022365	✓	✓		✓	46,336	8,547
**MUNDELEIN, VILLAGE OF	IL0022501		✓			282,850†	20,493†
**JOLIET, CITY OF	IL0022519		✓			622,156†	240,889†
BATAVIA, CITY OF	IL0022543		✓			1,280*	168
FLAGG CREEK WATER RECLAMATION DISTRICT	IL0022586	✓	✓		✓	703,081	79,652
CARLINVILLE, CITY OF	IL0022675	✓	✓			36,155	9,311
**ST CHARLES, CITY OF	IL0022705		✓			261,142†	45,675†
DEKALB SANITARY DISTRICT	IL0023027	✓	✓			398,255	55,205

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
GALESBURG SANITARY DISTRICT	IL0023141	✓	✓			218,747	47,127
MENDOTA, CITY OF	IL0023221	✓	✓			54,827	9,787
MURPHYSBORO, CITY OF	IL0023248	✓	✓		✓	16,727	5,684
**CITY OF SALEM	IL0023264	✓	✓		✓	24,822†	1,391†
ALGONQUIN, VILLAGE OF	IL0023329	✓	✓		✓	81,497	8,709
WEST CHICAGO, CITY OF	IL0023469		✓			301,716†	30,180†
VANDALIA, CITY OF	IL0023574		✓		✓	46,037*	2,921
FREEPORT, CITY OF	IL0023591	✓	✓			268,964	24,838
CLINTON SANITARY DISTRICT	IL0023612	✓	✓			25,205	3,752
CAIRO, CITY OF	IL0023825					23,916*	4,013*
MOKENA, VILLAGE OF	IL0024201	✓	✓			174,300	23,939
JERSEYVILLE, CITY OF	IL0024465	✓	✓			16,824	3,600
AQUA ILLINOIS–UNIV. PARK WWTF	IL0024473	✓	✓		✓	75,432	4,958
HOOPESTON, CITY OF	IL0024830	✓	✓			2,971	3,978
MANTENO, VILLAGE OF	IL0025089	✓	✓			72,507	10,483
BEARDSTOWN SANITARY DISTRICT	IL0025135	✓	✓			54,770	8,010
COLUMBIA, CITY OF	IL0025143	✓	✓			74,412	21,542
STOOKEY TOWNSHIP	IL0025232	✓	✓		✓	21,231	6,016
WILMINGTON, CITY OF	IL0026085	✓	✓		✓	19,572	2,123
GREENVILLE STP	IL0026298	✓	✓			25,192	5,713
EDWARDSVILLE, CITY OF	IL0026310	✓	✓			142,970	22,123
**CAROL STREAM, VILLAGE OF	IL0026352		✓			412,405†	43,864†
DIXON, CITY OF	IL0026450	✓	✓			113,457	36,212
ST CHARLES, CITY OF	IL0026808					23,266*	3,067
ROCK RIVER WATER RECLAMATION DISTRICT	IL0027201	✓	✓			1,838,087	232,702
MT VERNON, CITY OF	IL0027341	✓	✓		✓	26,042	2,306
**ADDISON, VILLAGE OF	IL0027367		✓			118,001†	18,332†
ALTON, CITY OF	IL0027464	✓	✓			207,163	31,894
**BARTLETT, VILLAGE OF	IL0027618		✓			148,893†	19,181†

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
BELVIDERE STP	IL0027685	✓	✓			110,847	19,254
THORN CREEK BASIN SD STP	IL0027723	✓	✓			636,331	124,633
BLOOMINGTON/NORMAL WATER RECLAMATION DISTRICT	IL0027731	✓	✓			767,952	130,866
CANTON, CITY OF	IL0027839	✓	✓			8,877	12,731
CARBONDALE, CITY OF	IL0027871	✓	✓			44,163	27,779
CITY OF CARBONDALE	IL0027898	✓	✓			61,350	652
CARMI, CITY OF	IL0027910	✓	✓			18,754	4,827
**CARPENTERSVILLE, VILLAGE OF	IL0027944		✓			92,656†	8,411†
CENTRALIA, CITY OF	IL0027979	✓	✓			52,092	21,835
METRO WATER RECL. DIST. OF GREATER CHICAGO–STICKNEY	IL0028053	✓	✓		✓	17,753,672	1,288,296
METRO WATER RECL. DIST. OF GREATER CHICAGO–CALUMET	IL0028061	✓	✓			5,454,993	1,705,544
**METRO WATER RECL. DIST. OF GREATER CHICAGO–LEMONT	IL0028070					138,739†	16,399†
METRO WATER RECL. DIST. OF GREATER CHICAGO–T.O.	IL0028088	✓	✓			7,493,992	916,335
COLLINSVILLE STP	IL0028215	✓	✓		✓	229,862	5,901
CITY OF CRYSTAL LAKE	IL0028282	✓	✓		✓	199,865	3,827
**DECATUR SD MAIN STP	IL0028321					1,168,962*	1,770,422*†
DEERFIELD, VILLAGE OF	IL0028347	✓	✓			152,081	19,023
DOWNERS GROVE SANITARY DISTRICT	IL0028380	✓	✓			482,044	118,253
DUQUOIN, CITY OF	IL0028517	✓	✓		✓	8,193	2,975
EAST DUNDEE, VILLAGE OF	IL0028541	✓	✓		✓	20,363	2,563
EAST MOLINE, CITY OF	IL0028550	✓	✓			54,598	34,864
EAST PEORIA, CITY OF	IL0028576	✓	✓			205,532	28,250
EFFINGHAM, CITY OF	IL0028622	✓	✓			88,704	32,939
**FOX RIVER WATER RECLAMATION DISTRICT	IL0028657		✓			1,512,176†	184,605†

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**FOX RIVER WATER RECLAMATION DISTRICT	IL0028665		✓			219,962†	36,316†
ELMHURST, CITY OF	IL0028746	✓	✓			338,947	85,596
**GLENDALE HEIGHTS, VILLAGE OF	IL0028967		✓			204,295†	31,083†
HARRISBURG, CITY OF	IL0029149	✓	✓		✓	36,570	3,202
HERRIN, CITY OF	IL0029165	✓	✓			88,254	13,616
HIGHLAND, CITY OF	IL0029173	✓	✓			30,286	4,492
HILLSBORO, CITY OF	IL0029203	✓	✓			61,912	11,580
HUNTLEY, VILLAGE OF	IL0029238	✓	✓		✓	40,475	8,350*†
KEWANEE, CITY OF	IL0029343	✓	✓			60,805	12,687
**LASALLE, CITY OF	IL0029424					84,466†	8,341†
LAWRENCEVILLE, CITY OF	IL0029467	✓	✓			40,776	8,041
LIBERTYVILLE, VILLAGE OF	IL0029530	✓	✓		✓	262,835	31,247
LINCOLN, CITY OF	IL0029564	✓	✓			121,373	4,846
LOCKPORT, CITY OF	IL0029611	✓	✓		✓	184,291	7,304
MACOMB, CITY OF	IL0029688	✓	✓			139,469	24,882
MARION, CITY OF	IL0029734	✓	✓		✓	80,893	6,375
MATTOON, CITY OF	IL0029831	✓	✓			214,721	45,046
METROPOLIS, CITY OF	IL0029874	✓	✓			41,763	7,216
MOLINE, CITY OF–SOUTH SLOPE	IL0029939	✓	✓			248,528	33,016
MOLINE, CITY OF–NORTH SLOPE	IL0029947	✓	✓			244,725	12,599
MONTICELLO, CITY OF	IL0029980	✓	✓			27,781	4,998
MORTON, VILLAGE OF	IL0030015	✓	✓			96,752	20,491
MOUNT CARMEL, CITY OF	IL0030023	✓	✓			59,762	28,336
NORTH SHORE SANITARY DISTRICT	IL0030171					587,485*	88,170*
NORTH SHORE SANITARY DISTRICT	IL0030244		✓		✓	899,646*	135,020*†
OTTAWA, CITY OF	IL0030384	✓	✓			209,436	20,769
PONTIAC, CITY OF	IL0030457	✓	✓			178,601	20,404
QUINCY, CITY OF	IL0030503	✓	✓			198,987	56,431
PERU, CITY OF	IL0030660	✓	✓			77,730	16,733

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PITTSFIELD, CITY OF	IL0030686	✓	✓			25,410	5,730
ROBINSON, CITY OF	IL0030732	✓	✓		✓	14,689	2,158
ROCHELLE, CITY OF	IL0030741	✓	✓			30,086	6,335
ROCK ISLAND, CITY OF	IL0030783	✓	✓			203,671	38,220
ROSELLE, VILLAGE OF	IL0030813		✓			61,543†	13,755†
SALT CREEK SANITARY DISTRICT	IL0030953	✓	✓			172,804	27,447
SANDWICH, CITY OF	IL0030970	✓	✓			18,753	4,037
SPRING VALLEY, CITY OF	IL0031216	✓	✓			19,958	3,332
**SYCAMORE, CITY OF	IL0031291		✓			96,844†	18,134†
TAYLORVILLE SANITARY DISTRICT	IL0031356	✓	✓			124,038	17,627
TROY, CITY OF	IL0031488	✓	✓			80,951	15,307
URBANA & CHAMPAIGN SANITARY DISTRICT NE PLANT	IL0031500	✓	✓			699,639	72,474
URBANA-CHAMPAIGN SANITARY DISTRICT	IL0031526	✓	✓		✓	192,527	5,475
WEST FRANKFORT, CITY OF	IL0031704	✓	✓			22,088	3,389
**WHEATON SANITARY DISTRICT	IL0031739		✓			401,759†	48,042†
DUPAGE COUNTY DEPARTMENT OF PUBLIC WORKS	IL0031844	✓	✓			667,654	68,869
WOOD RIVER, CITY OF	IL0031852	✓	✓			143,817	11,921
WOODSTOCK, CITY OF	IL0031861	✓	✓		✓	89,419	4,264
NORTHERN MORAINE WW RECLAMATION DIST	IL0031933	✓	✓			54,800	9,465
**BOLINGBROOK STP #1	IL0032689		✓			103,945†	19,737†
BOLINGBROOK, VILLAGE OF	IL0032735	✓	✓			166,870	23,438
ILLINOIS-AMERICAN WATER CO.	IL0032760	✓	✓		✓	24,161	8,718
GRANITE CITY, CITY OF	IL0033481	✓	✓			386,396	133,683
JOLIET, CITY OF	IL0033553	✓	✓		✓	474,190	181,228
**ADDISON, VILLAGE OF	IL0033812		✓			206,823†	33,525†
NAPERVILLE, CITY OF	IL0034061	✓	✓			919,467	163,870

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**WOOD DALE, CITY OF	IL0034274		✓			20,381†	2,480†
WOODSTOCK, CITY OF	IL0034282	✓	✓			48,916	7,561
HANOVER PARK, VILLAGE OF	IL0034479		✓			56,734*	11,530*†
PEKIN, CITY OF	IL0034495	✓	✓			139,847	23,548
NORTH SHORE SANITARY DISTRICT	IL0035092					633,121*	95,019*
FOX RIVER WATER RECLAMATION DISTRICT	IL0035891	✓	✓			106,449	6,066
**METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–HANOVER PARK	IL0036137					339,790†	68,441†
MONMOUTH, CITY OF	IL0036218	✓	✓		✓	294,596	9,442
**METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–EGAN	IL0036340					1,103,224†	206,963†
ROCK ISLAND SW STP	IL0036382					12,297*	2,349*
YORKVILLE-BRISTOL SANITARY DISTRICT	IL0036412	✓	✓			110,401	20,285
GODFREY, VILLAGE OF	IL0036421	✓	✓			47,367	6,996
WASHINGTON, CITY OF	IL0042412	✓	✓		✓	63,070	5,087
FRANKFORT, VILLAGE OF	IL0045403	✓	✓		✓	41,987	3,389
EAST PEORIA, CITY OF	IL0046213	✓	✓			20,834	1,696
**METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–KIRIE	IL0047741					819,403†	42,695†
ST. CLAIR TOWNSHIP	IL0048232	✓	✓			44,363	8,230
ROMEOVILLE, VILLAGE OF	IL0048526	✓	✓			172,098	18,032
ROSELLE, VILLAGE OF	IL0048721	✓	✓			73,802	9,185
OLNEY, CITY OF	IL0048755	✓	✓			40,016	2,982
CRYSTAL LAKE, CITY OF	IL0053457	✓	✓		✓	23,300	522
BRAIDWOOD STP, CITY OF	IL0054992	✓	✓		✓	23,513	2,057
MINOOKA, VILLAGE OF	IL0055913	✓	✓		✓	34,731	3,892

Illinois facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**ILLINOIS AMERICAN WATER CO.	IL0055981		✓			9,697†	1,214†
COLONA, CITY OF	IL0059757	✓	✓			43,527	5,339
STERLING, CITY OF	IL0060569	✓	✓			185,873†	141,480
ELBURN WWTP, VILLAGE OF	IL0062260	✓	✓			11,408	5,766
CREST HILL, CITY OF	IL0064998	✓	✓			17,138	10,361
SAUGET, VILLAGE OF	IL0065145					426,769*	64,050*
**DUPAGE COUNTY PUBLIC WORKS	IL0065188		✓			298,313†	27,694†
MCHENRY, CITY OF	IL0066257	✓	✓		✓	75,133	3,139
GILBERTS, VILLAGE OF	IL0068764	✓	✓		✓	49,768	574
BOLINGBROOK, VILLAGE OF	IL0069744	✓	✓			213,877	30,908
HUNTLEY, VILLAGE OF	IL0070688	✓	✓		✓	25,413	1,369
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS	IL0071366	✓	✓		✓	31,610	393
POPLAR GROVE, VILLAGE OF	IL0071447	✓			✓	8,968	317
CITY OF CHESTER	IL0072931	✓	✓			21,141	5,578
BLOOMINGTON-NORMAL WATER RECLAMATION DISTRICT	IL0073504	✓	✓			258,104	42,341
PLAINFIELD, VILLAGE OF	IL0074373	✓	✓		✓	160,791	7,045
GALENA, CITY OF	IL0075191	✓	✓			5,246	3,032
PERU, CITY OF	IL0075507	✓	✓			28,921	9,343
JOLIET, CITY OF	IL0076414	✓	✓		✓	91,428	22,100
CITY OF WATERLOO	IL0077551	✓	✓		✓	14,522	2,114
ROCK FALLS, CITY OF	IL0078301	✓	✓		✓	19,878	1,430
VILLAGE OF ITASCA	IL0079073	✓	✓			31,269	2,359
Total	**213**	**171**	**194**	**0**	**61**	70,097,850	11,403,056

Table A-4. Notes for values marked with †[8]

Illinois facility name	NPDES ID	Note
WAUCONDA, VILLAGE OF	IL0020109	The NPDES code for this outfall was switched from 001 to B01 at the end of September. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0020109 to calculate annual TP load in 2017 (001 for Jan-Sept, B01 for Oct-Dec). TPC for TN at 12.75 mg/L (medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) was used to calculate annual TN load.
JOLIET, CITY OF	IL0022519	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0022519 to calculate annual load in 2017.
SALEM STP, CITY OF	IL0023264	The NPDES code for this outfall was switched from 001 to B01 at the end of September. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0023264 to calculate annual TP load in 2017 (001 for Jan-Sept, B01 for Oct-Dec). TPC for TN at 12.75 mg/L (medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) was used to calculate annual TN load.
CAROL STREAM, VILLAGE OF	IL0026352	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and dissolved P concentration ("Phosphorus, dissolved (00666)") were downloaded from https://echo.epa.gov/effluent-charts#IL0026352 to calculate annual load in 2017.
METRO WATER RECL. DIST. OF GREATER CHICAGO–LEMONT	IL0028070	IEPA calculated these loads based on raw data from the MWRDGC posted on this website: https://www.mwrd.org/irj/go/km/docs/documents/MWRD/internet/reports/Monitoring_and_Research/htm/Water_Reclamation_Plant_data.htm.
DECATUR SD MAIN STP	IL0028321	IEPA provided this facility's TP discharge data on this website: https://www2.illinois.gov/epa/topics/water-quality/watershed-management/excess-nutrients/Documents/Decatur%20SDD%202017%20%28002%29.pdf.
FOX RIVER WATER REC DIST	IL0028665	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0028665 to calculate annual load in 2017.

[8] Nutrient loads from 16 facilities marked with ** were calculated by IEPA using publicly available data from DMRs. Those calculations follow the methods used by U.S. EPA's Loading Tool and, therefore, are not detailed in this table.

Illinois facility name	NPDES ID	Note
HUNTLEY, VILLAGE OF	IL0029238	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IL0029238 and TPC for TP at 2.599 mg/L (medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) were used to calculate annual load in 2017.
NORTH SHORE SANITARY DISTRICT	IL0030244	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IL0030244 and TPC for TP at 2.039 mg/L (high-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) were used to calculate annual load in 2017.
ROSELLE, VILLAGE OF	IL0030813	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IL0030813. TN and TP were monitored at this facility, but the monitoring data were coded to an internal outfall that could not be captured by the default DMR Loading Tool per protocol. Only daily maxima for TN, TP were reported in ICIS monthly, so they were downloaded from the same website to estimate actual concentrations in calculation annual loads. Calculated loads based on TPCs would otherwise provide similar estimates.
HANOVER PARK, VILLAGE OF	IL0034479	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0034479 to calculate annual load in 2017.
METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–HANOVER PARK	IL0036137	IEPA calculated these loads based on raw data from the MWRDGC posted on this website: https://www.mwrd.org/irj/go/km/docs/documents/MWRD/internet/reports/Monitoring_and_Research/htm/Water_Reclamation_Plant_data.htm.
METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–EGAN	IL0036340	IEPA calculated these loads based on raw data from the MWRDGC posted on this website: https://www.mwrd.org/irj/go/km/docs/documents/MWRD/internet/reports/Monitoring_and_Research/htm/Water_Reclamation_Plant_data.htm.
METRO WATER RECLAMATION DISTRICT OF GREATER CHICAGO–KIRIE	IL0047741	IEPA calculated these loads based on raw data from the MWRDGC posted on this website: https://www.mwrd.org/irj/go/km/docs/documents/MWRD/internet/reports/Monitoring_and_Research/htm/Water_Reclamation_Plant_data.htm.

Illinois facility name	NPDES ID	Note
ILLINOIS AMERICAN WATER CO.	IL0055981	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#IL0055981 to calculate annual TP load in 2017. For TN ("Nitrogen, total [as N] (00600)"), only daily maximum concentrations were reported, and not monthly averages. For each month, the daily maximum value is lower than the 12.75 mg/L TPC, which would otherwise be used by the Loading Tool. Therefore, daily maxima were used to estimate load.
STERLING, CITY OF	IL0060569	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IL0060569 and TPC for TN at 12.75 mg/L (medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) were used to calculate annual load in 2017.

Note: mg/L = milligrams per liter.

Indiana

Table A-5. Major sewage treatment plants in Indiana with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Indiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ALEXANDRIA WWTP	IN0020044		✓		✓	67,527*	8,842
DANVILLE WWTP	IN0020079		✓		✓	53,089*	5,469
PORTLAND WWTP	IN0020095					54,204*	11,049*
GREENFIELD WWTP	IN0020109		✓			119,560*	28,949
GREENSBURG WWTP	IN0020133		✓			154,794*	37,504
YORKTOWN WWTP, TOWN OF	IN0020150					49,091*	9,837
NOBLESVILLE WWTP, CITY OF	IN0020168		✓		✓	265,932*	67,181
MONTICELLO WWTP	IN0020176		✓		✓	48,630*	976
EDINBURGH WWTP	IN0020184		✓			22,279*	4,604
MARTINSVILLE WWTP	IN0020303		✓			46,163*	4,814
NORTH MANCHESTER WWTP	IN0020362		✓			36,736*	4,559
SCOTTSBURG WWTP	IN0020397		✓		✓	48,779*	2,333
SELLERSBURG MUNICIPAL WWTP	IN0020419		✓		✓	62,877*	12,817*

Indiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
BREMEN WWTP	IN0020427		✓			37,016*	4,776
CHANDLER WWTP	IN0020435		✓			32,890*	6,582
NORTH VERNON WWTP	IN0020451		✓			205,071*	31,471
CHARLESTOWN WASTEWATER TREATMENT PLANT	IN0020508	✓	✓			68,496	9,199
LINTON WWTP, CITY OF	IN0020575		✓			35,641*	5,349
SANTA CLAUS WWTP, TOWN OF	IN0020605		✓			38,928*	5,722
LEBANON WWTP	IN0020818		✓			92,883*	7,764
JASPER MUNICIPAL WWTP	IN0020834		✓		✓	79,576*	19,442
CORYDON WWTP	IN0020893		✓			36,275*	6,524
UNION CITY WWTP	IN0020982		✓			36,961*	3,613
PLYMOUTH WWTP	IN0020991		✓			93,205*	305,494
TELL CITY MUNICIPAL WWTP	IN0021016	✓	✓		✓	49,725	9,575
WINCHESTER WWTP	IN0021024		✓		✓	44,122*	2,159
GREENCASTLE WASTEWATER TREATMENT PLANT	IN0021032		✓			65,590*	8,422
ELLETTSVILLE MUNICIPAL WWTP	IN0021083		✓		✓	43,378*	6,280
FRANKLIN WWTP, CITY OF	IN0021181		✓		✓	157,486*	24,286
PLAINFIELD WATER POLLUTION CONTROL	IN0021202		✓			92,477*	9,042
BRAZIL WWTP, CITY OF	IN0021211		✓			61,059*	5,595
BROWNSBURG WWTP	IN0021245		✓		✓	100,137*	18,633
RUSHVILLE WWTP	IN0021270		✓			66,711*	3,548
CUMBERLAND WWTP	IN0021300		✓		✓	37,415*	4,379
DELPHI WWTP	IN0021377		✓		✓	41,763*	4,176
TIPTON WWTP	IN0021474		✓		✓	69,335*	921
HARTFORD CITY WWTP	IN0021628		✓			49,690*	3,828
SALEM WWTP	IN0021644					49,124*	9,802*
ROCHESTER WASTEWATER TREATMENT PLANT	IN0021661		✓		✓	30,266*	11,377
BARGERSVILLE WWTP	IN0022314		✓		✓	32,229*	2,787

Indiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
BLUFFTON WWTP, CITY OF	IN0022411		✓		✓	128,427*	4,020
BOONVILLE MUNICIPAL WWTP	IN0022420		✓			152,266*	8,703
CARMEL WWTP	IN0022497		✓			419,092*	76,969
CLINTON MUNICIPAL WWTP	IN0022608		✓		✓	16,133*	2,630
COLUMBIA CITY WWTP	IN0022624		✓			70,152*	10,004
FRANKFORT WWTP, CITY OF	IN0022934		✓		✓	250,022*	28,218
FRENCH LICK MUNICIPAL WWTP	IN0022951		✓		✓	29,133*	5,549
GAS CITY WWTP	IN0022985		✓		✓	46,765*	2,303
HUNTINGBURG WWTP	IN0023124		✓		✓	43,710*	8,126
HUNTINGTON WWTP	IN0023132		✓		✓	222,858*	11,493
INDIANAPOLIS BELMONT & SOUTHPORT AWTP	IN0023183	✓	✓			4,338,328*†	286,174
JEFFERSONVILLE DOWNTOWN WWTP	IN0023302		✓		✓	200,383*	48,128
LOGANSPORT WASTEWATER TREATMENT PLANT	IN0023604		✓		✓	349,607*	19,808
LOWELL WASTEWATER TREATMENT PLANT	IN0023621		✓		✓	127,697*	19,413
MOORESVILLE WWTP, TOWN OF	IN0023825		✓		✓	70,954*	2,058
NEW ALBANY WWTP	IN0023884	✓	✓			529,099	67,980
NEWBURGH MUNICIPAL WWTP	IN0023892	✓	✓		✓	48,802	11,842
NEW CASTLE WWTP	IN0023914		✓		✓	232,028*	40,556
OAK PARK CONSERVANCY DISTRICT	IN0023965	✓	✓			10,406	2,355
PRINCETON WASTEWATER TREATMENT PLANT	IN0024392		✓			87,477*	8,089
RENSSELAER WWTP, CITY OF	IN0024414		✓			62,325*	7,314
ROCKVILLE MUNICIPAL WWTP	IN0024449		✓		✓	27,975*	3,359
SEYMOUR WWTP, CITY OF	IN0024473		✓		✓	550,739*	36,552
SOUTH DEARBORN R.S.D.	IN0024538	✓	✓		✓	139,550	18,752
SULLIVAN MUNICIPAL WWTP	IN0024554		✓		✓	53,773*	8,182
WABASH WWTP	IN0024741		✓		✓	104,077*	7,164
WEST LAFAYETTE WWTP	IN0024821		✓		✓	389,404*	17,222

Indiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PERU UTILITIES–GRISSOM DIVISION WWTP	IN0024902		✓			45,889*	3,426
AUSTIN WWTP	IN0025135		✓		✓	32,954*	875
LAPORTE WWTP	IN0025577		✓			233,497*	24,525
MARION WWTP, CITY OF	IN0025585		✓		✓	331,664*	8,463
TERRE HAUTE WWTP, CITY OF	IN0025607		✓		✓	573,254*	117,134
RICHMOND WWTP	IN0025615		✓		✓	371,067*	17,786
BEDFORD WASTEWATER TREATMENT PLANT	IN0025623		✓		✓	71,013*	4,823
MUNCIE WATER POLLUTION CONTROL FACILITY	IN0025631		✓			832,663*	58,455
WASHINGTON WWTP	IN0025658		✓			168,182*	45,823
MADISON WWTP	IN0025666	✓	✓		✓	72,291	22,685
VINCENNES WWTP, CITY OF	IN0031020		✓		✓	158,395*	47,146
PERU UTILITIES WWTP	IN0032328		✓		✓	215,233*	9,062
CONNERSVILLE WWTP	IN0032336		✓			139,053*	16,237
LAFAYETTE WWTP	IN0032468		✓		✓	769,324*	37,996
ANDERSON WWTP	IN0032476		✓		✓	757,906*	37,979
COLUMBUS WWTP, CITY OF	IN0032573		✓			253,439*	27,096
ELWOOD WWTP, CITY OF	IN0032719		✓		✓	147,778*	8,109
SHELBYVILLE WATER RESOURCE RECOVERY FACILITY	IN0032867		✓		✓	211,791*	31,492
KOKOMO WWTP, CITY OF	IN0032875		✓		✓	555,209*	5,798
EVANSVILLE WEST WWTP	IN0032956	✓	✓		✓	803,196	71,355
CRAWFORDSVILLE WWTP, CITY OF	IN0032964		✓			71,250*	18,187
SPEEDWAY WWTP	IN0032972		✓			144,804*	26,075
EVANSVILLE EAST WWTP	IN0033073	✓	✓		✓	929,013	98,559
MOUNT VERNON MUNICIPAL WWTP	IN0035696	✓	✓		✓	34,395	17,725
BLOOMINGTON S (DILLMAN ROAD)	IN0035718		✓		✓	497,691*	16,974
BLOOMINGTON N (BLUCHER POOLE)	IN0035726		✓			124,018*	28,191
ZIONSVILLE WWTP	IN0036951		✓		✓	44,478*	2,040
BATESVILLE WWTP, CITY OF	IN0039268		✓		✓	34,819*	1,788

Indiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PRINCE'S LAKES WWTP	IN0042366		✓		✓	83,952*	27,839
CLARKSVILLE WWTP	IN0047058	✓	✓		✓	102,242*†	1,519
FALL CREEK REGIONAL WASTE DISTRICT	IN0049026		✓		✓	89,950*	4,736
WEST CENTRAL CONSERVANCY DISTRICT	IN0051632		✓		✓	98,606*	12,519
FISHERS CHEENEY CREEK WWTP	IN0055484		✓			272,578*	69,097
CLAY TOWNSHIP RWD WWTP	IN0055760		✓		✓	101,956*	4,267
HENDRICKS COUNTY RSD	IN0057614		✓			77,810*	15,236
WARSAW WWTP	IN0060917		✓		✓	153,919*	37,717
PLAINFIELD SOUTH WWTP, TOWN OF	IN0062456		✓		✓	79,636*	16,233*
JEFFERSONVILLE NORTH WATER RECLAMATION FACILITY	IN0063673		✓			45,026*	14,129
CHESTERFIELD MUNICIPAL WWTP	IN0063983		✓			28,734*	3,772
WHITESTOWN SOUTH WWTP	IN0064211		✓		✓	35,793*	964
Total	**107**	**12**	**104**	**0**	**63**	21,272,760	2,506,475

Note: Please see Indiana's supplemental information in Appendix B; Indiana documented progress since 2017.

Table A-6. Notes for values marked with †

Indiana facility name	NPDES ID	Note
INDIANAPOLIS BELMONT & SOUTHPORT AWTP	IN0023183	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IN0023183 and TPC for TN (13.586 mg/L) was used by selecting high-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
CLARKSVILLE WWTP	IN0047058	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#IN0047058 and TPC for TN (12.75 mg/L) was used by selecting medium-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.

Note: mg/L = milligrams per liter.

Iowa

Much of the following data are not based on U.S. EPA ICIS, but rather queried from the database of Iowa Department of Natural Resources (DNR). A previous compatibility issue between the two systems prevented accurate flow of information from Iowa DNR to U.S. EPA. Nutrient loads from facilities marked with double asterisks (**) were calculated by Iowa DNR using publicly available data from DMRs or Iowa DNR records following the methods used by U.S. EPA's Loading Tool. Data for those facilities can be found at https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Nutrient-Reduction-Strategy.

Table A-7. Major sewage treatment plants in Iowa with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Iowa facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CITY OF CORALVILLE	IA0020788	✓	✓			113,735	9,745
CITY OF SPENCER	IA0021059					73,537*	14,990*
**CITY OF JEFFERSON	IA0021300	✓	✓	✓		29,279[b]	3,923[b]
CITY OF CRESCO	IA0021334	✓	✓			29,639	14,856
CITY OF HARLAN	IA0021342	✓	✓			29,700	4,531
CITY OF GREENFIELD	IA0021369	✓	✓			15,151	1,886
CITY OF CARROLL	IA0021377	✓	✓	✓		65,271	4,088
**CITY OF FOREST CITY	IA0021563	✓	✓	✓		29,940[b]	3,952[b]
**CITY OF EMMETSBURG	IA0021580	✓	✓	✓		20,598[b]	3,610[b]
**GLENWOOD MUNICIPAL UTILITIES	IA0021946	✓	✓			57,937*	8,154[a]
CITY OF MITCHELLVILLE	IA0021997	✓	✓			15,376	2,473
CITY OF EVANSDALE	IA0022004	✓	✓	✓		23,892	3,752
**CITY OF LECLAIRE	IA0022012	✓	✓			34,982[b]	6,522[b]
**CITY OF CHARLES CITY	IA0022039	✓	✓	✓		95,607[a]	15,632[a]
CITY OF ALGONA	IA0022055	✓	✓	✓		40,355	12,391
DENISON MUNICIPAL UTILITIES	IA0023302	✓	✓			19,857*	3,630*
CITY OF MUSCATINE	IA0023434	✓	✓			125,495	31,598
CITY OF IOWA FALLS	IA0023442	✓	✓			31,590	6,891
CITY OF BRITT	IA0023582	✓	✓			9,401	1,630
**CITY OF MOUNT VERNON	IA0023710	✓	✓		✓	23,675*	2,256[a]

Iowa facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**CITY OF ESTHERVILLE	IA0023744	✓	✓	✓		99,382[a]	8,830[a]
CITY OF MAQUOKETA	IA0024481	✓	✓			84,921	46,911
**CITY OF GRUNDY CENTER	IA0024511	✓	✓	✓	✓	8,350[a]	1,386
CITY OF CARLISLE	IA0024554					9,745*	1,781*
**CITY OF ANAMOSA	IA0025895	✓	✓			14,442[b]	7,820[b]
**CITY OF ELDORA	IA0025933	✓	✓			13,814[b]	3,150[b]
CITY OF MONTICELLO	IA0026034	✓	✓			22,331	3,600
CITY OF FORT MADISON	IA0027219	✓	✓			99,996	12,290
CITY OF CENTERVILLE	IA0027472					51,746*	9,459*
CITY OF INDIANOLA	IA0027669					34,098*	6,233*
CITY OF NEWTON	IA0027723	✓	✓			109,133	20,759
**CITY OF NEW HAMPTON	IA0028525	✓	✓			67,242[a]	16,136[a]
CITY OF CHARITON	IA0028924					13,880*	2,537*
CITY OF ATLANTIC	IA0029025	✓	✓	✓		14,265	5,028
**CITY OF GRINNELL	IA0031186	✓	✓			45,000[a]	7,260[a]
**CITY OF WEST LIBERTY	IA0031691	✓	✓	✓	✓	20,756[a]	3,579[a]
CITY OF NEVADA	IA0031704	✓	✓			95,450	35,820
**CITY OF SHENANDOAH	IA0032328	✓	✓			45,971*	5,237[a]
CITY OF OELWEIN	IA0032344	✓	✓			6,908	4,114
CITY OF PERRY	IA0032379					23,790*	4,349*
CITY OF WASHINGTON	IA0032433	✓	✓			23,899	25,633
CITY OF STORM LAKE	IA0032484					31,903*	5,832*
**CITY OF SHELDON	IA0032662	✓	✓			41,701[a]	8,571*
**CITY OF TIPTON (WEST)	IA0032727	✓	✓			9,455[a]	2,378[a]
CITY OF ORANGE CITY	IA0032751					14,854*	2,715*
**CITY OF WAUKEE	IA0032794	✓	✓	✓		94,263[a]	14,397[a]
CITY OF NORTH LIBERTY	IA0032905					21,722*	3,971*
CITY OF WAUKON	IA0033081	✓	✓			31,485	7,195
CITY OF TOLEDO	IA0033103	✓	✓			5,863	1,192
CITY OF ROCKWELL CITY	IA0033138					54,052*	9,880*

Iowa facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CITY OF WAVERLY	IA0033197	✓	✓	✓		90,252	14,721
**CITY OF WEST BURLINGTON	IA0033669	✓	✓			12,811[a]	3,819[a]
CITY OF SIOUX CENTER	IA0033731	✓	✓	✓		123,521	44,829
CITY OF WINTERSET	IA0034291	✓	✓			34,468	3,917
**CITY OF EAGLE GROVE	IA0034380	✓	✓	✓		28,860[a]	4,331
CITY OF FAIRFIELD	IA0035076					46,300*	8,727*
CITY OF CLARINDA	IA0035190	✓	✓			50,584	8,130
CITY OF DECORAH	IA0035220	✓	✓			73,817	10,816
CITY OF CRESTON	IA0035238	✓	✓			65,227	14,923
CITY OF DEWITT	IA0035271	✓	✓			60,490	8,945
CITY OF KNOXVILLE	IA0035866	✓	✓			49,282	11,512
CITY OF VINTON	IA0035891	✓	✓	✓		36,970	4,378
CITY OF GRIMES	IA0035939	✓	✓	✓		87,569	11,633
**CITY OF CLINTON	IA0035947	✓	✓			97,834[a]	4,692[a]
CITY OF AMES	IA0035955	✓	✓			283,429*	46,126*
**CITY OF HAMPTON	IA0036471	✓	✓			27,351[b]	2,657[b]
CITY OF INDEPENDENCE	IA0036510	✓	✓			52,742	30,859
CITY OF LEMARS	IA0036536	✓				25,420*	4,647*
CITY OF WEBSTER CITY	IA0036625	✓	✓	✓		54,281	21,480
CITY OF CEDAR FALLS	IA0036633	✓	✓	✓		381,894	51,360
CITY OF COUNCIL BLUFFS	IA0036641	✓	✓			452,841	126,394
CITY OF MONTEZUMA	IA0036935	✓	✓			8,746	1,961
CITY OF OSKALOOSA	IA0038521	✓	✓			83,837	10,692
CITY OF OSKALOOSA	IA0038539	✓	✓			24,830	3,653
**CITY OF MARSHALLTOWN	IA0038610	✓	✓			643,002[a]	133,570[a]
CITY OF RED OAK	IA0040266	✓	✓			47,938	4,761
CITY OF OSCEOLA	IA0041815	✓	✓			40,742	11,618
**CITY OF ADEL	IA0041921	✓	✓	✓		15,960[a]	2,990[a]
**CITY OF KEOKUK	IA0042609	✓	✓			287,369[a]	35,171[a]
**CITY OF CEDAR RAPIDS	IA0042641	✓	✓			2,494,893[a]	992,756

Iowa facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
**CITY OF WATERLOO	IA0042650	✓	✓	✓		1,663,493[a]	359,345[a]
**CITY OF DAVENPORT	IA0043052	✓	✓			2,584,547[a]	67,771[a]
CITY OF BURLINGTON	IA0043079	✓	✓			224,861	30,393
CITY OF SIOUX CITY	IA0043095	✓	✓			1,067,533	198,122
**CITY OF TAMA	IA0043681	✓	✓			27,601[a]	2,402[a]
CITY OF PELLA	IA0043869	✓	✓			90,150	18,475
DES MOINES METROPOLITAN WRA	IA0044130	✓	✓			4,350,483	739,030
CITY OF DUBUQUE	IA0044458	✓	✓			1,409,026	107,892
CITY OF FORT DODGE	IA0044849	✓	✓	✓		610,302	42,969
**CITY OF MELCHER-DALLAS	IA0047783	✓	✓			7,739[a]	1,071[a]
CITY OF HUMBOLDT	IA0047791	✓	✓	✓		33,873	7,799
**CITY OF WAPELLO	IA0047961	✓	✓			3,897[b]	1,273[b]
CITY OF MOUNT PLEASANT	IA0047970	✓	✓			13,548	7,973
**CITY OF MASON CITY	IA0057169	✓	✓			262,622[a]	47,673[a]
CITY OF BOONE	IA0058076	✓	✓	✓		83,510	12,422
**CLEAR LAKE SANITARY DISTRICT	IA0058441	✓	✓			30,996[a]	6,467
**CITY OF OTTUMWA	IA0058611	✓	✓			218,870[a]	22,316[a]
CITY OF CHEROKEE	IA0059005	✓	✓			42,523	5,818
**IOWA GREAT LAKES SANITARY DISTRICT	IA0059765	✓	✓		✓	126,936	17,201[a]
CITY OF WALCOTT	IA0061891	✓	✓			3,120	2,708
CITY OF ELDRIDGE	IA0063231	✓	✓			10,806	2,218
**CITY OF IOWA CITY	IA0070866	✓	✓	✓	✓	267,693[a]	25,351[a]
CITY OF JESUP	IA0075302					6,651*	1,216*
Total	**103**	**91**	**90**	**25**	**5**	21,019,474	3,808,526

Notes:

[a] Values in ICIS are incorrect because of data transfer issues; DMR data provided by Iowa.

[b] Facility is not shown as a major in ICIS because of data transfer issues; DMR data provided by Iowa.

Kentucky

Table A-8. Major sewage treatment plants in Kentucky with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Kentucky facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
LA GRANGE STP	KY0020001	✓	✓		✓	55,130	1,888
GREENVILLE STP	KY0020010	✓	✓			51,255	4,597
HAZARD STP	KY0020079	✓	✓			34,416	6,732
RWRA MAX RHOADS WWTP	KY0020095	✓	✓			206,632	58,465
CORBIN STP	KY0020133	✓	✓			44,303	14,510
GEORGETOWN STP #1	KY0020150	✓	✓			83,064	18,613
MAYSVILLE STP	KY0020257	✓	✓			60,282	2,408
SHELBYVILLE STP	KY0020427	✓	✓		✓	21,696	3,451
VERSAILLES STP	KY0020621	✓	✓			55,031	12,294
HENDERSON STP	KY0020711	✓	✓			129,534	5,384
RUSSELLVILLE STP	KY0020877	✓	✓			50,005	8,511
LANCASTER WWTP	KY0020974	✓	✓		✓	10,645	1,051
LAWRENCEBURG STP	KY0021067	✓	✓		✓	54,309	5,096
GLASGOW STP	KY0021164		✓			89,171*	31,133
BENTON STP	KY0021172	✓	✓			4,647	4,038
MAYFIELD STP	KY0021211	✓	✓			47,213	7,452
FLEMINGSBURG STP	KY0021229	✓	✓		✓	5,747	557
BARDSTOWN STP	KY0021237	✓	✓			78,774	12,047
LONDON STP	KY0021270	✓	✓		✓	30,617	4,457
MORGANFIELD WWTP	KY0021440	✓	✓			42,549	5,142
NORTHERN SD #1 DRY CREEK	KY0021466		✓			1,162,736*	174,504
LEXINGTON TOWN BRANCH STP	KY0021491		✓			784,751*	164,882
LEXINGTON WEST HICKMAN STP	KY0021504		✓		✓	753,155*	34,283
ELIZABETHTOWN VALLEY CRK WWTP	KY0022039	✓	✓			333,406	35,332
ASHLAND STP	KY0022373	✓	✓			392,421	20,618
RADCLIFF STP	KY0022390	✓	✓			176,588	18,211

Kentucky facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
BOWLING GREEN STP	KY0022403	✓	✓			132,213	19,749
MORRIS FORMAN WQTC MSD	KY0022411		✓			1,653,772*	501,990*†
HITE CREEK WQTC MSD	KY0022420		✓		✓	171,258*	7,723
PADUCAH/MCCRACKEN JSA PADUCAH	KY0022799	✓	✓			296,261	41,459
FRANKFORT MUNICIPAL STP	KY0022861	✓	✓			22,674	32,900
LEITCHFIELD STP	KY0022934	✓	✓			42,384	23,407
CENTRAL CITY STP	KY0023540	✓	✓			20,049	25,606
BARBOURVILLE STP	KY0024082	✓	✓			26,863	465
COLUMBIA/ADAIR CO STP	KY0024317	✓	✓		✓	39,647	883
STANFORD STP	KY0024619	✓	✓			48,799	10,296
SCOTTSVILLE STP	KY0024783	✓	✓			35,787	4,924
PIKEVILLE WWTP	KY0025291	✓	✓			54,547	8,799
PADUCAH/MCCRACKEN JSA REIDLAND	KY0025810	✓	✓			24,079	3,610
HARLAN STP	KY0026093	✓	✓			51,797	6,554
LEBANON STP	KY0026549	✓	✓		✓	71,507	3,687
SOMERSET STP	KY0026611	✓	✓			110,230	34,425
SHEPHERDSVILLE STP	KY0027359	✓	✓			38,773	14,415
HARRODSBURG STP	KY0027421	✓	✓			55,237	15,756
FRANKLIN STP	KY0027456	✓	✓			95,567	14,241
WILLIAMSBURG STP	KY0028347	✓	✓			54,066	20,666
PRINCETON STP	KY0028401	✓	✓		✓	65,553	2,119
WILMORE STP	KY0028428	✓	✓			29,305	4,930
MANCHESTER STP	KY0029122	✓	✓			50,837	5,659
GREENUP JOINT SEWER AGENCY	KY0033553	✓	✓			42,845	2,866
MT WASHINGTON STP	KY0033804	✓	✓			23,581	15,520
MONTICELLO STP	KY0033847	✓	✓			32,829	5,223
STRODES CREEK STP	KY0037991	✓	✓		✓	33,158	3,542
GREENUP CO ENVIRONMENTAL COMM	KY0048348	✓	✓			103,571	20,171
MOREHEAD STP	KY0052752	✓	✓			242,606	12,492
CAMPBELLSVILLE STP	KY0054437	✓	✓			97,290	5,294

Kentucky facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
DANVILLE STP	KY0057193	✓	✓		✓	194,532	8,298
RUSSELL CO REGIONAL STP	KY0062995	✓	✓			34,562	7,519
CRAB ORCHARD STP	KY0065897	✓	✓			4,157	1,138
HOPKINSVILLE HAMMOND WOOD STP	KY0066532	✓	✓			57,918	34,918
BEE CREEK WWTP	KY0072761	✓	✓		✓	89,974	6,190
MIDDLESBORO STP	KY0072885	✓	✓			59,333	8,507
OWENSBORO EAST STP	KY0073377	✓	✓			78,142	20,296
DEREK R GUTHRIE WQTC MSD	KY0078956	✓	✓			567,824	167,648
BEREA MUNICIPAL UTILITIES WWTP	KY0079898	✓	✓		✓	41,017	7,570
GEORGETOWN STP #2	KY0082007	✓	✓		✓	147,106	5,884
PARIS STP	KY0090654	✓	✓			6,744	3,626
PRECOAT METALS ROLL COATER INC	KY0092118					835*	140*
MADISONVILLE STP WEST SIDE	KY0098043	✓	✓			133,451	10,685
CEDAR CREEK WQTC MSD	KY0098540	✓	✓		✓	135,787	7,477
HENDERSON SOUTH STP #2	KY0100293	✓	✓			251,085	41,826
JESSAMINE CRK ENV CONTROL #1	KY0100404	✓	✓			42,281	29,206
FLOYDS FORK WQTC MSD	KY0102784	✓	✓		✓	111,082	3,137
RICHMOND SILVER CREEK STP	KY0103357	✓	✓			7,488	748
HONEY BRANCH REGIONAL STP	KY0103578	✓	✓			21,208	3,547
JERRY L RILEY STP	KY0104027	✓	✓		✓	105,830	6,336
MT STERLING HINKSTON CRK STP	KY0104400	✓	✓		✓	33,437	2,070
CARROLLTON REGIONAL WWTP	KY0104931	✓	✓		✓	81,932	2,820
EASTERN REGIONAL STP	KY0105031	✓	✓		✓	52,417	1,406
NORTHERN MADISON CO SD	KY0105376	✓	✓		✓	6,602	1,550
OHIO CO REGIONAL STP	KY0105791	✓	✓		✓	31,488	1,057
CYNTHIANA STP	KY0105856	✓	✓		✓	48,443	1,870
OHIO RIVER STP	KY0106143	✓	✓			48,292	6,748
RICHMOND OTTER CREEK STP	KY0107107	✓	✓		✓	97,573	7,176
WESTERN REG WATER RECLAM FAC	KY0107239	✓	✓			248,612	39,437
WINCHESTER MUNICIPAL UTILITIES	KY0108740	✓	✓			25,018	4,894

Kentucky facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
WILLIAMSTOWN REGIONAL WRF	KY0109991	✓	✓			13,046	5,682
OLDHAM COUNTY REG WWTP	KY0111716	✓	✓		✓	2,558	138
Total	**88**	**81**	**87**	**0**	**27**	11,304,936	1,974,571

Table A-9. Notes for values marked with †

Kentucky facility name	NPDES ID	Note
MORRIS FORMAN WQTC MSD	KY0022411	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#KY0022411 and TPC for TP at 2.039 mg/L (high-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) were used to calculate annual load in 2017.

Note: mg/L = milligrams per liter.

Louisiana

Table A-10. Major sewage treatment plants in Louisiana with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
FRANKLIN, CITY OF WWTP	LA0006289					71,599*	14,489*
BASTROP, CITY OF	LA0020109					34,624*	6,074*
BUNKIE, CITY OF	LA0020257		✓			29,322*	5,741
BASTROP, CITY OF–MAIN PLANT	LA0020443					34,783*	6,225*
PORT ALLEN, CITY OF WWTP	LA0020541					41,798*	8,187*
RAYVILLE WWTF	LA0020559					40,482*	7,686*
BROUSSARD, CITY OF	LA0020613	✓	✓			11,795	7,506

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
FERRIDAY, TOWN OF–WASTEWATER TREATMENT FACILITY	LA0020630					13,663†	5,289
PLAQUEMINE, CITY OF–SOUTH WASTEWATER TREATMENT FACILITY	LA0020648					61,676*	12,458*
ST. CHARLES PARISH COUNCIL–LULING OXIDATION POND	LA0032131	✓	✓			90,900	17,699
AMERICAN WATER SOUTH FORT POLK WWTP	LA0032221					48,429*	9,632*
AMERICAN WATER NORTH FORT POLK WWTP	LA0032239					18,712*	3,139*
HAMMOND, CITY OF–SOUTH SLOUGH WETLAND WASTEWATER ASSIMILATION PROJECT	LA0032328	✓	✓			346,984	81,364
VIDALIA, CITY OF–WASTEWATER TREATMENT PLANT	LA0032794					7,573	2,705
THIBODAUX, CITY OF–WASTEWATER TREATMENT FACILITY	LA0032948	✓	✓			171,106	22,623
BREAUX BRIDGE, CITY OF	LA0033014	✓	✓			30,941	9,767
SPRINGHILL, CITY OF	LA0033227	✓	✓			20,111	1,178
JENA, TOWN OF	LA0033260					22,771*	3,820*
OAKDALE, CITY OF	LA0033430		✓			66,090	10,520
PINEVILLE, CITY OF–WWTP	LA0033464					88,977*	17,204*
RUSTON, CITY OF–NORTHSIDE WASTEWATER TREATMENT PLANT	LA0036323	✓	✓			44,970	14,479
LAKE CHARLES, CITY OF–PLANT A	LA0036340					212,211*	36,965*
LAKE CHARLES, CITY OF	LA0036366					224,764*	37,505*
LAFAYETTE CONSOLIDATED GOVERNMENT–SOUTH WWTP	LA0036374					226,694*	36,484*
LAFAYETTE CONSOLIDATED GOVERNMENT–EAST WWTP	LA0036382					126,138*	25,712*
LAFAYETTE CONSOLIDATED GOVERNMENT–NORTHEAST WWTP	LA0036391					46,027*	9,382*

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
OPELOUSAS, CITY OF–CANDY STREET WWTP	LA0036404					120,337*	24,530*
E BATON ROUGE CITY–PAR (SOUTH)	LA0036412					1,945,046*	291,914*
E BATON ROUGE CITY–PAR (NORTH)	LA0036439					659,566*	98,988*
WESTWEGO, CITY OF–WASTEWATER TREATMENT PLANT	LA0038059	✓	✓			14,418	1,656
SEWERAGE AND WATER BOARD OF NEW ORLEANS–EAST BANK STP	LA0038091	✓	✓			4,238,902*†	636,178*†
SEWERAGE AND WATER BOARD OF NEW ORLEANS–WEST BANK STP	LA0038105					456,257*	68,476*
MINDEN, CITY OF	LA0038130					53,289*	10,863*
MANDEVILLE, CITY OF	LA0038288	✓	✓			127,117	27,182
DERIDDER, CITY OF–WASTEWATER TREATMENT PLANT	LA0038407					80,952*	16,502*
AMITE CITY, TOWN OF–AMITE CITY STP	LA0038431					33,735*	5,976*
HOMER, TOWN OF–WASTEWATER TREATMENT PLANT	LA0038521					21,496*	3,606*
NEW ROADS, CITY OF–WASTEWATER TREATMENT PLANT	LA0038555	✓	✓			1,725	396
DEQUINCY, TOWN OF	LA0038709					12,423*	2,084*
MONROE, CITY OF	LA0038741					380,983*	57,178*
VILLE PLATTE, CITY OF	LA0038814					57,880*	11,798*
GRAMBLING, CITY OF	LA0038822					32,213*	5,404*
RAYNE, CITY OF	LA0039055					61,709*	12,579*
ABBEVILLE, CITY OF	LA0039748					73,564*	14,995*
DELHI, TOWN OF–WWTP	LA0039802	✓	✓			46,428	12,988
ST. BERNARD PARISH–MUNSTER AND DRAVO WWTP	LA0040177					301,005*	45,895*
JEANERETTE, CITY OF	LA0040193					25,615*	4,970*
TERREBONNE PH GOVT–HOUMA NORTH	LA0040207	✓	✓			373,100	57,011
TERREBONNE PH GOVT–HOUMA-SOUTH	LA0040274	✓	✓			19,262	8,990

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ST. MARTINVILLE, CITY OF	LA0040941	✓	✓			19,485	5,583
ALEXANDRIA, CITY OF–WWTP	LA0041009					389,224*	58,415*
CROWLEY, CITY OF–WASTEWATER TREATMENT FACILITY	LA0041254					84,793*	17,027*
GRETNA, CITY OF–WASTEWATER TREATMENT PLANT	LA0041262					94,975*	19,360*
SHREVEPORT, CITY OF–LUCAS WWTP	LA0041394					817,201*	122,646*
EUNICE, CITY OF–WASTEWATER TREATMENT FACILITY	LA0041751					55,845*	11,255*
JENNINGS, CITY OF–WWTP	LA0041769					71,739*	14,623*
JEFFERSON PARISH DEPARTMENT OF SEWERAGE–MARRERO WWTP	LA0042048					379,096*	56,895*
JEFFERSON PARISH DEPARTMENT OF SEWERAGE–BRIDGE CITY WWTP	LA0042064					132,786*	25,896*
JEFFERSON PARISH DEPARTMENT OF SEWERAGE–HARVEY WWTP	LA0042081					366,511*	55,006*
SHREVEPORT, CITY OF–NORTH REGIONAL WWTP	LA0042188					159,738*	31,528*
LAFAYETTE CONSOL. GOVERNMENT–AMBASSADOR CAFFERY STP	LA0042561					246,053*	38,601*
WINNFIELD, CITY OF–WASTEWATER TREATMENT PLANT	LA0043915					41,485*	7,531*
DONALDSONVILLE, CITY OF	LA0043931					49,124*	9,506*
HARAHAN, CITY OF	LA0043940					62,810*	12,688*
WEST MONROE, CITY OF–WASTEWATER TREATMENT PLANT	LA0043982					1,340*	270*
PLAQUEMINES PARISH GOVERNMENT–BELLE CHASSE WWTP	LA0044032					86,256*	17,583*
PLAQUEMINES PARISH GOVERNMENT–BURAS WWTP	LA0044041					115,023*	21,647*
PLAQUEMINES PARISH GOVERNMENT–PORT SULPHUR WWTP	LA0044059					39,336*†	6,600*†

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
PONCHATOULA, CITY OF–WASTEWATER TREATMENT FACILITY	LA0044695					71,285*	14,417*
MARKSVILLE, CITY OF	LA0045144					41,862*	8,196*
COAST WATERWORKS, INC.–EDEN ISLES	LA0045446					31,900*	5,631*
DENHAM SPRINGS, CITY OF	LA0045730	✓	✓			81,687	22,858
SLIDELL, CITY OF	LA0047180					160,803*	30,798*
BOSSIER CITY–POTW	LA0053716					72,864	6,293
YOUNGSVILLE, TOWN OF–WWTF	LA0055328					39,695*	7,065*
WALKER, TOWN OF	LA0059951	✓	✓			48,707	12,059
ST. JOHN THE BAPTIST PARISH–WOODLAND WWTP	LA0064092	✓	✓			13,984	1,067
SEWERAGE DISTRICT #1 OF IBERIA PARISH & CITY OF NEW IBERIA–TETE BAYOU WWTP	LA0065251	✓	✓			122,154	18,939
BOSSIER, CITY OF–WWTP	LA0065978					125,119*	25,505*
MORGAN CITY, CITY OF–WASTEWATER TREATMENT PLANT	LA0065986					128,727*	23,852*
UTILITIES, INC. OF LA–ARROWWOOD REGIONAL WWTP	LA0066559					47,645*	9,594*
JEFFERSON PARISH DEPARTMENT OF SEWERAGE–EAST BANK WWTP	LA0066630					829,750*†	124,530*†
KENNER, CITY OF	LA0066800					508,304*	76,287*
SULPHUR, CITY OF–WWTP	LA0067083					177,144	6,039
LIVINGSTON PARISH SD NO. 1 & 2	LA0067784					40,468*	7,610*
ST. MARY PARISH WARDS 5 & 8 JOINT SEWER COMMISSION	LA0068381					141,439*	26,854*
H2O SYSTEMS, INC.–GREENLEAVES TREATMENT FACILITY	LA0068730					33,555*	5,763*
ST. JOHN THE BAPTIST PARISH–RIVER ROAD WWTP	LA0069868	✓	✓			277,905	11,775

Louisiana facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ST. CHARLES PARISH COUNCIL–HAHNVILLE STP	LA0073521	✓	✓			91,618	12,685
ST. CHARLES PARISH COUNCIL–DESTREHAN WWTP	LA0073539	✓	✓			158,619	17,702
ST. JOHN THE BAPTIST PARISH–GARYVILLE WWTP	LA0079596					28,834*	4,956*
COVINGTON, CITY OF–SEWERAGE TREATMENT FACILITY	LA0084336					68,783*	14,021*
TALLULAH, CITY OF–WASTEWATER TREATMENT PLANT	LA0086576	✓	✓			22,987	8,461
NATCHITOCHES, CITY OF	LA0095222	✓	✓			81,523*†	16,618*†
GONZALES, CITY OF–WASTEWATER TREATMENT PLANT	LA0109576					76,704*	15,636*
LAKE CHARLES, CITY OF–STP	LA0118770					127,083*	24,866*
ST. TAMMANY PARISH GOVERNMENT–CASTINE REGIONAL STP	LA0120154	✓	✓			23,394	4,621
NEW IBERIA, CITY OF	LA0120201	✓	✓			58,247	14,125
CONSOLIDATED WATERWORKS/ SEWERAGE DISTRICT NO 1	LA0126152					37,339*	6,264*
Total	**99**	**26**	**28**	**0**	**0**	18,253,110	2,951,739

Table A-11. Notes for values marked with †

Louisiana facility name	NPDES ID	Note
FERRIDAY, TOWN OF–WASTEWATER TREATMENT FACILITY	LA0020630	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") downloaded from https://echo.epa.gov/effluent-charts#LA0020630 and TPC for TN at 14.436 mg/L (low-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale) were used to calculate annual load in 2017.
SEWERAGE AND WATER BOARD OF NEW ORLEANS–EAST BANK STP	LA0038091	No effluent flow or TN, TP concentrations available for 2017. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#LA0038091, and TPCs for TP (2.039 mg/L) and TN (13.586 mg/L) were used by selecting high-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
PLAQUEMINES PARISH GOVERNMENT–PORT SULPHUR WWTP	LA0044059	No effluent flow or TN, TP concentrations available for 2017. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#LA0044059, and TPCs for TP (2.422 mg/L) and TN (14.436 mg/L) were used by selecting low-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
JEFFERSON PARISH DEPARTMENT OF SEWERAGE–EAST BANK WWTP	LA0066630	No effluent flow or TN, TP concentrations available for 2017. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#LA0066630, and TPCs for TP (2.039 mg/L) and TN (13.586 mg/L) were used by selecting high-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
NATCHITOCHES, CITY OF	LA0095222	No effluent flow or TN, TP concentrations available for 2017. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#LA0095222, and TPCs for TP (2.599 mg/L) and TN (12.75 mg/L) were used by selecting medium-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.

Note: mg/L = milligrams per liter.

Minnesota

Table A-12. Major sewage treatment plants in Minnesota with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Minnesota facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MONTEVIDEO	MN0020133	✓	✓		✓	65,420	3,645
LUVERNE WWTF	MN0020141	✓	✓			70,046	11,461
NEW PRAGUE	MN0020150	✓	✓		✓	45,197	1,427
SAINT MICHAEL WWTF	MN0020222	✓	✓		✓	25,572	2,409
MELROSE TREATMENT FACILITY	MN0020290	✓	✓		✓	145,637	5,415
CAMBRIDGE WWTF	MN0020362	✓	✓		✓	59,768	786
REDWOOD FALLS	MN0020401	✓	✓		✓	107,459	5,469
MONTICELLO WWTP	MN0020567	✓	✓			31,237	16,224
LAKE CITY	MN0020664	✓	✓		✓	31,340	515
STEWARTVILLE	MN0020681	✓	✓			45,314	5,935
LITTLE FALLS WASTEWATER PLANT	MN0020761	✓	✓			53,288	7,683
ELK RIVER WWTF	MN0020788	✓	✓			174,983	9,209
WASECA	MN0020796	✓	✓		✓	81,158	5,045
GRAND RAPIDS	MN0022080	✓	✓			69,266*	10,960
MARSHALL	MN0022179	✓	✓		✓	282,922	8,511
WINDOM WWTF	MN0022217	✓	✓			78,312	6,105
GLENCOE WWTF	MN0022233		✓			37,642*†	8,066*†
BEMIDJI WASTEWATER FACILITY	MN0022462	✓	✓		✓	105,020	342
ST. PETER WASTEWATER FACILITY	MN0022535	✓	✓		✓	117,966	2,889
AUSTIN WWTF	MN0022683	✓	✓			1,139,093	95,948
COLD SPRING WWTF	MN0023094	✓	✓		✓	44,115	1,733
LITCHFIELD WWTF	MN0023973	✓	✓		✓	75,514	2,278
MADELIA WASTEWATER PLANT	MN0024040	✓	✓		✓	93,696	998
NORTHFIELD WWTP	MN0024368	✓	✓		✓	163,633	2,809
PRINCETON	MN0024538	✓	✓		✓	23,736	170
RED WING WWTP	MN0024571	✓	✓		✓	109,155	2,833

Minnesota facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ROCHESTER WWTF	MN0024619	✓	✓		✓	1,251,133	31,636
SAINT JAMES	MN0024759	✓	✓		✓	20,331	1,079
WILLMAR WWTF	MN0025259	✓	✓		✓	362,150	11,568
WINNEBAGO WWTF	MN0025267	✓	✓		✓	13,984	680
ZUMBROTA WASTEWATER PLANT	MN0025330	✓	✓			24,922	3,256
BECKER WWTF	MN0025666	✓	✓		✓	53,860	1,322
ROGERS WWTF	MN0029629	✓	✓		✓	50,631	1,100
MCES–METRO	MN0029815	✓	✓		✓	12,116,505	244,314
MCES–BLUE LAKE	MN0029882		✓		✓	1,134,558*	25,075
MCES–EAGLE POINT	MN0029904		✓		✓	182,260*	6,071
MCES–HASTINGS	MN0029955	✓	✓		✓†	125,263	16,211
MCES–ST. CROIX VALLEY	MN0029998	✓	✓		✓	181,082	4,523
MCES–SENECA	MN0030007		✓		✓	902,379*†	34,275*†
NEW ULM	MN0030066	✓	✓		✓	88,449	9,462
FAIRMONT	MN0030112	✓	✓		✓	97,287	3,398
FARIBAULT	MN0030121	✓	✓		✓	276,717	9,571
WINONA WWTF	MN0030147	✓	✓			284,178	59,324
MANKATO WWTP	MN0030171	✓	✓		✓	482,664	6,968
WORTHINGTON INDUSTRIAL	MN0031178	✓	✓		✓	929,672	8,052
WORTHINGTON WWTF	MN0031186	✓	✓		✓	125,589	4,251
BUFFALO	MN0040649	✓	✓		✓	66,093	1,628
ALEXANDRIA LAKE AREA SSD	MN0040738	✓	✓		✓	201,805	1,137
ST CLOUD WWTF	MN0040878	✓	✓		✓	666,831	6,338
ALBERT LEA WASTEWATER FACILITY	MN0041092	✓	✓			237,989	61,440
MCES–EMPIRE	MN0045845		✓		✓	493,881*†	13,855*†
WHITEWATER REGIONAL WWTP	MN0046868	✓	✓			50,118	7,168
BRAINERD WWTP	MN0049328	✓	✓		✓	56,867	1,882
DELANO	MN0051250		✓		✓	17,899*	727
OWATONNA WWTF	MN0051284	✓	✓		✓	285,403	8,068
PLAINVIEW–ELGIN SD	MN0055361	✓	✓		✓	21,638	1,006
CHISAGO LAKES JOINT STC	MN0055808	✓	✓		✓	49,018	2,447

Minnesota facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
HUTCHINSON	MN0055832	✓	✓		✓	232,551	4,931
OTSEGO EAST WWTF	MN0064190	✓	✓		✓	10,672	411
LONG PRAIRIE MUNICIPAL WWTF	MN0066079	✓	✓		✓	141,016	2,639
ANNANDALE/MAPLE LAKE WWTF	MN0066966	✓	✓		✓	19,053	689
MINN RIVER VALLEY PUC	MN0068195	✓	✓		✓	201,375	1,119
Total	**62**	**56**	**62**	**0**	**49**	24,732,312	816,486

Table A-13. Notes for values marked with †

Minnesota facility name	NPDES ID	Note
GLENCOE WWTF	MN0022233	No effluent flow or TN concentration available for 2017. Monthly averages of influent flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#MN0022233 to estimate effluent flow. TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from the same website. TPC for TN (14.436 mg/L) was used by selecting low-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
MCES–SENECA	MN0030007	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)"), both monitored at the influent station, were downloaded from https://echo.epa.gov/effluent-charts#MN0030007 to calculate annual loading in 2017. TPC for TN (13.586 mg/L) was used by selecting high-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
MCES–EMPIRE	MN0045845	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)"), both monitored at the influent station, were downloaded from https://echo.epa.gov/effluent-charts#MN0045845 to calculate annual loading in 2017. TPC for TN (13.586 mg/L) was used by selecting high-flow class in Table 4 of https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
MCES-HASTINGS	MN0029955	The MCES-Hastings WWTP has a phosphorus limit as a participant in the Met Council - Mississippi Basin TP permit (MN0070629) issued on 09/11/2015.

Note: mg/L = milligrams per liter.

Mississippi

Table A-14. Major sewage treatment plants in Mississippi with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Mississippi facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
NEW ALBANY POTW	MS0020044	✓	✓			89,021	9,902
GREENVILLE POTW	MS0020184	✓	✓			154,970	55,673
CLARKSDALE POTW	MS0020311	✓	✓	✓	✓	87,509	16,656
BELZONI POTW	MS0020371	✓	✓			8,354	1,641
YAZOO CITY POTW	MS0020389	✓	✓			100,863	18,365
GRENADA POTW	MS0020397	✓	✓	✓	✓	57,902	19,090
CLEVELAND POTW	MS0020567	✓	✓	✓	✓	6,817	1,349
WINONA POTW	MS0021024					32,123*	5,520*
WATER VALLEY POTW	MS0022331	✓	✓			41,763	18,872
VICKSBURG POTW	MS0022381	✓	✓			149,147	21,714
GREENWOOD POTW	MS0023833	✓	✓	✓	✓	37,030	7,240
NATCHEZ POTW	MS0024252	✓	✓			109,684	26,863
INDIANOLA POTW	MS0024619	✓	✓	✓	✓	18,890	2,988
BATESVILLE POTW	MS0024627	✓	✓			40,272	10,763
OXFORD POTW	MS0029017	✓	✓			112,508	32,917
DCRUA, OLIVE BRANCH POTW	MS0029513	✓	✓	✓	✓	39,685	6,028
BOONEVILLE POTW	MS0042030	✓	✓			48,991	12,258
CANTON MUNICIPAL UTILITIES, HCR POTW	MS0042455	✓	✓	✓	✓	3,798	939
TUNICA COUNTY UTILITY DISTRICT	MS0048691	✓	✓			74,455	4,082
SENATOBIA POTW	MS0052221	✓	✓			42,816	6,738
CLINTON POTW, SOUTHSIDE	MS0054992	✓	✓	✓	✓	42,347	16,696
BEATTIES BLUFF WWTF	MS0057517	✓	✓			156,324	83,376
PONTOTOC, CITY OF, ACTIVATED SLUDGE FACILITY	MS0058581	✓	✓			37,340	4,986
MCCOMB POTW	MS0061077	✓	✓			82,866	14,300

Mississippi facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CORINTH POTW	MS0061328	✓	✓	✓	✓	63,580	13,384
DCRUA SHORT FORK WWTF	MS0062227		✓			164,950	31,642
Total	**26**	**24**	**25**	**9**	**9**	1,804,005	443,982

Missouri

Data from many facilities in Missouri, as marked with † in Table A-15, were absent from the Loading Tool. Missouri DNR provided data for those facilities and U.S. EPA calculated the loadings following the same methodology as the Loading Tool; the data can be accessed at https://dnr.mo.gov/mocwis_public/dmrDisclaimer.do. Table A-16 provides additional information about errors in the data for two of the facilities marked with †.

Table A-15. Major sewage treatment plants in Missouri with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MSD, MISSOURI RIVER WWTF	MO0004391	✓	✓			1,229,713	113,955
MONETT WASTEWATER TREATMENT PLANT	MO0021440	✓	✓			75,354	29,497
REPUBLIC WWTF	MO0022098					843,883	127,292
BOLIVAR WWTF	MO0022373					53,073*	10,267*
MOUNT VERNON WWTF	MO0022381	✓	✓			24,499	1,287
JACKSON MUNICIPAL WWTP	MO0022853	✓	✓			46,377*†	16,744†
SEDALIA CENTRAL WWTP	MO0023019					60,495*	12,331*
SEDALIA NORTH WWTF	MO0023027					28,818*	5,240*
ST. JOSEPH WATER PROTECTION FACILITY	MO0023043	✓				920,719*	138,182*
DEXTER EAST LAGOON	MO0023213	✓	✓			110,117	12,540

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MACON WWTF	MO0023221	✓	✓			8,847	17,674
JOPLIN SHOAL CREEK	MO0023256					187,786*	35,115*
CALIFORNIA S WWTF	MO0023272	✓	✓			79,490	48,510
KC, BLUE RIVER WWTF	MO0024911	✓	✓			1,959*	329*
KC, WESTSIDE WWTP	MO0024929					694,673*	104,257*
CITY OF KANSAS CITY TODD CREEK	MO0024961					126,138*	24,737*
MSD, LEMAY WWTP	MO0025151	✓	✓			5,040,572	929,641
MSD, COLDWATER CREEK WWTF	MO0025160	✓	✓			229,506*†	30,818†
MSD, BISSELL POINT WWTP	MO0025178					4,542,848*	682,316*
BRANSON, COMPTON DRIVE	MO0025241	✓	✓		✓	109,860†	720*†
UNION WEST WWTF	MO0025283	✓	✓			27,395	3,782,137
WASHINGTON SEWAGE TREAT	MO0025810	✓	✓			45,961	32,416
PLATTE CITY WWTF	MO0026298	✓	✓			9,594	1,500
CABOOL WWTF	MO0026301	✓	✓			25,796*†	23,870*†
CITY OF MOUNTAIN VIEW	MO0026310					13,935*†	2,338*†
SAVANNAH WWTF	MO0026336	✓	✓			1,237†	2,857†
ODESSA SOUTHEAST WWTP	MO0026387					21,106*	3,656*
DE SOTO WWTP	MO0026662	✓	✓			5,849	54,136
CITY OF HERCULANEUM	MO0027111	✓	✓			57,885	12,687
NIXA WWTF	MO0028037	✓	✓		✓	14,491	1,282
HARRISONVILLE WWTF	MO0028070					59,375*†	12,103*†
KENNETT WWTF	MO0028568	✓	✓			307,122*	46,093*
O' FALLON WASTEWATER TREATMENT PLANT	MO0028720	✓	✓			568,396	66,661
CENTRALIA WASTEWATER DISPOSAL FACILITY	MO0028789					529,051*	79,444*
EXCELSIOR SPRINGS WWTP	MO0028843					66,155*	13,485*
FARMINGTON E WWTP	MO0028860	✓	✓			89,916	10,713
BLUE SPRINGS, SNI A BAR WWTF	MO0028886					168,911*	30,998*
ST. PETERS SPENCER CREEK WWTP	MO0030970	✓	✓			290,161	51,985

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MARSHALL SE WWTP	MO0032883	✓	✓			15,565	17,622
MARYVILLE WWTF	MO0033286	✓	✓			25,381	5,450
SIKESTON WASTEWATER TREATMENT PLANT	MO0035009					74,750*	15,237*
MEXICO WWTP	MO0036242					137,033*	26,767*
AURORA WWTF	MO0036757	✓	✓			18,430	21,337
CARTHAGE WASTEWATER TREATMENT FACILITY	MO0039136					178,186*	33,370*
EUREKA WWTF	MO0039659	✓	✓			27,378	5,785
TRENTON MUNICIPAL UTILITIES WWTP	MO0039748	✓	✓			40,972	6,461
NEOSHO-CROWDER	MO0039926	✓		✓		9,998*	1,828*
PEVELY WWTP	MO0040142	✓	✓			30,498	5,113
CENTER CREEK WWTF	MO0040185					85,424*	17,413*
FARMINGTON WEST WWTF	MO0040312	✓	✓			84,262†	12,295†
BOONVILLE WASTEWATER PLANT	MO0040738	✓	✓			40,354	12,020
CITY OF MARSHFIELD	MO0040843	✓	✓			53,345	14,161
PACIFIC WASTEWATER TREATMENT FACILITY	MO0041131	✓	✓			30,470	34,772
CASSVILLE WWTF	MO0042579	✓	✓		✓	22,977†	211*†
POPLAR BLUFF MUNICIPAL WWTP	MO0043648	✓	✓			99,453	11,039
ROLLA SOUTHWEST WWTP	MO0047023	✓	✓			7,275	1,027
ROLLA, VICHY ROAD WWTP	MO0047031					13,592*	2,280*
KC, ROCKY BRANCH SEWAGE	MO0048305					55,047*	10,885*
KC, FISHING RIVER WWTF	MO0048313					41,144*	7,693*
KIRKSVILLE WWTP	MO0049506					182,108*	31,813*
SPRINGFIELD SW WWTP	MO0049522	✓	✓		✓	1,390,069	25,058
KC, BIRMINGHAM WWTF	MO0049531	✓	✓			454,886*	68,270*
CAPE GIRARDEAU MUNICIPAL WWTF	MO0050580					264,874*†	39,753*†
ROLLA SE TREATMENT PLANT	MO0050652					106,608*	19,408*
PERRYVILLE SOUTHEAST WWTF	MO0051144	✓	✓			59,000	13,137

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
TROY HWY 47 WASTEWATER TREATMENT PLANT	MO0054623	✓	✓			58,588	10,363
WARRENSBURG WEST WWTP	MO0055905	✓	✓			16,325	7,011
GLAIZE CREEK SEWER DISTRICT	MO0056162	✓	✓			30,134	1,938
ST CHARLES-MISSISSIPPI RIVER WWTF	MO0058343	✓	✓			207,949	39,838
MISSOURI RIVER WWTF	MO0058351	✓	✓			101,686	28,711
FESTUS-CRYSTAL CITY STP	MO0080632	✓	✓			28,223	14,534
MONTGOMERY CITY WWTP EAST	MO0084158					8,377*	1,405*
DCSD, TREATMENT PLANT #1	MO0085472	✓	✓			184,576	58,939
MSD, FENTON WWTP	MO0086126	✓	✓			192,091	25,376
WARRENTON WWTP	MO0087912	✓	✓			28,266	6,144
LEBANON WASTEWATER TREATMENT FACILITY	MO0089010					106,497*	21,709*
NEVADA	MO0089109	✓	✓			67,561	9,618
INDEPENDENCE, CITY OF	MO0089681	✓	✓			260,617	28,557
HANNIBAL WASTEWATER TREATMENT PLANT	MO0093513					149,959*	26,916*
ST. JAMES STP	MO0093564	✓	✓			2,191†	5,444†
WENTZVILLE WATER RECLAMATION CENTER	MO0093599					170,041*	32,668*
WAYNESVILLE WWTF	MO0094161	✓	✓			937	2,154
WARRENSBURG EAST WWTP	MO0094579					41,226*	7,554*
JEFFERSON CITY WATER RECLAMATION	MO0094846	✓	✓			178,753	63,819
BUFFALO WWTF	MO0094854					97,422	8,037
CITY OF CUBA	MO0094919					52,109*	10,143*
CARUTHERSVILLE WWTF	MO0095028	✓	✓			1,119	2,221
BUTLER WWTP	MO0096229					21,711*	3,768*
CARROLLTON WWTP	MO0096318	✓	✓			28,447	3,324
WEST PLAINS WWTF	MO0096610					71,121*	14,497*
CLINTON WWTP	MO0097390					74,232*	12,372*

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
COLUMBIA REGIONAL WWTP	MO0097837	✓		✓		508,158*	76,265*
OZARK WWTF, CITY OF	MO0099163	✓	✓		✓	59,851†	1,673†
ST CLAIR, CITY OF	MO0099465	✓	✓			34,223†	6,137†
ELDON WWTF	MO0100676	✓	✓			33,638	4,331
LITTLE BLUE VALLEY SEWER	MO0101087					1,560,223*	234,160*
MSD, GRAND GLAIZE WWTF	MO0101362	✓	✓			544,726*†	81,753*†
SEDALIA SOUTHEAST WWTP	MO0101567					64,788*	12,976*
SPRINGFIELD NW WWTF	MO0103039	✓	✓			73,986	7,402
CITIES/LK OZARK & OSAGE	MO0103241	✓	✓			67,968	10,513
FULTON WWTP	MO0103331	✓	✓			80,426	11,038
JOPLIN TURKEY CREEK WWTF	MO0103349					364,774*	54,748*
PARK HILL WWTF	MO0103560	✓	✓			67,757	14,354
CAMERON WWTF	MO0104299	✓	✓			81,747	12,553
SULLIVAN WWTP	MO0104736	✓	✓			10,440†	4,409†
NEOSHO-SHOAL CREEK	MO0104906	✓	✓			2,130†	287†
KEARNEY WWTF	MO0107883					31,178*	5,381*
CHILLICOTHE, CITY OF	MO0108227					105,300†	13,908†
ST. ROBERT WWTP	MO0112925	✓	✓			165,175	55,527
HOLLISTER WWTF	MO0116041	✓	✓		✓	159,024	8,689
DUCKETT CREEK SANI DIST	MO0116572	✓	✓			186,927	52,827
BRANSON, COOPER CREEK	MO0116599	✓	✓		✓	123,209†	525*†
BELTON WWTF	MO0117412	✓	✓			87,406	9,215
MOBERLY WWTP	MO0117960					233,157*	44,291*
PCRSD, BRUSH CREEK FAC	MO0119474	✓	✓			33,543	90,139
CHARLESTON WWT LAGOON	MO0120081	✓	✓			6,269	7,670
MSD, NEW LOWER MERAMEC WWTF	MO0127949	✓	✓			449,046*†	67,393*†
NPSD, INTERIM SALINE CREEK REGIONAL WWTF	MO0128490	✓	✓			42,442	18,644
CITY OF OAK GROVE WWTF	MO0130371	✓	✓			13,263	6,718
TROY, SOUTHEAST WWTF	MO0131296					11,266*	1,890*

Missouri facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CITY OF OZARK WWTF	MO0133671	✓	✓		✓	10,599†	178†
CAPE GIRARDEAU WWTF	MO0136328					210,150*	37,306*
CITY OF LIBERTY	MO0137111	✓	✓			49,705	22,386
Total	**123**	**81**	**78**	**2**	**8**	27,918,794	8,452,364

Table A-16. Notes for values marked with † due to errors in the provided data

Missouri facility name	NPDES ID	Note
ST CLAIR, CITY OF	MO0099465	Monthly flow value for May 2017 was corrected for an assumed missing decimal (2259 MGD to 2.259 MGD). This was flagged by the Loading Tool.
SULLIVAN WWTP	MO0104736	Monthly flow value for March 2017 was corrected for an assumed missing decimal (1350203 MGD to 1.350203 MGD).

Note: MGD = million gallons per day.

Ohio

Table A-17. Major sewage treatment plants in Ohio with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
TWIN CITY WWTP	OH0020079	✓	✓			104,760	5,051
WEST CARROLLTON WWTP	OH0020133	✓	✓			70,718	7,689
LEXINGTON WWTP	OH0020257	✓	✓			27,990*	3,092
CELINA WWTP	OH0020320	✓	✓		✓	103,411*	2,478
ORRVILLE WWTP	OH0020371	✓	✓		✓	94,318	2,888
HILLSBORO WWTP	OH0020389	✓	✓		✓	24,392	1,386
HAMILTON CO POLK RUN WWTP	OH0020419	✓	✓			241,277	36,801

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MILFORD STP	OH0020451	✓	✓			44,863	8,427
GALLIPOLIS WPCF	OH0020478	✓	✓			26,783	16,466
MASON WWTP NO 2	OH0020494	✓	✓		✓	107,209	21,003
MASSILLON WWTP	OH0020516	✓	✓		✓	675,741	99,283
BROOKVILLE WWTP	OH0020605	✓	✓			16,832	3,260
BELPRE WWTP	OH0020621	✓	✓			56,534	7,224
JACKSON WWTP	OH0020834	✓	✓		✓	107,530	3,197
EATON WWTP & SEWER SYSTEM	OH0020907	✓	✓			66,188	8,889
LEBANON REGIONAL WWTP	OH0021059	✓	✓			136,949	22,267
GREENFIELD WWTP	OH0021083	✓	✓		✓	40,778	1,466
GEORGETOWN STP	OH0021300	✓	✓		✓	18,176	1,350
HARRISON WWTP	OH0021440	✓	✓			80,237	18,282
UNION WWTP	OH0021644	✓	✓			46,691	4,254
COLUMBIANA WWTP	OH0021776	✓	✓			26,792	6,224
EAST PALESTINE WWTP	OH0021784	✓	✓		✓	36,146*	1,232
SOUTH POINT WWTP	OH0021814	✓	✓			55,454	11,971
WEST MILTON WWTP	OH0021857	✓	✓			35,264	5,769
NEWTON FALLS WPC	OH0022110	✓	✓			30,719	1,477
LOGAN WWTP	OH0023388	✓	✓			51,939*	4,381
WELLSTON WWTP NORTH	OH0023507	✓	✓			59,089	2,716
SHELBY WWTP	OH0023540	✓	✓			82,772*	8,708
LONDON WWTP	OH0023779	✓	✓			117,245*	20,062
ALLIANCE WWTP	OH0023868	✓	✓		✓	458,629	7,112
ASHLAND WWTP	OH0023906	✓	✓		✓	273,685	61,037
ATHENS WWTP	OH0023931	✓	✓			126,006	19,616
BARBERTON WPCF	OH0024007	✓	✓		✓	121,383	7,627
BARNESVILLE WWTP	OH0024015	✓	✓			18,548*	1,407
BELLEFONTAINE WWTP	OH0024066	✓	✓			91,964	12,225
CAMBRIDGE WPCC	OH0024309	✓	✓			96,043	8,817
CAMPBELL WWTP	OH0024325	✓	✓			40,503	2,884

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CANAL WINCHESTER WWTP	OH0024333	✓	✓			52,010*	10,735
CITY OF CANTON	OH0024350	✓	✓		✓	1,226,760	63,454
CHILLICOTHE WWTP–EASTERLY	OH0024406	✓	✓			124,733	25,534
CITY OF CIRCLEVILLE	OH0024465	✓	✓			69,262	15,577
CITY OF COLUMBUS	OH0024732	✓	✓			2,429,207	595,677
CITY OF COLUMBUS	OH0024741	✓	✓			3,074,227	575,451
COSHOCTON WWTP	OH0024775	✓	✓			68,074*	75,732
DAYTON STP	OH0024881	✓	✓			1,904,288	353,054
CITY OF DELAWARE	OH0024911	✓	✓	✓	✓	64,636	7,769
DOVER WWTP	OH0024945	✓	✓			53,103*	10,353
EAST LIVERPOOL WWTP	OH0024970	✓	✓			98,286	12,809
ENGLEWOOD WWTP	OH0025011					47,278	3,049
FAIRBORN WATER RECLAMATION	OH0025062	✓	✓			151,054	21,849
FAIRFIELD WWTP	OH0025071	✓	✓			255,593	37,172
FRANKLIN REGIONAL WWTP	OH0025275	✓	✓			77,333	5,615
GALION WWTP	OH0025313	✓	✓		✓	77,320	5,073
GIRARD WWTP	OH0025364	✓	✓			115,493	21,086
BEAVERCREEK WRRF	OH0025381	✓	✓		✓	241,357	13,160
GREENVILLE WWTP	OH0025429	✓	✓		✓	42,358	4,591
HAMILTON WWTP	OH0025445	✓	✓			307,672	59,427
CINCINNATI MSD LITTLE MIAMI	OH0025453					507,439*	76,157*
CINCINNATI MSD MILL CREEK	OH0025461					5,095,920*	764,801*
CINCINNATI MSD MUDDY CREEK	OH0025470	✓	✓			406,472	55,899
SYCAMORE CREEK WWTP	OH0025488	✓	✓		✓	132,139	4,425
HEATH WWTP	OH0025763	✓	✓			49,522*	10,391
HUBBARD WPCF	OH0025810	✓	✓			72,747	11,297
IRONTON WWTP	OH0025852	✓	✓			95,522	9,439
KENTON WWTP	OH0025925	✓	✓			132,011	14,075
LANCASTER WPCF	OH0026026	✓	✓			360,495	19,697
CITY OF LOUISVILLE	OH0026182	✓	✓		✓	34,907	2,317

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MANSFIELD WWTP	OH0026328	✓	✓			454,708	52,380
MARIETTA WWTP	OH0026344	✓	✓			92,785	23,009
MARION WPC	OH0026352	✓	✓			278,366	38,910
MIAMISBURG WATER RECLAMATION FACILITY	OH0026492	✓	✓			164,685	17,641
CITY OF MIDDLETOWN	OH0026522	✓	✓			374,409	13,340
MINSTER WWTP	OH0026573	✓	✓		✓	59,433*	12,115*
EASTERN REGIONAL WATER RECLAMATION FACILITY	OH0026590	✓	✓		✓	298,086	28,444
MONTGOMERY CO WESTERN REGIONAL	OH0026638	✓	✓			405,504	55,294
MOUNT VERNON WWTP	OH0026662	✓	✓			172,367	23,137
NEWARK WWTP	OH0026671	✓	✓			621,125	214,232
NEWCOMERSTOWN WWTP & SEWERS	OH0026689	✓	✓			28,360*	6,947
NEW PHILADELPHIA WWTP	OH0026727	✓	✓			156,702*	21,925
NILES WWTP	OH0026743	✓	✓			149,164	25,990
OXFORD WWTP	OH0026930	✓	✓			92,661	17,252
PIQUA WWTP	OH0027049	✓	✓			123,269	24,130
PORTSMOUTH LAWSON RUN WWTP	OH0027197	✓	✓			139,869	18,160
SALEM STP	OH0027324	✓	✓		✓	147,845	4,233
SIDNEY WWTP	OH0027421	✓	✓			144,930	42,070
SPRINGBORO WWTP	OH0027472	✓	✓			45,543	5,846
STEUBENVILLE WWTP	OH0027511	✓	✓			132,830	6,232
STRUTHERS WWTP	OH0027600	✓	✓			296,014	42,714
TROY WWTP	OH0027758	✓	✓			220,611	33,533
URBANA WPCF	OH0027880	✓	✓			210,501	10,266
WARREN WPCF	OH0027987	✓	✓			381,632	43,328
WASHINGTON COURT HOUSE WWTP	OH0028002	✓	✓			106,172	24,507
WILMINGTON STP	OH0028134	✓	✓		✓	92,003	11,943
WOOSTER WPCP	OH0028185	✓	✓			189,268	10,738
XENIA FORD ROAD WWTP	OH0028193	✓	✓		✓	70,500	3,671

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
XENIA GLADY RUN WWTP	OH0028207	✓	✓		✓	67,200	2,894
YOUNGSTOWN WWTP	OH0028223	✓	✓			863,786	84,344
PICKERINGTON WWTP	OH0031119	✓	✓			83,140*	10,477
AQUA OHIO WATER CO INC–BLACKLICK WWTP	OH0036021	✓	✓		✓	34,638	721
TRUMBULL CO. BROOKFIELD WWTP	OH0036285	✓	✓			39,910	1,922
LOGAN INDIAN LAKE WPCF	OH0036641	✓	✓			95,035	4,182
MAHONING BOARDMAN WWTP	OH0037249	✓	✓		✓	172,700	6,207
LICKING CO BUCKEYE LAKE WWTP	OH0039098	✓	✓			45,082*	15,547
GREENE CO SUGARCREEK WRF	OH0040592	✓	✓		✓	49,236	11,065
HAMILTON CO TAYLOR CRK TREATME	OH0040983	✓	✓			122,790	28,934
TRUMBULL MOSQUITO CREEK WWTP	OH0043401	✓	✓			238,939	15,213
MAHONING MEANDER WWTP	OH0045721	✓	✓		✓	161,018	4,520
O'BANNON CREEK REGIONAL WWTP	OH0048089	✓	✓			156,244	18,800
NINE MILE CREEK WWTP	OH0049361	✓	✓			37,590	9,523
CLERMONT CO LOWER EAST FORK	OH0049379	✓	✓			356,953	50,609
CLERMONT CO MIDDLE EAST FORK	OH0049387	✓	✓			344,735	41,067
BUTLER CO LESOURDSVILLE WATER	OH0049417	✓	✓			303,300	5,848
TRI CITIES NORTH REGIONAL WWTP	OH0049646	✓	✓			506,582	113,668
CLARK CO SOUTHWEST WWTP	OH0049794	✓	✓			48,761	6,733
EASTERN OHIO REGIONAL WW AUTHORITY	OH0049999	✓	✓			97,406	2,918
SCIOTO WHEELERSBURG WWTP SD NO 2	OH0050016	✓	✓			36,138	6,903
PICKAWAY CORRECTIONAL INSTITUTE	OH0054224	✓	✓		✓	29,624*	1,127
FAIRFIELD CO TUSSING ROAD WWTP	OH0054305	✓	✓		✓	67,899	2,146
DELAWARE CO COMMISSIONERS	OH0054399	✓	✓	✓	✓	49,210	3,440
MARION CO SD NO 7 WATER RECL.	OH0058157	✓	✓		✓	13,688	2,015
UPPER TUSCARAWAS WWTP NO 36	OH0064017	✓	✓		✓	221,589	8,596
WARREN CO LOWER LITTLE MIAMI WWTP	OH0071692	✓	✓		✓	170,088	10,446
BUTLER CO UPPER MILL CREEK WATER RECLAMATION FACILITY	OH0072087	✓	✓	✓	✓	394,730*	19,097
MILLERCOORS BREWING CO.	OH0072605	✓	✓		✓	65,282*	42,217

Ohio facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
CHILLICOTHE CORRECTIONAL INSTITUTION	OH0076490	✓	✓			52,854	7,116
LAWRENCE CO WWTP	OH0094684	✓	✓			59,501	8,645
RITTMAN WWTP	OH0102857	✓	✓		✓	75,721	3,094
SOUTHWEST LICKING W & SD GALE RD ENVIR CONTROL FACILITY	OH0113964	✓	✓			71,096*	12,106
DELAWARE ALUM CREEK WWTP	OH0121380	✓	✓			207,784*	10,963
DELAWARE LOWER SCIOTO WRF	OH0136247	✓	✓	✓	✓	519†	87†
MARYSVILLE WRF	OH0136271	✓	✓		✓	155,567*	8,534
LANCASTER UPPER HOCKING WPCF	OH0136603	✓	✓			33,062	10,269
Total	**132**	**129**	**129**	**4**	**40**	32,359,515	4,767,663

Table A-18. Notes for values marked with †

Ohio facility name	NPDES ID	Note
DELAWARE LOWER SCIOTO WRF	OH0136247	No effluent flow or TN, TP concentrations available for 2017. Average Facility Flow in 2017 reported at https://echo.epa.gov/trends/loading-tool/reports/dmr-pollutant-loading?permit_id=OH0136247&year=2017 was used to estimate average monthly flow, and TPCs for TP (2.422 mg/L) and TN (14.436 mg/L) were used by selecting low-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.

Note: mg/L = milligrams per liter.

Tennessee

Table A-19. Major sewage treatment plants in Tennessee with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Tennessee facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
SWEETWATER STP	TN0020052	✓	✓	✓	✓	38,535*†	4,358
MARYVILLE STP	TN0020079	✓	✓			170,143	59,217
KINGSPORT STP	TN0020095					370,409*	55,591*
GATLINBURG STP	TN0020117	✓	✓		✓	83,334	13,236
GALLATIN STP	TN0020141	✓	✓			109,392	25,818
DAYTON STP	TN0020478	✓	✓			105,399	9,408
LENOIR CITY STP	TN0020494	✓	✓			22,664	10,655
DECHERD CITY STP	TN0020508	✓	✓	✓	✓	3,082	193
SMYRNA STP	TN0020541	✓	✓	✓	✓	78,802	6,287
NASHVILLE–CENTRAL	TN0020575	✓	✓			903,176	85,844
MCKENZIE STP	TN0020613	✓	✓	✓	✓	17,827	5,516
NASHVILLE–DRY CREEK STP	TN0020648	✓	✓			287,576	30,433
CLARKSVILLE STP	TN0020656	✓	✓			113,869	10,268
ROGERSVILLE STP	TN0020672	✓	✓			578	90
NEWPORT STP	TN0020702	✓	✓			16,275	4,148
MEMPHIS–MAYNARD C. STILES	TN0020711	✓	✓			7,862,983	1,999,523
MEMPHIS–TE MAXSON STP SO PLT	TN0020729	✓	✓			19,204,759	1,857,912
LAFAYETTE STP	TN0020877	✓	✓	✓	✓	5,323	777
COVINGTON STP	TN0020982	✓	✓			73,935	4,644
MILLINGTON STP #2	TN0021067	✓	✓	✓	✓	112,303	10,031
JEFFERSON CITY STP	TN0021199	✓	✓			58,828	5,162
DENZIL BOWMAN WASTEWATER	TN0021229	✓	✓			111,833	13,636
PIGEON FORGE STP	TN0021237	✓	✓		✓	28,707	4,074
CHURCH HILL WWTP	TN0021253	✓	✓			13,448	2,308
SPRING CITY STP	TN0021261	✓				1,554	4,386*
USA FT CAMPBELL STP	TN0021296	✓	✓	✓	✓	85,662	2,426

Tennessee facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
UNION CITY A. L. STRUB WWTP	TN0021580	✓	✓			77,573	10,228
PULASKI STP	TN0021687					34,931	3,199
FAYETTEVILLE STP	TN0021814	✓	✓			8,786	2,657
KNOXVILLE–LOVES CREEK STP	TN0021822	✓	✓			200,865	17,232
WINCHESTER STP	TN0021857	✓	✓			817	2,106
PORTLAND STP	TN0021865	✓	✓	✓	✓	21,951	6,514
LIVINGSTON STP	TN0021873	✓	✓	✓	✓	12,994	5,028
LAWRENCEBURG UTILITY SYSTEMS	TN0022551	✓	✓			5,160	2,219
MURFREESBORO STP	TN0022586	✓	✓	✓		74,568	50,905
LEWISBURG STP	TN0022888	✓	✓			59,352	11,448
ERWIN STP	TN0023001	✓	✓			64,649	9,608
FIRST U.D. KNOX CO.–TURKEY CR	TN0023353	✓	✓			174,586	29,169
TULLAHOMA STP	TN0023469	✓	✓	✓	✓	44,022	7,075
DYERSBURG STP	TN0023477	✓	✓			238,643	39,139
MORRISTOWN STP	TN0023507	✓	✓			554,610	58,998
ELIZABETHTON STP	TN0023515	✓	✓			79,086	12,198
BRISTOL STP #2	TN0023531					445,039*	66,792*
KNOXVILLE–FOURTH CREEK STP	TN0023574					259,971*	39,017*
KNOXVILLE–KUWAHEE STP	TN0023582					1,020,036*	153,088*
MCMINNVILLE STP	TN0023591	✓	✓			76,244	2,567
CLEVELAND UTILITIES STP	TN0024121	✓	✓			73,548	21,009
OAK RIDGE STP	TN0024155	✓	✓			50,034	6,417
SHELBYVILLE STP	TN0024180	✓	✓			58,666	16,536
COOKEVILLE STP	TN0024198	✓	✓			74,272	19,155
ATHENS UB–OOSTANAULA CREEK STP	TN0024201	✓	✓	✓	✓	18,290	8,372
CHATTANOOGA–MOCCASIN BEND STP	TN0024210	✓	✓			3,460,442	446,333
JOHNSON CITY KNOB CREEK STP	TN0024236	✓	✓			44,599	7,333
JOHNSON CITY STP	TN0024244	✓	✓			242,696	10,883
SOUTH PITTSBURG STP	TN0024295	✓	✓			24,375	15,285
LEXINGTON WASTEWATER FACILITY	TN0024341					50,782*	10,351*

Tennessee facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ROANE COUNTY STP	TN0024473	✓	✓			24,809	1,790
JACKSON ENERGY AUTHORITY	TN0024813	✓	✓		✓	222,651	29,462
MOUNTAIN CITY STP	TN0024945	✓	✓			29,125	3,237
SPRINGFIELD STP	TN0024961	✓	✓			67,487	24,892
NASHVILLE–WHITES CR STP	TN0024970	✓	✓			511,957	55,436
CROSSVILLE STP	TN0024996	✓	✓			48,730	7,096
MANCHESTER STP	TN0025038	✓	✓			58,491	10,968
HARRIMAN UTILITY BOARD	TN0025437	✓	✓			9,441	1,645
ROCKWOOD STP	TN0026158	✓	✓			16,435	4,242
BELLS LAGOON	TN0026247	✓	✓			67,588	16,072
CLINTON STP #1	TN0026506					63,671*	12,979*
WHITEVILLE STP	TN0026590	✓	✓			20,338	3,827
LEBANON STP	TN0028754	✓	✓			177,564	28,535
JOHNSON CITY REGIONAL STP	TN0028789	✓	✓			10,916	4,692
FRANKLIN STP	TN0028827	✓	✓	✓	✓	43,670	20,057
COLUMBIA STP	TN0056103	✓	✓		✓	202,347	24,018
HALLS LAGOON	TN0057291	✓	✓			4,275	1,023
COLLIERVILLE STP	TN0057461	✓	✓			32,130	16,314
LOUDON STP	TN0058181	✓	✓			429,513	190,539
TELLICO AREA–NILES FERRY WWTP	TN0058238	✓	✓			1,886	526
WHITE HOUSE STP	TN0059404	✓	✓	✓	✓	18,279	5,160
WEST KNOX UD–KARNS BEAV CR STP	TN0060020	✓	✓			78,680	10,802
SPARTA STP	TN0061166					13,173	2,663
PARIS STP	TN0061271	✓	✓			34,992	2,748
SAVANNAH LAGOON	TN0061565	✓	✓			37,398	9,855
KINGSTON STP	TN0061701	✓	✓			3,075	1,429
KUB–EASTBRIDGE STP	TN0061743	✓	✓			43,212	4,494
NEWBERN STP	TN0062111	✓	✓			72,726	15,795
SELMER STP	TN0062308	✓	✓			21,933	7,617
BROWNSVILLE STP	TN0062367	✓	✓			8,443	1,850

Tennessee facility name	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
MILAN STP	TN0062375	✓	✓			14,736	3,800
MUNFORD LAGOON	TN0062499	✓	✓			87,151	11,904
MARTIN STP	TN0062545	✓	✓	✓	✓	47,306	14,305
HUMBOLDT STP	TN0062588	✓	✓			42,030	12,196
JAMESTOWN STP	TN0062634	✓	✓	✓	✓	1,893	87
ETOWAH STP	TN0063771	✓	✓			66,655	5,211
SEVIERVILLE STP	TN0063959	✓	✓			168,459*	34,339*
ROSSVILLE STP	TN0064092	✓				12,986	13,447*
MONTEREY STP	TN0064688	✓	✓			33,905	8,407
SMITHVILLE STP	TN0065358	✓	✓			13,241	3,266
BARTLETT LAGOON	TN0066800	✓	✓			17,631	16,120
DICKSON STP	TN0066958	✓	✓	✓	✓	21,874	8,143
ATHENS UB–NORTH MOUSE CREEK	TN0067539	✓	✓		✓	2,170	1,473
HARPETH VALLEY UD	TN0074748	✓	✓			159,118	11,391
BROWNSVILLE LAGOON	TN0075078	✓	✓		✓	20,922	6,110
SPRING HILL STP	TN0075868	✓	✓	✓	✓	35,813	1,248
JACKSON ENERGY AUTH–MIDDLE FK	TN0075876	✓	✓			25,614	10,046
CITY OF OAKLAND	TN0077836					31,508*†	5,286*†
BOLIVAR STP	TN0077917	✓	✓	✓	✓	43,820	5,509
RIPLEY WASTEWATER LAGOON	TN0078191	✓	✓			41,702*†	6,997*†
LAKELAND STP	TN0078255		✓			4,457	4,059
TRENTON STP	TN0078271					32,567*	5,591*
ARLINGTON STP	TN0078603	✓	✓			15,222	13,254
WAVERLY STP	TN0078808					42,617*	7,899*
COLLIERVILLE NORTHWEST STP	TN0078841	✓	✓			42,877	21,210
HALLSDALE POWEL UTILITY DISTRICT	TN0078905	✓	✓			99,599	50,858
LA FOLLETTE UTILITIES	TN0080021	✓	✓	✓	✓	9,775	3,993
JONESBOROUGH	TN0081175	✓	✓			17,059	12,944
Total	**114**	**102**	**101**	**20**	**25**	40,959,625	6,135,658

Note: Please see Tennessee's supplemental information in Appendix B; Tennessee documented progress since 2017.

Table A-20. Notes for values marked with †

Tennessee facility name	NPDES ID	Note
SWEETWATER STP	TN0020052	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#TN0020052. TPC for TN (14.436 mg/L) was used by selecting low-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
RIPLEY WASTEWATER LAGOON	TN0078191	No effluent flow or TN, TP concentrations available for 2017. Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#TN0078191, and TPCs for TP (2.422 mg/L) and TN (14.436 mg/L) were used by selecting low-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.
CITY OF OAKLAND	TN0077836	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") were downloaded from https://echo.epa.gov/effluent-charts#TN0077836. TPCs for TP (2.422 mg/L) and TN (14.436 mg/L) were used by selecting low-flow class of Table 4 from https://echo.epa.gov/help/loading-tool/hypoxia-task-force-search-help/potw-typical-pollutant-concentration-rationale.

Note: mg/L = milligrams per liter.

Wisconsin

Table A-21. Major sewage treatment plants in Wisconsin with monitoring or limits for nutrient pollution and their nutrient loadings (as of September 30, 2017)

Wisconsin facility n0ame	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
WHITEWATER CITY WWTF	WI0020001	✓	✓		✓	45,021	3,642
RHINELANDER WWTF	WI0020044	✓	✓		✓	26,459	1,597
RICHLAND CENTER CITY WWTF	WI0020109		✓		✓	24,334*	1,392*
MERRILL CITY WWTF	WI0020150		✓		✓	52,737*	3,212*
HARTFORD WATER POLLUTION CTRL	WI0020192		✓		✓	92,967*	412*
PRAIRIE DU CHIEN WWTF	WI0020257		✓		✓	1,716,163*†	102,829*†
STOUGHTON CITY WWTF	WI0020338	✓	✓		✓	18,318	1,473
MONROE CITY WWTF	WI0020362	✓	✓		✓	13,721	973
REEDSBURG CITY WWTF	WI0020371		✓		✓	87,075*	3,674
PORTAGE CITY WWTF	WI0020427	✓	✓		✓	25,836	3,051
PLATTEVILLE CITY WWTF	WI0020435		✓		✓	40,682*	1,657
SUN PRAIRIE CITY WWTF	WI0020478		✓		✓	161,992*	7,074
SUSSEX VILLAGE WWTF	WI0020559	✓	✓		✓	15,312	2,071
BARABOO CITY WWTF	WI0020605		✓		✓	60,007*	847
OREGON WWTF	WI0020681	✓	✓		✓	15,235*	3,188*
SPARTA CITY WWTF	WI0020737		✓		✓	55,869*	2,370
COLUMBUS CITY WWTF	WI0021008	✓	✓		✓	20,956*	1,638
MARSHFIELD CITY WWTF	WI0021024		✓		✓	121,306*	3,003
OCONOMOWOC CITY WWTF	WI0021181		✓		✓	111,951*	6,105*
TOMAH CITY WWTF	WI0021318		✓		✓	48,940*	749
TWIN LAKES WASTEWATER TREATMENT	WI0021695		✓		✓	34,114*	1,175
RICE LAKE CITY WWTF	WI0021865	✓	✓		✓	140,690†	4,217†
ANTIGO CITY SPRINGBROOK FACILI	WI0022144	✓	✓		✓	11,810	1,803
FORT ATKINSON CITY WWTF	WI0022489		✓		✓	102,439*	6,497*
WAUPUN CITY WWTF	WI0022772	✓	✓		✓	44,898*	3,832*
BURLINGTON WATER POLLUTION CTL	WI0022926	✓	✓		✓	19,819	4,407

Wisconsin facility n0ame	NPDES ID	Monitoring/limits for nutrients				Facility nutrient loadings	
		Monitoring N	Monitoring P	Limits N	Limits P	Nitrogen (lbs. in 2017)	Phosphorus (lbs. in 2017)
ARCADIA CITY WWTF	WI0023230	✓	✓		✓	28,077	3,324
BEAVER DAM CITY WWTF	WI0023345	✓	✓		✓	145,557	11,392
BELOIT CITY WWTF	WI0023370	✓	✓		✓	88,772	3,413
BROOKFIELD FOX WATER POLLUTION	WI0023469		✓		✓	406,673*	17,237
CHIPPEWA FALLS CITY WWTF	WI0023604	✓	✓		✓	23,742	7,467
EAU CLAIRE CITY WWTF	WI0023850		✓		✓	284,376*	3,623*
HUDSON CITY WWTF	WI0024279		✓		✓	62,717*	26,524*
JEFFERSON CITY WWTF	WI0024333	✓	✓		✓	21,324	1,327
MADISON METRO SEW DIST WWTF	WI0024597		✓		✓	1,809,371*	37,874
MAYVILLE CITY WWTF	WI0024643		✓		✓	34,769*	1,792*
MENOMONIE CITY WWTF	WI0024708	✓	✓		✓	17,567	3,270
WAUSAU WATER WORKS WWTF	WI0025739		✓		✓	212,687*	10,975
WISCONSIN RAPIDS CITY WWTF	WI0025844		✓		✓	126,227*	8,193
PLOVER, VILLAGE OF	WI0027995		✓		✓	54,344*	1,414
WATERTOWN CITY WWTF	WI0028541		✓		✓	145,116*	5,907
WESTERN RACINE CO SEW DISTRICT	WI0028754		✓		✓	44,939*	2,031
RIVER FALLS CITY WWTF	WI0029394	✓	✓		✓	26,750	937†
STEVENS POINT CITY WWTF	WI0029572		✓		✓	105,444*	4,117
LA CROSSE CITY WWTF	WI0029581	✓	✓		✓	133,373	11,184
WAUKESHA CITY WWTF	WI0029971		✓		✓	452,711*	2,741
JANESVILLE CITY WWTF	WI0030350	✓	✓		✓	628,337*	14,901
LAKE MILLS CITY WWTF	WI0031194	✓	✓		✓	24,059*	1,668
WI DELLS LAKE DELTON SEW COMM	WI0031402	✓	✓		✓	32,927	690
WALWORTH COUNTY METRO WWTF	WI0031461	✓	✓		✓	117,244*	7,421*
NORWAY TN SANITARY DISTRICT 1	WI0031470	✓	✓		✓	22,038	591
SALEM UTILITY DISTRICT NO 2	WI0031496		✓		✓	36,537†	2,710
DELAFIELD HARTLAND PCC WWTF	WI0032026	✓	✓		✓	30,557	4,004
RIB MOUNTAIN METRO SEWER DIST	WI0035581		✓		✓	121,856*	7,306
FONTANA WALWORTH WPCC WWTF	WI0036021		✓		✓	46,154*	2,229
Total	**55**	**26**	**55**	**0**	**55**	8,392,896	379,150

Table A-22. Notes for values marked with †

Wisconsin facility name	NPDES ID	Note
PRAIRIE DU CHIEN WWTF	WI0020257	Wisconsin Department of Natural Resources calculated TN and TP loads following the methods used in U.S. EPA's Loading Tool. The annual average flow of 42.22 MGD was used together with TPCs for TN and TP to calculated TN and TP loads.
RICE LAKE CITY WWTF	WI0021865	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#WI0021865 to calculate annual loading in 2017. For TN, the 1-month load in the Loading Tool (11,724 lb for May 2017) was extrapolated for the whole year (11,724 lb x 12 = 140,690 lb).
RIVER FALLS CITY WWTF	WI0029394	Monthly averages of flow ("Flow, in conduit or thru treatment plant (50050)") and TP concentration ("Phosphorus, total [as P] (00665)") were downloaded from https://echo.epa.gov/effluent-charts#WI0029394 to calculate annual loading in 2017.
SALEM UTILITY DISTRICT NO 2	WI0031496	https://echo.epa.gov/trends/loading-tool/reports/dmr-pollutant-loading?permit_id=WI0031496&year=2017 gives 2017 N loading as 10,849 lb/yr. It seems, however, to account only for inorganic nitrogen. DIN, TKN, and NO_2 + NO_3 were reported for this facility. Although the Loading Tool based TN load on inorganic nitrogen data, TKN + NO_2 + NO_3 is a better measure. Using monthly averages of effluent flow ("Flow, in conduit or thru treatment plant (50050)") from https://echo.epa.gov/effluent-charts#WI0031496, TN load should be 10.6 mg/L (NO_2+NO_3) + 1.3 mg/L (TKN) = 11.9 mg/L in November 2017. November 2017 load = 3,044.75, then extrapolated 2017 load = 36,537 lb/TN.

Notes: DIN = dissolved inorganic nitrogen; lb = pounds; lb/yr = pounds per year; mg/L = milligrams per liter; NO_2 = nitrogen dioxide; NO_3 = nitrate; TKN = total Kjeldahl nitrogen.

Appendix B STATE-SPECIFIC SUPPLEMENTAL INFORMATION

This appendix presents additional material prepared by many of the HTF states on their efforts to reduce point source nutrient loads, beyond the common measures in this report, which use data on monitoring requirements and permit limits for major sewage treatment plants from the end of federal fiscal year 2017 (September 30, 2017), and from the end of calendar year 2017 for estimated discharge loads.

B.1 Illinois Supplemental Information

The Illinois Environmental Protection Agency (IEPA) has not adopted numeric TN or TP water quality standards (WQS) for streams. It has, however, convened a Nutrient Science Advisory Committee to develop recommendations for numeric nitrogen and phosphorus WQS. The Committee released their report (*Recommendations for Numeric Nutrient Criteria and Eutrophication Standards for Illinois Streams and Rivers*) in December 2018. The report was provided for public notice prior to IEPA proposing any nutrient WQS to the Illinois Pollution Control Board, a quasi-legislative body responsible for adopting WQS in Illinois. At the time of this writing, IEPA is reviewing the public comments.

IEPA has not issued any National Pollutant Discharge Elimination System (NPDES) permits with TN permit limits. It has, however, issued 17 NPDES permits that each contains a goal for TN removal.

All new and expanding major municipal facilities will have a phosphorus limit of 1.0 milligram per liter (mg/L) as required by the effluent standard specified in Title 35 Illinois Administrative Code § 304.123(g) and might receive more stringent nutrient limits through the antidegradation process.

Since 2017, under Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) permits, the Calumet (354 million gallons per day [MGD]), Stickney (1,200 MGD), and O'Brien (333 MGD) plants have been subject to the following requirements:[9]

- Meeting an annual phosphorus limit of 0.5 mg/L by 2030.
- Setting up a Nutrient Oversight Committee to prepare a nutrient implementation plan.
- Developing a feasibility report to meet 0.5 mg/L, 0.3 mg/L, and 0.1 mg/L for phosphorus.

Since 2018, all major sewage treatment plants (more than 1.0 MGD) have been subject to the following requirements:

- Meeting an annual phosphorus limit of 0.5 mg/L by 2030 if the treatment method is biological phosphorus removal.
    - Meeting an annual phosphorus limit of 0.5 mg/L by 2025 if the treatment method is a chemical phosphorus removal option.
    - Meeting an annual phosphorus limit of 0.5 mg/L by 2035 if the treatment method is a biological nutrient removal option.

  Exceptions to these requirements include if the construction of the facilities would cause widespread social and economic hardship for the community.
- A Nutrient Assessment Reduction Plan (NARP) might be required in some cases:

[9] Based on the January 25, 2017, Settlement Agreement between MWRDGC and environmental groups.

- A NARP and a permit limit will be required for all major municipal facilities upstream of a segment impaired for aquatic algae, aquatic plants (macrophytes), or dissolved oxygen (DO) that has the signature of excess algae (above 100-percent DO saturation and below the DO WQS within a 24-hour period).
- A NARP will be required for all major municipal facilities that indicate there is a risk of eutrophication downstream of the discharge. A "risk of eutrophication" will include one of the following situations for monitoring downstream of the discharge:
  - Exceeding the upper standard for pH (pH higher than 9.0),
  - Median sestonic chlorophyll *a* higher than 26 micrograms per liter, or
  - pH higher than 8.35 and daily maximum DO saturation more than 110 percent on 2 or more days.

- All major municipal facilities will be required to develop a feasibility report to meet 0.5 mg/L, 0.3 mg/L, and 0.1 mg/L for phosphorus.
- All major municipal facilities will be required to optimize their existing facilities for nutrient removal.

B.2 Indiana Supplemental Information

The Indiana Department of Environmental Management (IDEM) has a nonrule policy document (NPD) that establishes the Commissioner's determination that an effluent containing no more than 1.0 mg/L of TP as a monthly average is needed for sanitary WWTPs with average design flows 1 MGD or more. The NPD can be found here: https://www.in.gov/idem/files/nrpd_water-019.pdf.

Additionally, IDEM began requiring major (1.0 MGD or more average design flow) sanitary WWTPs to conduct monthly monitoring of TN in the effluent. This monitoring requirement is included in impacted permits with any application for permit renewal or permit modification application received by IDEM after January 1, 2019.

IDEM is actively updating NPDES permits and implementing the TP NPD. The IDEM Office of Water Quality updated Indiana's table in Appendix A (Table A-5) to include effluent limits for TP instituted in recently issued permits and current permit expiration dates of NPDES permits that have not yet been renewed to indicate when TP limits will be implemented in the NPDES permits (upon next permit renewal). Table B-1 shows the recent updates marked with a double dagger (‡).

Table B-1. Major sewage treatment plants in Indiana with monitoring or limits for nutrient pollution as of January 2019

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
ALEXANDRIA WWTP	IN0020044	✓		✓	
DANVILLE WWTP	IN0020079	✓		✓	
PORTLAND WWTP	IN0020095	✓‡		✓‡	
GREENFIELD WWTP	IN0020109	✓		10/1/2019[a]‡	
GREENSBURG WWTP	IN0020133	✓		10/1/2019[a]‡	
YORKTOWN WWTP, TOWN OF	IN0020150	✓‡		✓‡	
NOBLESVILLE WWTP, CITY OF	IN0020168	✓		✓	
MONTICELLO WWTP	IN0020176	✓		✓	
EDINBURGH WWTP	IN0020184	✓		3/1/2020[a]‡	

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
MARTINSVILLE WWTP	IN0020303	✓		7/1/2019[a]‡	
NORTH MANCHESTER WWTP	IN0020362	✓		1/1/2020[a]‡	
SCOTTSBURG WWTP	IN0020397	✓		✓	
SELLERSBURG MUNICIPAL WWTP	IN0020419	✓		✓	
BREMEN WWTP	IN0020427	✓		✓‡	
CHANDLER WWTP	IN0020435	✓		9/1/2019[a]‡	
NORTH VERNON WWTP	IN0020451	✓		2/1/2020[a]‡	
CHARLESTOWN WASTEWATER TREATMENT PLANT	IN0020508	✓	✓	✓‡	
LINTON WWTP, CITY OF	IN0020575	✓		7/1/2019[a]‡	
SANTA CLAUS WWTP, TOWN OF	IN0020605	✓		4/1/2019[a]‡	
LEBANON WWTP	IN0020818	✓		4/1/2020[a]‡	
JASPER MUNICIPAL WWTP	IN0020834	✓		✓	
CORYDON WWTP	IN0020893	✓		✓‡	
UNION CITY WWTP	IN0020982	✓		✓‡	
PLYMOUTH WWTP	IN0020991	✓		8/1/2020[a]‡	
TELL CITY MUNICIPAL WWTP	IN0021016	✓	✓	✓	
WINCHESTER WWTP	IN0021024	✓		✓	
GREENCASTLE WASTEWATER TREATMENT PLANT	IN0021032	✓		4/1/2019[a]‡	
ELLETTSVILLE MUNICIPAL WWTP	IN0021083	✓		✓	
FRANKLIN WWTP, CITY OF	IN0021181	✓		✓	
PLAINFIELD WATER POLLUTION CONTROL	IN0021202	✓		✓‡	
BRAZIL WWTP, CITY OF	IN0021211	✓		5/1/2020[a]‡	
BROWNSBURG WWTP	IN0021245	✓		✓	
RUSHVILLE WWTP	IN0021270	✓		4/1/2019[a]‡	
CUMBERLAND WWTP	IN0021300	✓		✓	
DELPHI WWTP	IN0021377	✓		✓	
TIPTON WWTP	IN0021474	✓		✓	
HARTFORD CITY WWTP	IN0021628	✓		9/1/2019[a]‡	
SALEM WWTP	IN0021644			✓‡	
ROCHESTER WASTEWATER TREATMENT PLANT	IN0021661	✓		✓	
BARGERSVILLE WWTP	IN0022314	✓		✓	
BLUFFTON WWTP, CITY OF	IN0022411	✓		✓	
BOONVILLE MUNICIPAL WWTP	IN0022420	✓		✓‡	
CARMEL WWTP	IN0022497	✓		✓‡	
CLINTON MUNICIPAL WWTP	IN0022608	✓		✓	
COLUMBIA CITY WWTP	IN0022624	✓		✓‡	
FRANKFORT WWTP, CITY OF	IN0022934	✓		✓	
FRENCH LICK MUNICIPAL WWTP	IN0022951	✓		✓	
GAS CITY WWTP	IN0022985	✓		✓	
HUNTINGBURG WWTP	IN0023124	✓		✓	
HUNTINGTON WWTP	IN0023132	✓		✓	
INDIANAPOLIS BELMONT & SOUTHPORT AWTP	IN0023183	✓	✓	✓‡	

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
JEFFERSONVILLE DOWNTOWN WWTP	IN0023302	✓		✓	
LOGANSPORT WASTEWATER TREATMENT PLANT	IN0023604	✓		✓	
LOWELL WASTEWATER TREATMENT PLANT	IN0023621	✓		✓	
MOORESVILLE WWTP, TOWN OF	IN0023825	✓		✓	
NEW ALBANY WWTP	IN0023884	✓	✓	✓‡	
NEWBURGH MUNICIPAL WWTP	IN0023892	✓	✓	✓	
NEW CASTLE WWTP	IN0023914	✓		✓	
OAK PARK CONSERVANCY DISTRICT	IN0023965	✓	✓	✓‡	
PRINCETON WASTEWATER TREATMENT PLANT	IN0024392	✓		✓‡	
RENSSELAER WWTP, CITY OF	IN0024414	✓		5/1/2020[a]‡	
ROCKVILLE MUNICIPAL WWTP	IN0024449	✓		✓	
SEYMOUR WWTP, CITY OF	IN0024473	✓		✓	
SOUTH DEARBORN R.S.D.	IN0024538	✓	✓	✓	
SULLIVAN MUNICIPAL WWTP	IN0024554	✓		✓	
WABASH WWTP	IN0024741	✓		✓	
WEST LAFAYETTE WWTP	IN0024821	✓		✓	
PERU UTILITIES-GRISSOM DIVISION WWTP	IN0024902	✓		1/1/2020*‡	
AUSTIN WWTP	IN0025135	✓		✓	
LAPORTE WWTP	IN0025577	✓		3/1/2020[a]‡	
MARION WWTP, CITY OF	IN0025585	✓		✓	
TERRE HAUTE WWTP, CITY OF	IN0025607	✓		✓	
RICHMOND WWTP	IN0025615	✓		✓	
BEDFORD WASTEWATER TREATMENT PLANT	IN0025623	✓		✓	
MUNCIE WATER POLLUTION CONTROL FACILITY	IN0025631	✓		7/1/2019[a]‡	
WASHINGTON WWTP	IN0025658	✓		✓‡	
MADISON WWTP	IN0025666	✓	✓	✓	
VINCENNES WWTP, CITY OF	IN0031020	✓		✓	
PERU UTILITIES WWTP	IN0032328	✓		✓	
CONNERSVILLE WWTP	IN0032336	✓		6/1/2020[a]‡	
LAFAYETTE WWTP	IN0032468	✓		✓	
ANDERSON WWTP	IN0032476	✓		✓	
COLUMBUS WWTP, CITY OF	IN0032573	✓		4/1/2020[a]‡	
ELWOOD WWTP, CITY OF	IN0032719	✓		✓	
SHELBYVILLE WATER RESOURCE RECOVERY FACILITY	IN0032867	✓		✓	
KOKOMO WWTP, CITY OF	IN0032875	✓		✓	
EVANSVILLE WEST WWTP	IN0032956	✓	✓	✓	
CRAWFORDSVILLE WWTP, CITY OF	IN0032964	✓		12/1/2019[a]‡	
SPEEDWAY WWTP	IN0032972	✓		✓‡	
EVANSVILLE EAST WWTP	IN0033073	✓	✓	✓	

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
MOUNT VERNON MUNICIPAL WWTP	IN0035696	✓	✓	✓	
BLOOMINGTON S (DILLMAN ROAD)	IN0035718	✓		✓	
BLOOMINGTON N (BLUCHER POOLE)	IN0035726	✓		9/1/2019[a]‡	
ZIONSVILLE WWTP	IN0036951	✓		✓	
BATESVILLE WWTP, CITY OF	IN0039268	✓		✓	
PRINCE'S LAKES WWTP	IN0042366	✓		✓	
CLARKSVILLE WWTP	IN0047058	✓	✓	✓	
FALL CREEK REGIONAL WASTE DISTRICT	IN0049026	✓		✓	
WEST CENTRAL CONSERVANCY DISTRICT	IN0051632	✓		✓	
FISHERS CHEENEY CREEK WWTP	IN0055484	✓		✓‡	
CLAY TOWNSHIP RWD WWTP	IN0055760	✓		✓	
HENDRICKS COUNTY RSD	IN0057614	✓		9/1/2019[a]‡	
WARSAW WWTP	IN0060917	✓		✓	
PLAINFIELD SOUTH WWTP, TOWN OF	IN0062456	✓		✓	
JEFFERSONVILLE NORTH WATER RECLAMATION FACILITY	IN0063673	✓		✓‡	
CHESTERFIELD MUNICIPAL WWTP	IN0063983	✓		✓‡	
WHITESTOWN SOUTH WWTP	IN0064211	✓		✓	
HUNTERTOWN WWTP	IN0064289	✓‡		✓‡	
Total	108	108	12	84	0

Note:

[a] NPDES permit renewal date. NPDES permit renewals for these facilities will include a TP limitation.

B.3 Iowa Supplemental Information

Progress in reducing nutrient discharges in Iowa is being evaluated by means other than a simple count of the number of permits that specify nutrient limits and/or monitoring requirements. Such metrics include the number of permits issued that require feasibility studies, of studies submitted, of construction schedules included in permits, and of facilities that have completed construction and are operating nutrient reduction technologies.

Nutrient Reduction Strategy Progress

One of the goals of the Nutrient Reduction Strategy (NRS) was to annually issue or reissue NPDES permits to at least 20 (or 15 percent) of the facilities listed in the strategy. Those facilities include all major POTWs (more than 1 MGD), all major industries, and minor industries that use a biological treatment process.

Table B-2 shows that a total of 125 permits requiring feasibility studies had been issued as of May 31, 2018. The goal of 20 permits per year has been met or exceeded in each of the 5 years the NRS has been in place. The total number of facilities addressed by the NRS and, therefore, the number of permits that will require completion of a feasibility study changes slightly from year to year for several reasons:

- New industries begin operating.
- Industries previously discharging to POTWs begin operating separately from the city.
- An industry might cease operations altogether or dispose of its wastewater by means other than discharging to a river or stream.
- City wastewater treatment facilities (WWTFs) are replaced with new facilities or are expanded to treat larger volumes.

Eighty-two feasibility studies had been submitted as of May 31, 2018. Twenty-seven of the studies have resulted in permit amendments to include schedules for construction and optimization of nutrient treatment technology. Eight permits had been amended under the NRS to include limits as of May 31, 2018.

Table B-2. Summary of NRS point source implementation through May 1, 2018

Metric	Number required					Number complete					Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2013-14	2014-15	2015-16	2016-17	2017-18	
Permits issued under NRS	130	147	149	151	154	21	32	29	24	20	125
Feasibility studies submitted	-	-	20	30	27	0	1	19	31	31	82
Permits with construction schedules	-	-	-	-	-	0	0	2	13	12	27
Permits with nutrient limits	130	147	149	151	154	0	0	1	38	46	46
TN	-	-	-	-	-	-	-	1	38	44	44
TP	-	-	-	-	-	-	-	1	5	8	8
Facilities meeting NRS % reduction targets											
TN	-	-	-	-	-	-	9	14	19	24	24
TP	-	-	-	-	-	-	2	6	9	11	11
Permits with nutrient monitoring (including those not in the NRS)	-	-	-	-	-	169	201	224	344	399	399

A total of 178 permits have been issued to facilities in Iowa that are not affected by the NRS that specify limits for one or more nitrogen compounds (excluding ammonia nitrogen) and one permit that has been issued to a facility not affected by the NRS that specifies limits for one or more phosphorus compounds. Limits in these permits are either required by federal effluent standards or are based on a total maximum daily load (TMDL) developed by the Iowa Department of Natural Resources (DNR). In many cases these limits do not require a reduction in the amount of nitrogen or phosphorus discharged, but neither do they allow an increase in the amount discharged.

Several POTWs and industries have constructed or are presently constructing biological or chemical nutrient reduction facilities. Many others are planning to construct facilities in the coming years. Improved metrics are being evaluated to document whether a treatment plant was upgraded to remove nutrients or optimized to meet the NRS goals, and what facilities are currently under construction.

Analysis of Data

Results of weekly monitoring are now available for 93 facilities whose permits have been reissued since the strategy was released. Data in Table B-3 reflect the actual results from 72 POTWs for which at least 10 months of weekly sample results were available for both raw waste and final effluent and the 21 industries with at least 10 months of data for raw waste, final effluent or both for the period May 1, 2017, through April 30, 2018. Not all industries operate WWTPs and, therefore, not all have raw waste data.

Table B-3. Performance in 2017–18 by Iowa nutrient strategy facilities with 10 or more months of data

	Target	POTW	Industry
TN (average)			
Number of facilities		72	15
Raw waste (mg/L)	25	34.7 (range 15.6–104.9)	92.7 (range 15.5–271.5)
Final effluent (mg/L)	10	18.3 (range 4.1–63.1)	21.3 (range 1.8–94.7)
% Removal	66	44.1% (range -2.0%–87.0%)	73.4% (range 19.4%–94.8%)
TP (average)			
Number of Facilities		72	21
Raw waste (mg/L)	4	6.6 (range 2.3–33.0)	26.3 (range 1.3–68.2)
Final effluent (mg/L)	1	3.9 (range 0.7–24.5)	13.5 (range 0.5–82.5)
% Removal	75	40.0% (range -4.8%–87.6%)	37.8% (range -286.5%–98.1%)
Annual Load Reduction (2017–18)			
TN (tons)	-	7,988	856
TP (tons)	-	1,452	377

By subtracting the average pounds per day (lb/day) in the effluent discharged by each POTW from the average lb/day in the raw waste, then multiplying the resulting value by 365, reasonable approximations of the total pounds of TN and TP removed by each of the 72 POTWs during 2017–18 were calculated. Adding the calculated values for all these individual facilities shows that POTWs removed approximately 7,998 tons of TN and 1,452 tons of TP in a 12-month period. Industries removed approximately 856 tons of TN and 337 tons of TP in a 12-month period.

Most of the facilities have not constructed treatment specifically designed to reduce TN and TP but nonetheless some achieved significant reductions in one or both nutrients. Greater reductions are anticipated for most facilities following installation or implementation of specific nutrient reduction practices and technologies.

Iowa Point Source Baseline Pilot Project

In 2016, Iowa DNR began coordinating with USGS to better understand historical nutrient loads from point sources in the state. USGS shared a draft data set that contained annual TN and TP load estimates for Iowa point sources for the years 1992, 1997, and 2002. Iowa DNR evaluated the 1992 annual nutrient loads and concluded the shared data set could be used, with modification, to estimate baseline nutrient loads for Iowa point sources.

Annual TN and TP loads in 1992 were estimated for Iowa's major POTWs, minor domestic wastewater dischargers (including POTWs and semipublic facilities), and industrial dischargers that provide biological treatment of process wastewater (BTP). Those loads were then summed to provide the point source baseline TN and TP load estimates shown in Table B-4. The full report titled *Nitrogen and Phosphorus Load Estimates from Iowa Point Sources during the 1980-96 Hypoxia Task Force Baseline Period* can be found at http://www.nutrientstrategy.iastate.edu/documents.

Table B-4. Iowa point source 1992 annual baseline TN and TP load estimates

Discharge type	TN (tons)	TP (tons)
Major POTWs	10,311	1,380
Minor domestic wastewater dischargers	1,597	324
Industrial (major and minor with BTP)	1,262	683
Sum	13,170	2,386

As a result of discussions with stakeholders regarding the baseline estimates, Iowa DNR has begun integrating the baseline estimates into NRS progress tracking efforts. Stakeholders asked for a comparison of current point source loads to the 1980–96 baseline, to the loads at the time the NRS was developed, and to the estimated loads if all facilities covered by the NRS were to meet the NRS goals.

Preparing this load comparison required three steps. First, the original point source loads estimated at the time of NRS development were recalibrated using the newer, more accurate methodology employed to estimate the 1980–96 baseline. This entailed using 2013 monthly average effluent flow data and either Iowa-specific typical pollutant concentrations for TN and TP (for major POTWs and minor domestic wastewater dischargers) or long-term average effluent concentrations (for industrial dischargers with BTP). Second, loads for the 2018 reporting period were calculated using actual facility-specific TN and TP load data when available and modeled estimates using the new methodology. Third, TN and TP effluent concentrations of 10 mg/L and 1 mg/L, respectively, were used to estimate loads if all facilities covered by the NRS were to meet the NRS goals (assumed flows equal to 2013 levels). Figure B-1 summarizes the outcome of that effort by providing point source load values for the 1980-96 baseline, the 2013 recalibrated loads, and 2018 reporting period loads. The dashed lines in Figure B-1 provide the estimated loads in the case that all NRS-covered facilities met the NRS goals.

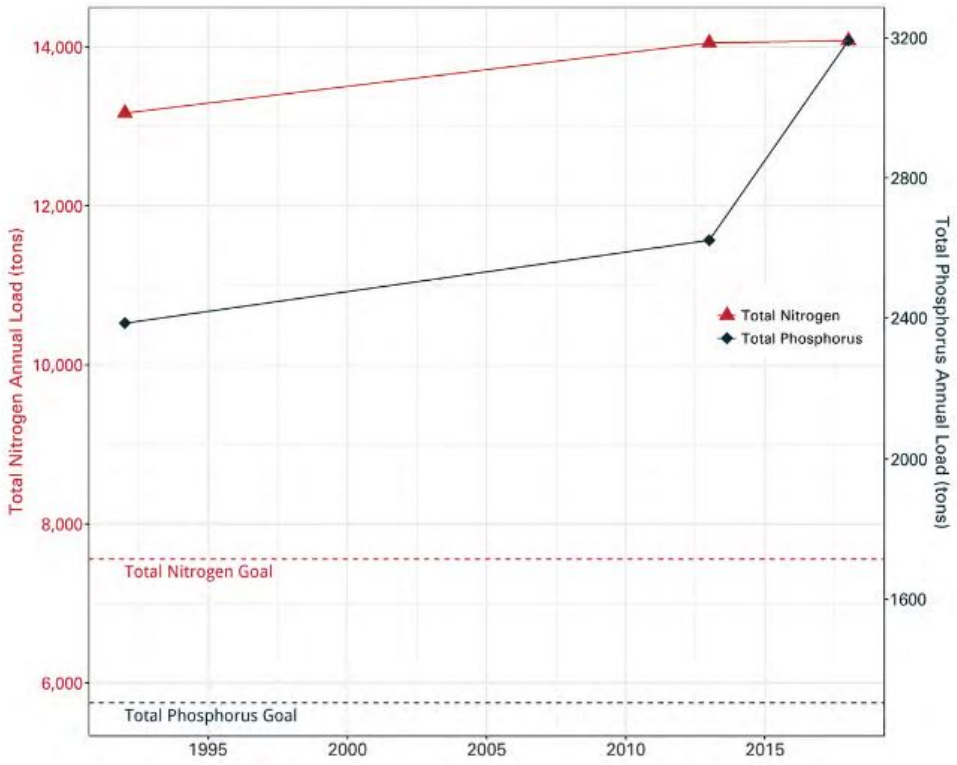


Figure B-1. Iowa point source annual nutrient loads from major POTWs, minor domestic, and industrial facilities with BTP.

B.4 Kentucky Supplemental Information

The Kentucky Division of Water (Division) continues to work to reduce nutrient discharges from permitted facilities. It has added nutrient monitoring requirements for influent and effluent in the discharge permit for all publicly owned treatment works (POTWs). It also is working toward adding technology-based limits to industrial and POTW discharges that contribute significant nutrient loads to receiving waters.

The division is conducting the legal, regulatory, technical, and resource analyses necessary to adopt a treatment-optimization, technology-based permitting approach similar to the approach used by the state of Iowa. It has convened a voluntary Wastewater Advisory Council, at the discretion of the Division Director, which consists of diverse wastewater stakeholders, to discuss, plan, and recommend approaches to addressing existing and emerging wastewater issues. The Council has formed subcommittees to develop recommendations on nutrients and permitting, operator certification, operational permits, asset management, and other issues. The Council has recommended that the Division adopt a technology-based permitting approach with an optimization study requirement to drive permit goals of 75-percent mass reduction in total phosphorus (TP) and 66-percent mass reduction in total nitrogen (TN) in effluent.

Kentucky House Bill (HB) 513 (2018 legislative session) amended Kentucky Revised Statutes 224.73-130 to 224.73-150 to authorize the Kentucky Energy and Environment Cabinet (Cabinet) to develop regulations that require privately owned wastewater treatment plants (WWTPs) to obtain insurance or a

letter of credit, maintain adequate revenue to ensure continuity of service, and implement an asset management plan. The statute also contains conditions for the appointment of a receiver if a privately owned WWTP presents a threat to public health or the environment, is in abject noncompliance, or has an owner who is unable or unwilling to provide for the proper operation of the facility.

Using quarterly ambient monitoring data statewide at the confluence of 8-digit hydrologic unit code (HUC 8) watersheds, the Division has conducted a nutrient load and yield study, including rolling 5-year average trends for the timeframe of 2005-2017. The Division anticipates using this data set to inform updates to the Nutrient Reduction Strategy prioritization process as well as to identify permitting priorities.

The Division is participating in a water quality trading (WQT) project for the Ohio River Basin, which is being implemented by the Electric Power Research Institute. The Ohio River Basin Interstate Water Quality Trading Project (the Project) was signed in 2012. The Cabinet is currently responsible for credit verification and credit certification within the credit registry process, for any credits generated in Kentucky. Amendments to the Project added three key elements: (1) allowing the use of new, more rigorous water quality models better able to estimate edge-of-field nutrient reductions for credit calculations; (2) in an attempt to relieve state agencies of undue burden in completing on-the-ground verifications for pre- and post-installation of best management practices (BMPs), the Project would revise its practices for verification to schedule a random selection on random farms to verify BMP installation and effectiveness, and include remote sensing technologies to verify BMPs, where possible; and (3) the Project proposes to contract directly with other agencies and landowners in the area to get on-the-ground projects implemented.

The Division, in partnership with the Kentucky Division of Compliance Assistance, continues to implement the Wastewater Treatment Plant Optimization Program to assist POTW facilities in reducing their costs and improving environmental performance through optimizing their energy efficiency. When implemented, these optimization efforts have demonstrated significant reductions in the nutrient profile of wastewater effluent.

B.5 Louisiana Supplemental Information

The *Louisiana Nutrient Management Strategy: Protection, Improvement, and Restoration of Water Quality in Louisiana's Water Bodies* (Louisiana Nutrient Management Strategy Interagency Team, 2014) provides a collaborative approach to addressing progress towards nutrient management within the state. One of the strategic actions listed in Section E.3.9 of the strategy is monitoring nutrients from point sources. Point source discharges into Louisiana waters are managed through the Louisiana Pollutant Discharge Elimination System (LPDES) Permit Program administered by the Louisiana Department of Environmental Quality (LDEQ).

To address monitoring of nutrients in point source discharges, LDEQ developed the *Point Source Implementation Strategy for Nutrients in the Louisiana Pollutant Discharge Elimination System (LPDES) Program* (LDEQ, May 30, 2017). LDEQ has begun implementing an enhanced approach for the determination of nutrient monitoring for all discharges that might contain nutrients. Historically, monitoring for nitrogen and phosphorus in LPDES general and individual permits has been implemented based on TMDL determinations and in wetland assimilation projects and in practices such as requiring

the use of low-phosphate, low-surfactant soaps and detergents as part of the General Permit for Discharges of Exterior Vehicle Wash Wastewater (LAG750000).

Beginning May 1, 2016, LDEQ implemented nutrient monitoring in all renewal and new Major and Minor Individual Permits, including for POTWs and privately owned treatment works. This monitoring consists of reporting the concentration (mg/L) and loading (lb/day) for TN and TP on a quarterly basis.

Beginning in May 2017, nutrient monitoring has been implemented on a case-by-case basis for process wastewater discharges from industrial facility types including food processing, petroleum refineries, sugar production, sugar mills, sugar refineries, paper mills, animal farming operations, fertilizer plants, wood processing, landfills, and any other facility where it is determined that there is the potential for a high level of nutrient discharge. Monitoring might also be established at industrial facilities on a case-by-case basis for other wastewater types such as stormwater or washwater if it is determined that these discharges may be a source of nutrients. This monitoring consists of reporting the concentration (mg/L) and loading (lb/day) for TN and TP on a semiannual basis or more frequently if conditions warrant.

Currently there are approximately 13,284 permitted dischargers in the state. Table B-5 lists the total number of facility outfalls that have nutrient monitoring or limitations by facility type.

Table B-5. Number of facility outfalls with nutrient monitoring or limitations by facility type

Permit type	Total Kjeldahl nitrogen (as N)	Total nitrogen, nitrate (as N)	Total organic nitrogen (as N)	TN (as N)	TP (as P)
Gen-LAG48-Light Commercial					
Limitations					
Reporting requirements				25	24
Gen-LAG53-Sanitary Class I					
Limitations					
Reporting requirements				767	768
Gen-LAG54-Sanitary Class II					
Limitations					
Reporting requirements				213	213
Gen-LAG56-Sanitary Class III					
Limitations					
Reporting requirements				16	16
Gen-LAG57-Sanitary Class IV					
Limitations					
Reporting requirements				90	90
Individual-Major-Industrial					
Limitations				2	
Reporting requirements				2	2
Individual-Major-MS4					
Limitations					
Reporting requirements	12			12	12

Permit type	Total Kjeldahl nitrogen (as N)	Total nitrogen, nitrate (as N)	Total organic nitrogen (as N)	TN (as N)	TP (as P)
Individual-Major-Sanitary					
Limitations					
Reporting requirements				54	54
Individual-Minor Industrial					
Limitations			2	3	2
Reporting requirements		2	4	112	123
Individual-Minor-Sanitary					
Limitations	3				
Reporting requirements		1		199	200
Grand Total	**15**	**3**	**6**	**1,496**	**1,505**

Note: MS4 = municipal separate storm sewer system.

B.6 Minnesota Supplemental Information

Minnesota's Wastewater Phosphorus Reduction Strategy

The significant statewide effluent phosphorus load reductions by Minnesota WWTFs over the last 15 years have been achieved as the result of a long-term strategy (Figure B-2). Phosphorus monitoring has increased over the last two decades and 55 percent of domestic and 9 percent of industrial NPDES permits contain phosphorus limits. Further reductions are expected as a result of the implementation of effluent limits consistent with Minnesota's river eutrophication standards.

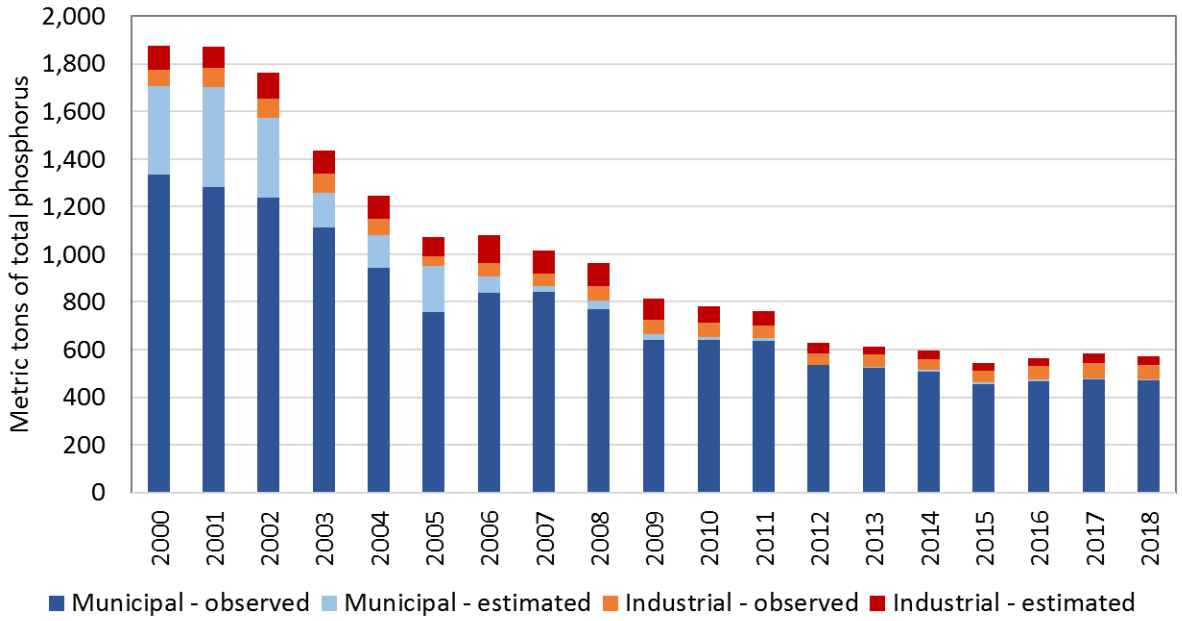


Figure B-2. Minnesota NPDES discharger effluent TP loading trend by facility type.

The majority of the phosphorus reductions can be traced back to the implementation of the Minnesota Pollution Control Agency (MPCA) 2000 Phosphorus Strategy, which was developed by MPCA staff to provide a consistent framework for implementing 1 mg/L TP limits and to promote reductions in phosphorus loading from point sources. The MPCA Citizens' Board approved the strategy in March 2000, establishing a 1-mg/L effluent concentration performance standard for new and expanded WWTPs whose discharge had the potential to exceed 1,800 pounds per year and required smaller WWTPs to develop Phosphorus Management Plans.

The majority of the statewide reduction in phosphorus discharge occurring from 2001 to 2013 (compared to peak loads pre-2001) was accomplished by the largest dischargers (Figure B-3), but significant reductions have also been made by smaller facilities since 2008.

Reductions from 2000/01 to 2018:

- Metropolitan Council WWTFs−838 metric tons (MT) per year = 77-percent reduction
- Other major facilities–367 MT per year = 21-percent reduction
- Minor facilities–63 MT per year = 30-percent reduction

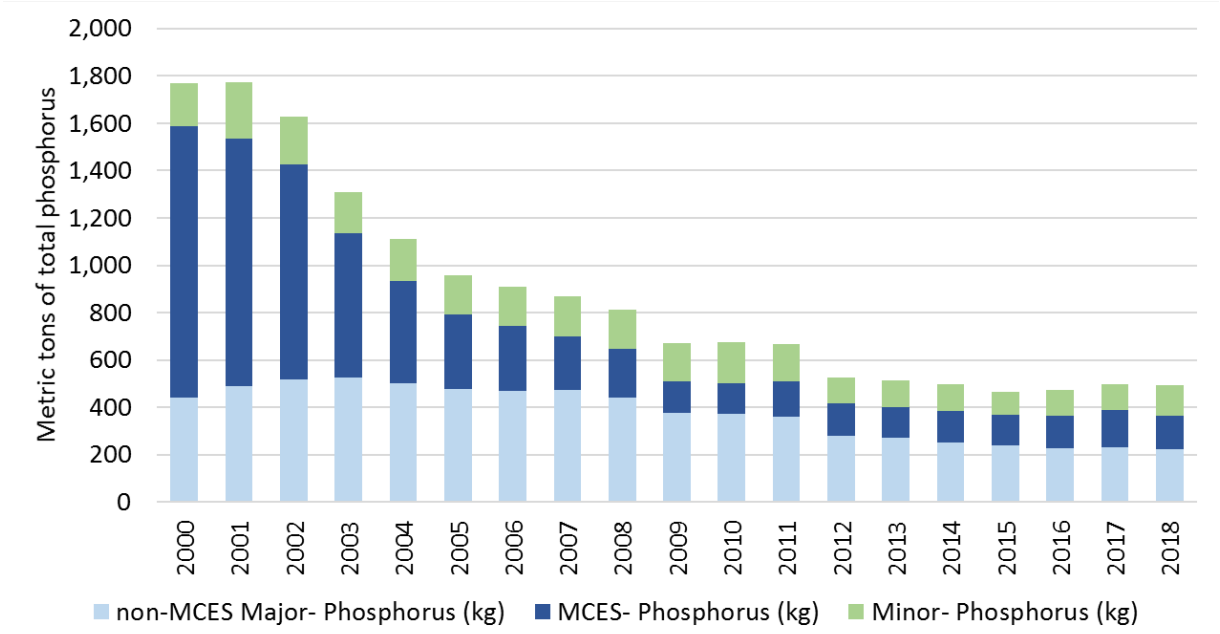


Figure B-3. Minnesota NPDES discharger effluent TP loading trend by facility size.

MPCA's 2000 Phosphorus Strategy was formalized as Minnesota Administrative Rule 7053.0255 in connection with the adoption of Lake Eutrophication Standards (LES) in 2008. Subsequent acceleration in the development of water quality-based LES effluent phosphorus limits has resulted in further effluent phosphorus load reductions. The adoption of River Eutrophication Standards (RES) in 2014 is expected to further reduce Minnesota effluent phosphorus loads over the next decade. The overall magnitude of RES-based reductions is expected to be small in comparison to the major statewide progress made since 2000, but the results will be important for the health of local water bodies, and the removal costs of those reductions may be relatively high where advanced tertiary treatment is necessary to comply with low-level effluent phosphorus limits.

As of April 2019, 76 percent of Minnesota's NPDES permits for dischargers in the Mississippi/Atchafalaya River Basin (MARB) contain TP monitoring requirements and 36 percent of the permits contain effluent limits (Table B-6).

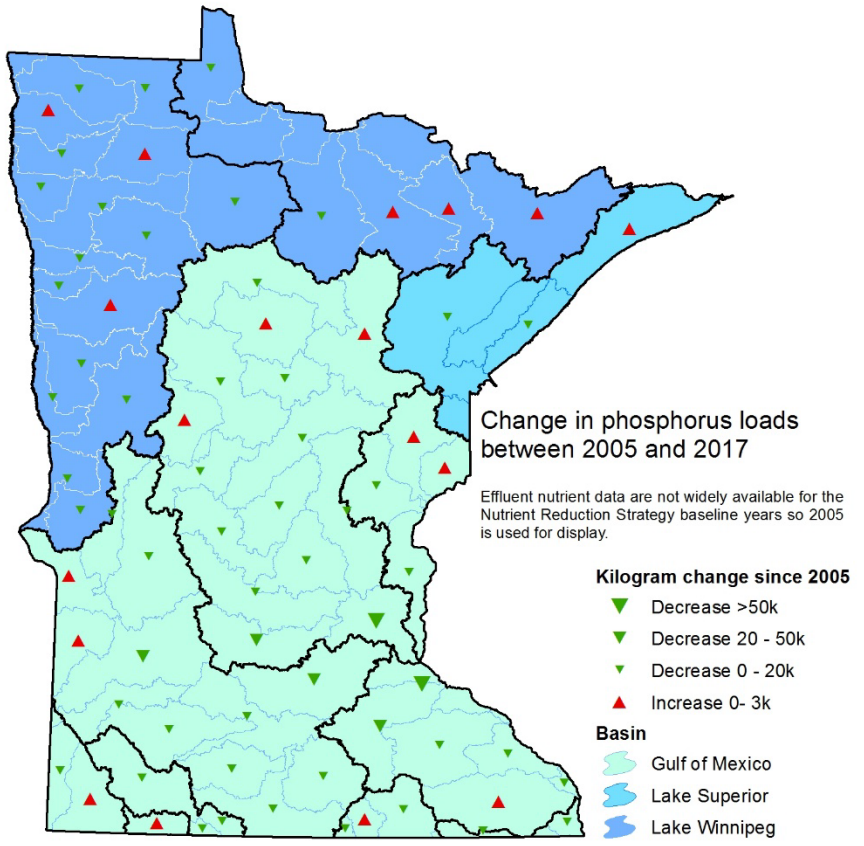
Table B-6. Minnesota NPDES permit TP limits and monitoring requirements in MARB

	Municipal	Industrial	Total
NPDES permits in Minnesota	573	529	1,102
NPDES permits in Mississippi River Basin	454	402	856
NPDES permits with TP monitoring in Mississippi River Basin	458	194	652
NPDES permits with TP limits in Mississippi River Basin	269	41	310

Overall Minnesota estimates that implementing the 2000 Phosphorus Strategy and subsequent adoption of Minnesota's Phosphorus Rule and LES have resulted in dramatic reductions in the quantities of phosphorus discharged by Minnesota industrial and domestic WWTFs.

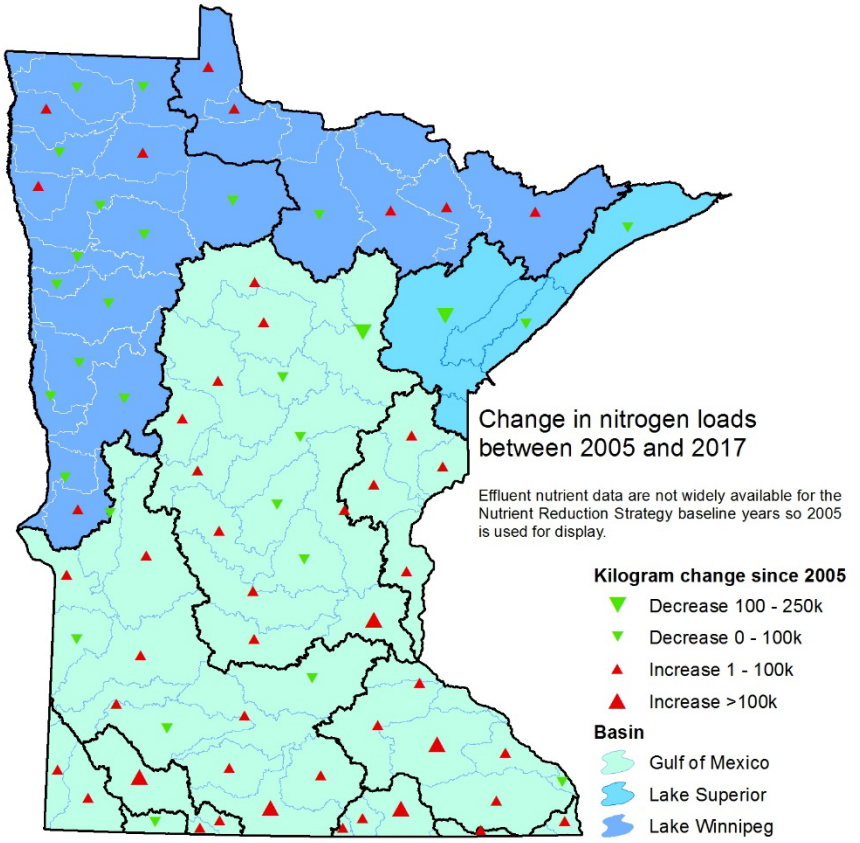
MPCA completed an NRS in 2014 to address nutrient impairments, which is available at https://www.pca.state.mn.us/water/nutrient-reduction-strategy.

Point sources in the Mississippi River drainage have significantly reduced phosphorus loading since 2005. NRS phosphorus reduction goals for the Mississippi River have been achieved and substantial progress has been made toward achieving Lake Winnipeg goals (Figure B-4). Point sources have not achieved NRS nitrogen reduction goals (Figure B-5). Permit-required monitoring frequencies for nitrogen species are being increased to develop a more comprehensive understanding of nitrogen in levels in wastewater effluent.



Phosphorus	Percent reduction goal	Baseline (MT)	Target (MT)	Current level (MT)	Progress towards goal
Gulf of Mexico	45%	1,739	783	498	100% met
Lake Winnipeg	10%	58	52	53	99% met
Lake Superior	No net increase			41	-

Figure B-4. Change in phosphorus loading (kg) from NPDES point sources by drainage basin.



Nitrogen	Percent reduction goal	Baseline (MT)	Target (MT)	Current level (MT)	Progress towards goal
Gulf of Mexico	20%	9,600	7,680	12,967	41% needed
Lake Winnipeg	13%	300	261	996	74% needed
Lake Superior	No net increase			1,309	-

Figure B-5. Change in nitrogen loading (kg) from NPDES point sources by drainage basin.

B.7 Mississippi Supplemental Information

Through the NPDES Permitting Program, Mississippi has been implementing nutrient monitoring and/or limits for TN and TP based on the following criteria:

- Effluent monitoring of TN and TP for all municipal NPDES permits for facilities discharging more than 1.0 MGD.
- Influent monitoring of TN and TP for all municipal NPDES permits for facilities discharging more than 1.0 MGD.
- Effluent limits for TN and/or TP for NPDES permits for facilities discharging into receiving waters that have nutrient TMDLs.

In addition, as part of the municipal separate storm sewer system process, Mississippi is requiring entities to incorporate nutrient reduction strategies into their stormwater management plans. Figure B-6 provides maps showing permitted facilities with nutrient (TN and TP) monitoring requirements and TN and TP limits for their discharges, which drain into the Mississippi/Atchafalaya River Basin (MARB).

Note: Data used to generate the maps came from a June 2019 ICIS data retrieval and differ slightly from the September 30, 2017, ICIS data used to generate the summary information provided for Mississippi in Table A-14. Since 2017, all major sewage treatment plants in MS now monitor for nutrients and there has been an increase in the number of these facilities that have limits for TN and TP.

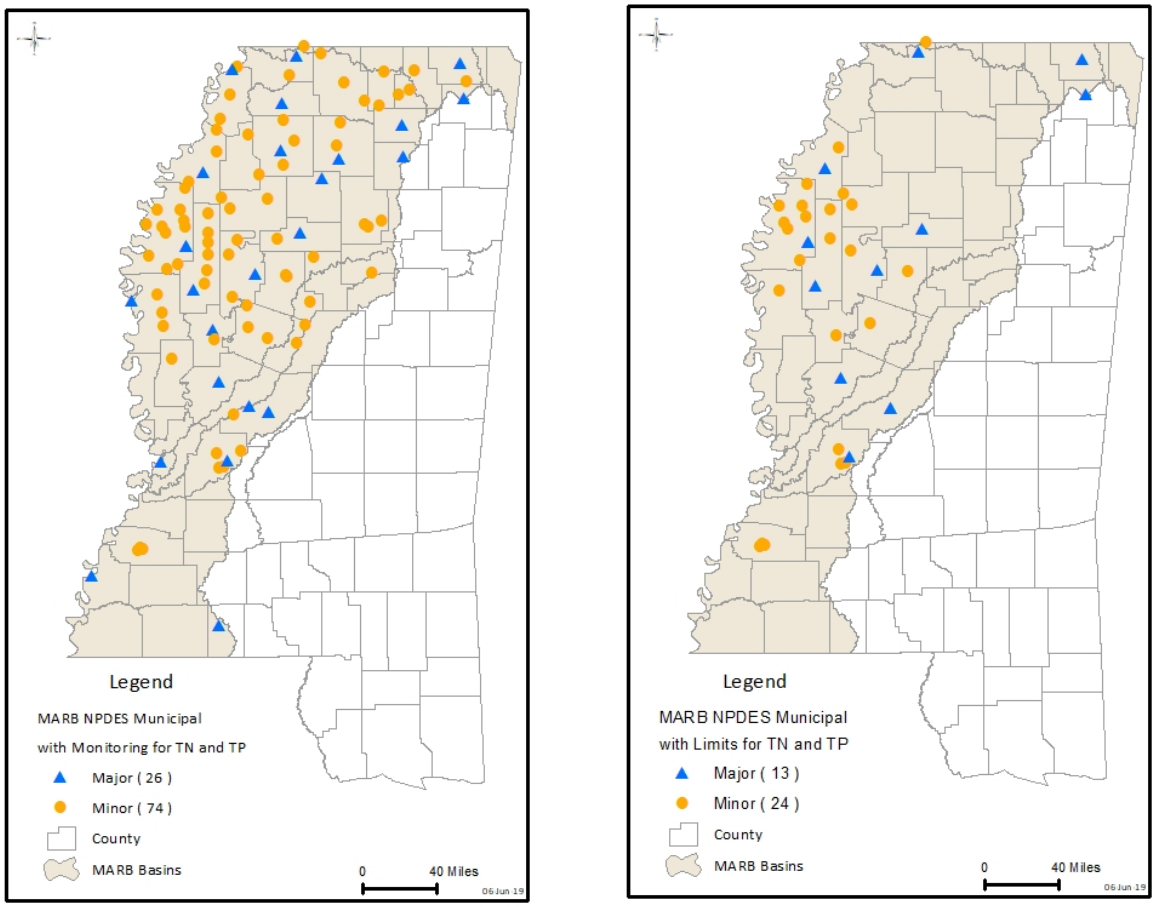


Figure B-6. Mississippi permitted facilities with TN and TP monitoring requirements (*left*) and TN and TP limits (*right*).

TMDL and Modeling

Mississippi has 97 water bodies with TN and/or TP TMDLs for waters that flow into the MARB. If a facility discharges into a watershed with a nutrient TMDL, the facility is required, at a minimum, to monitor their discharge for nutrients. Based on the TMDL loading requirements, the facility also might be required to have nutrient limits. Additionally, as intensive water quality models are developed, calibrated, and verified for state waters, and data of sufficient quality and quantity exist, model outputs are being used to provide nutrient limits for new and expanding dischargers. Figure B-7 provides a map showing waters with TN and/or TP TMDLs that flow into the MARB.

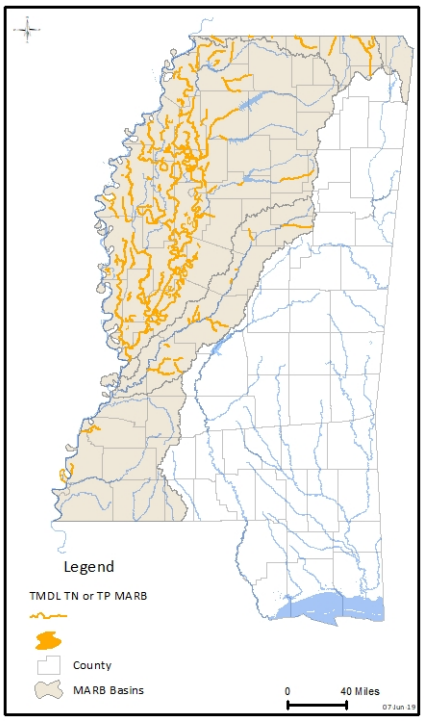


Figure B-7. Waters with TN and/or TP TMDLs that flow into the MARB.

B.8 Missouri Supplemental Information

Data Collection Efforts in Missouri

The Missouri DNR is working toward better understanding Missouri's nutrient contributions through data collection and analysis. An increasing number of point sources will be required to sample and report nutrient discharges. Missouri revised its effluent regulation in 2014 to require facilities with design flows of more than 100,000 gallons per day (gpd) to monitor discharges for TP and TN quarterly. Those monitoring requirements are being incorporated into permits as they are renewed.

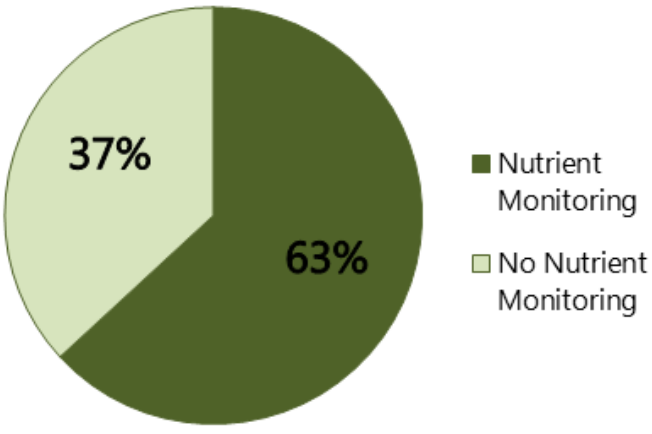
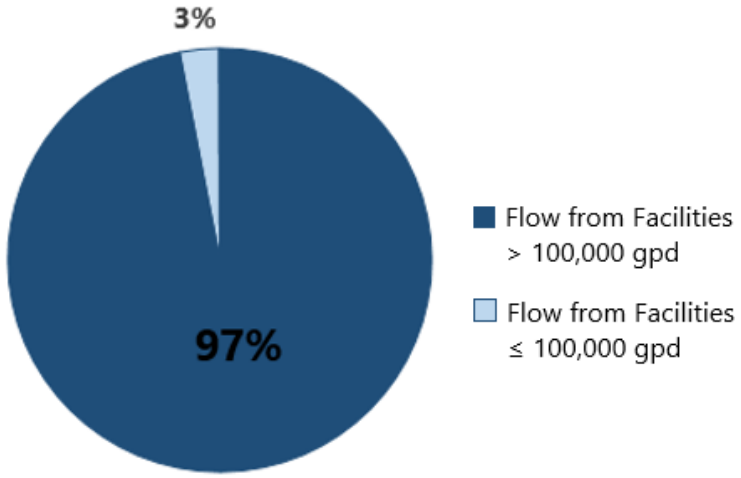


Figure B-8. Percent of domestic facilities with design flows more than 100,000 gpd required to monitor TP and/or TN.

Currently, Missouri DNR permits 407 domestic WWTF with design flows of more than 100,000 gpd. Of those, 257 facilities (or 63 percent) sample TP and/or TN as a result of either monitoring requirements or effluent limits in their permits (Figure B-8). Missouri DNR is on track to have permits for all 407 facilities require nutrient monitoring by the end of 2019.



The total design flow of Missouri's domestic wastewater facilities is 1,324 MGD. Facilities with a design flow of more than 100,000 gpd discharge 1,288 MGD. While smaller facilities make up 82 percent of the total number of facilities, they contribute only 3 percent of the total daily flow (Figure B-9).

Figure B-9. Percent of total flow from domestic facilities with design flows more than 100,000 gpd.

In addition to collecting data from point source dischargers, Missouri DNR collects surface water data from multiple sources statewide. Along with nutrient data collected by the department's Monitoring and Assessment Unit, the University of Missouri's Statewide Lake Assessment and Lakes of Missouri Volunteer Program samples and provides lake nutrient data to the department (Figure B-10). Other nutrient data sources include U.S. EPA and USGS.

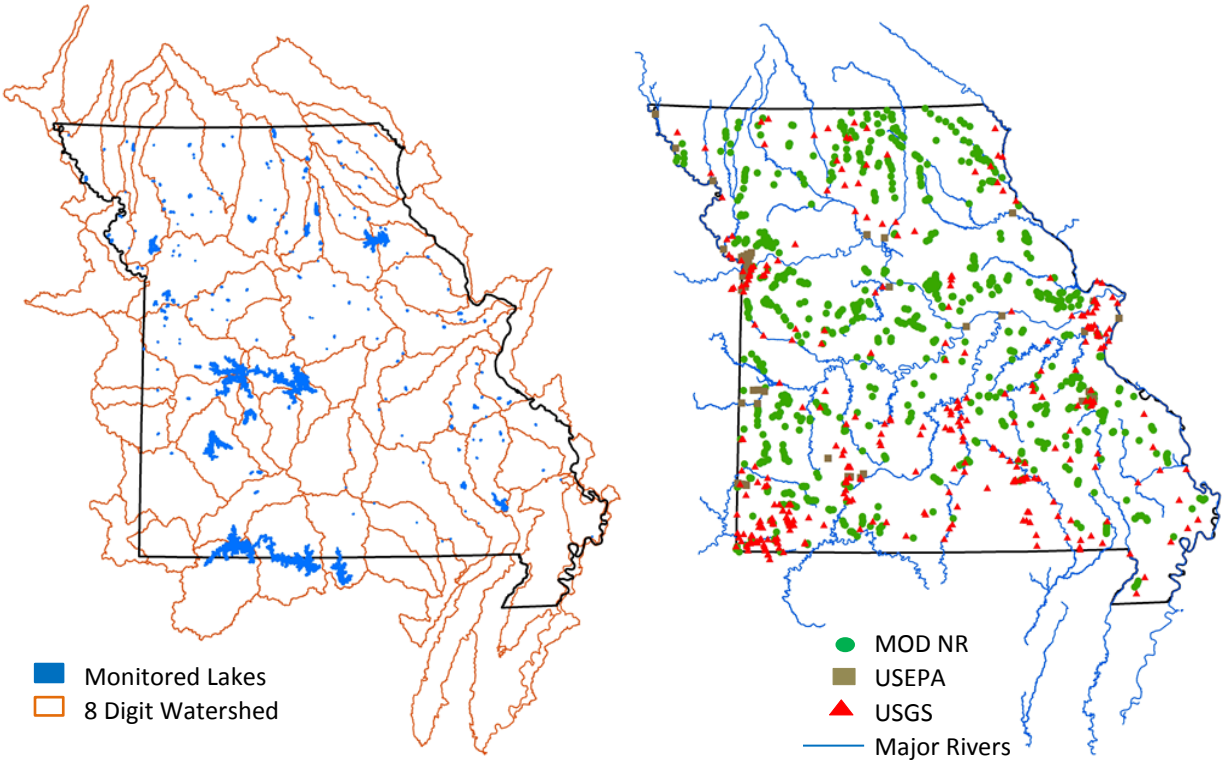


Figure B-10. Nutrient monitoring sites for lakes and streams in Missouri.

Nutrient Effluent Limitations in Missouri's Permits

Nutrient effluent limitations may be included in permits based on the following conditions:

- Missouri's effluent regulation requires dischargers to two of the state's major lake watersheds, Table Rock Lake and Lake Taneycomo, not to exceed 0.5 mg/L of phosphorus as a monthly average. Facilities permitted prior to May 9, 1994, and with a design flow less than 22,500 gpd are exempt from this requirement; however, all dischargers in the area are required to monitor for phosphorus.
- Missouri's WQS contain numeric nutrient criteria for specific lakes, each of which have site-specific criteria for TP, TN, and chlorophyll *a*.
- Industrial dischargers might be subject to federal effluent guidelines.
- Facilities discharging to an impaired water body might be subject to nutrient wasteload allocations established in a TMDL. In those cases, effluent limitations could be calculated from the wasteload allocations.
- Numeric nutrient criteria for lakes and reservoirs were adopted as part of Missouri's WQS Rule in 2009. In August 2011, U.S. EPA denied approval of a substantial part of that rule, expressing some technical concerns with the criteria that were introduced. Missouri DNR has worked to address those concerns and promulgated WQS in April 2018 that include numeric nutrient criteria for lakes and reservoirs by ecoregions. EPA approved the new criteria in December 2018.

Conversion of Lagoons to No-Discharge Irrigation Systems in Missouri

Missouri DNR encourages wastewater treatment systems to achieve no-discharge to address more stringent WQS and effluent limitations. Twenty-five percent of the construction permit applications received by the department from 2013 through 2016 were for the construction of no-discharge facilities. The department offers no-discharge guidance through its No-Discharge Wastewater Treatment website at https://dnr.mo.gov/env/wpp/no-discharge.htm.

Missouri's Nutrient Loss Reduction Strategy

The Missouri Nutrient Loss Reduction Strategy uses an adaptive approach to reducing nutrient pollution from both point and nonpoint sources (Figure B-11). The strategy proposes a set of recommended actions intended to improve water quality in Missouri while also reducing nutrients transported downstream to the Gulf of Mexico.

The following recommended actions in the strategy have been completed and are now being implemented:

Figure B-11. Missouri Nutrient Loss Reduction Strategy word cloud.

- Over 50 point sources have proactively engaged in the Voluntary Early Nutrient Monitoring Program by reporting monthly nutrient data to Missouri DNR.
- After adoption by the Missouri Clean Water Commission in 2016, the Missouri Water Quality Trading Framework now serves as the department's policy statement on WQT.
- The Community Assistance Program was established in 2016 and provides support and coaching to local governments to help them make informed decisions about environmental protection for their community. Coordinators are staffed in each of Missouri DNR's regional offices to enable them to work closely with communities and provide easy access to assistance and resources.

B.9 Ohio Supplemental Information

Tracking Nutrient Loads

In 2015, the Ohio General Assembly passed Amended Substitute House Bill 64 that contained a requirement for the Ohio Environmental Protection Agency (OEPA) to prepare a biennial report on mass loading of nutrients delivered to Lake Erie and the Ohio River from Ohio's point sources and nonpoint sources (Ohio Revised Code 6111.03(U)). In April 2018, the second edition of the Nutrient Mass Balance Study for Ohio's Major Rivers was completed for nine watersheds in Ohio covering 66 percent of the state's land area. The watersheds studied were in both the Lake Erie and Ohio River drainages. The objective of the study was to determine nutrient (phosphorus and nitrogen) loads and relative proportions of point and nonpoint sources. The study highlights differences between the watersheds both as total loads and relative contributions from different sources in the watersheds. The study identifies opportunities for data collection and new approaches that can refine future analysis on a biennial basis. This study, along with the other data related to current and past nutrient loadings, can serve as a tool to focus research, investment, and policy/legislation decisions to curb phosphorus and nitrogen loading in both the Lake Erie watershed and the Ohio River basin. The 2018 study is available on OEPA's website at https://epa.ohio.gov/Portals/35/documents/Nutrient%20Mass%20Balance%20Study%202018_Final.pdf.

Technology Upgrade Feasibility Studies

In 2015, the Governor signed into law Ohio Senate Bill 1, which required POTWs with a design flow of 1.0 MGD or more, or otherwise designated as a major sewage treatment plant by the Director of OEPA, and that did not have limits for TP to submit a study evaluating the technical and financial capability of the facilities to reduce the final effluent discharge of phosphorus to 1.0 mg/L. The language in the bill was later incorporated into Ohio Revised Code 6111.03. The studies were required to be submitted to OEPA no later than December 1, 2017. Ohio had 100-percent compliance with the study requirement, with 112 reports received. The information contained in the reports informed rulemaking efforts to support a statewide TP discharge limit of 1.0 mg/L for all major POTWs.

Legislative Efforts

Currently, there isn't legislative support for a statewide TP discharge limit. However, in 2019, Governor DeWine signed H.B. 7, creating a water quality initiative known as H2Ohio. This initiative consists of a trust fund for the protection, preservation, and restoration of Ohio's water quality. Through collaboration among the Ohio Department of Natural Resources, Ohio Environmental Protection Agency, Ohio Department of Agriculture, and Ohio Lake Erie Commission, the H2Ohio Fund will provide additional resources to plan, develop, and implement targeted water quality initiatives and best

management practices that will minimize the introduction of nutrients and other runoff into Ohio waterways. The bill also supports additional staffing at soil and water conservation districts, and more aggressive action to address failing septic systems and other water treatment needs across Ohio. For more information about H2Ohio, see http://h2.ohio.gov/wp-content/pdfs/H2Ohio-Handout.pdf.

OEPA has actively engaged the Legislature to propose, as part of a larger rule package, a statewide monthly average effluent limit of 1.0 mg/L for major WWTPs. While the Agency was unsuccessful in identifying a sponsor to introduce the legislation in the spring/summer of 2018, it is committed to continue to seek a sponsor for future legislative sessions.

OEPA began the process of drafting a large river eutrophication standard in August 2018 and solicited public comments through an early stakeholder outreach effort to develop rule language. The rulemaking effort will assist the Agency in determining when nutrients are impairing waterways and in setting targets for nutrient levels in streams to achieve attainment. This rule development is currently on hold while Ohio updates the Domestic Action Plan.

State Water Quality Trading Programs

OEPA adopted revised rules for WQT in May 2018. The revised rules incorporate the latest accepted approaches to implementing a WQT program. They provide a framework for developing a WQT plan that must be approved by the Director of OEPA before any trading activities can occur in Ohio.

Ohio continues to have several approved trading programs and pilot programs, with the most active being the Alpine Dairy WQT management plan and the Electric Power Research Institute's Ohio River Basin Trading Project. Ohio has also started developing a stewardship credit trading program to encourage investment in nonpoint source load reductions. In June 2018, OEPA shared a draft memorandum of understanding with possible trading partners and is currently working through the comments received.

B.10 Tennessee Supplemental Information

Since September 2017, Tennessee has made additional progress in reducing point source nutrient loading. As of March 2019, many facilities had added new nutrient monitoring requirements and/or discharge effluent limits. The Tennessee Department of Environment and Conservation updated Tennessee's table in Appendix A (Table A-19) to include the newly instituted updates, as shown in Table B-7, marked with a double dagger (‡).

Table B-7. Major sewage treatment plants in Tennessee with monitoring or limits for nutrient pollution as of March 2019

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
SWEETWATER STP	TN0020052	✓	✓	✓	✓
MARYVILLE STP	TN0020079	✓	✓		
KINGSPORT STP	TN0020095	✓‡	✓‡		
GATLINBURG STP	TN0020117	✓	✓	✓	
GALLATIN STP	TN0020141	✓	✓		
DAYTON STP	TN0020478	✓	✓		

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
LENOIR CITY STP	TN0020494	✓	✓		
DECHERD CITY STP	TN0020508	✓	✓	✓	✓
SMYRNA STP	TN0020541	✓	✓	✓	✓
NASHVILLE-CENTRAL	TN0020575	✓	✓		
MCKENZIE STP	TN0020613	✓	✓	✓	✓
NASHVILLE-DRY CREEK STP	TN0020648	✓	✓		
CLARKSVILLE STP	TN0020656	✓	✓		
ROGERSVILLE STP	TN0020672	✓	✓		
NEWPORT STP	TN0020702	✓	✓		
MEMPHIS-MAYNARD C. STILES	TN0020711	✓	✓		
MEMPHIS-TE MAXSON STP SO PLT	TN0020729	✓	✓		
LAFAYETTE STP	TN0020877	✓	✓	✓	✓
COVINGTON STP	TN0020982	✓	✓		
MILLINGTON STP #2	TN0021067	✓	✓	✓	✓
JEFFERSON CITY STP	TN0021199	✓	✓		
DENZIL BOWMAN WASTEWATER	TN0021229	✓	✓		
PIGEON FORGE STP	TN0021237	✓	✓	✓	
CHURCH HILL WWTP	TN0021253	✓	✓		
SPRING CITY STP	TN0021261		✓		
USA FT CAMPBELL STP	TN0021296	✓	✓	✓	✓
UNION CITY A. L. STRUB WWTP	TN0021580	✓	✓		
PULASKI STP	TN0021687	✓‡	✓‡		
FAYETTEVILLE STP	TN0021814	✓	✓		
KNOXVILLE-LOVES CREEK STP	TN0021822	✓	✓		
WINCHESTER STP	TN0021857	✓	✓		
PORTLAND STP	TN0021865	✓	✓	✓	✓
LIVINGSTON STP	TN0021873	✓	✓	✓	✓
LAWRENCEBURG UTILITY SYSTEMS	TN0022551	✓	✓		
MURFREESBORO STP	TN0022586	✓	✓	✓‡	✓
LEWISBURG STP	TN0022888	✓	✓	✓‡	✓‡
ERWIN STP	TN0023001	✓	✓		
FIRST U.D. KNOX CO.-TURKEY CR	TN0023353	✓	✓		
TULLAHOMA STP	TN0023469	✓	✓	✓	✓
DYERSBURG STP	TN0023477	✓	✓	✓‡	
MORRISTOWN STP	TN0023507	✓	✓		
ELIZABETHTON STP	TN0023515	✓	✓		
BRISTOL STP #2	TN0023531	✓	✓		
KNOXVILLE-FOURTH CREEK STP	TN0023574	✓	✓		
KNOXVILLE-KUWAHEE STP	TN0023582	✓‡	✓‡		
MCMINNVILLE STP	TN0023591	✓	✓		

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
CLEVELAND UTILITIES STP	TN0024121	✓	✓		
OAK RIDGE STP	TN0024155	✓	✓	✓‡	✓‡
SHELBYVILLE STP	TN0024180	✓	✓		
COOKEVILLE STP	TN0024198	✓	✓	✓‡	✓‡
ATHENS UB-OOSTANAULA CREEK STP	TN0024201	✓	✓	✓	✓
CHATTANOOGA-MOCCASIN BEND STP	TN0024210	✓	✓		
JOHNSON CITY KNOB CREEK STP	TN0024236	✓	✓		
JOHNSON CITY STP	TN0024244	✓	✓		
SOUTH PITTSBURG STP	TN0024295	✓	✓		
LEXINGTON WASTEWATER FACILITY	TN0024341	✓‡	✓‡		
ROANE COUNTY STP	TN0024473	✓	✓		
JACKSON ENERGY AUTHORITY	TN0024813	✓	✓	✓	
MOUNTAIN CITY STP	TN0024945	✓	✓		
SPRINGFIELD STP	TN0024961	✓	✓	✓‡	✓‡
NASHVILLE-WHITES CR STP	TN0024970	✓	✓		
CROSSVILLE STP	TN0024996	✓	✓	✓‡	✓‡
MANCHESTER STP	TN0025038	✓	✓	✓‡	✓‡
HARRIMAN UTILITY BOARD	TN0025437	✓	✓		
ROCKWOOD STP	TN0026158	✓	✓	✓‡	✓‡
BELLS LAGOON	TN0026247	✓	✓		
CLINTON STP #1	TN0026506				
WHITEVILLE STP	TN0026590	✓	✓		
LEBANON STP	TN0028754	✓	✓		
JOHNSON CITY REGIONAL STP	TN0028789	✓	✓		
FRANKLIN STP	TN0028827	✓	✓	✓	✓
COLUMBIA STP	TN0056103	✓	✓	✓	
HALLS LAGOON	TN0057291	✓	✓	✓‡	
COLLIERVILLE STP	TN0057461	✓	✓		
LOUDON STP	TN0058181	✓	✓		
TELLICO AREA–NILES FERRY WWTP	TN0058238	✓	✓		
WHITE HOUSE STP	TN0059404	✓	✓	✓	✓
WEST KNOX UD-KARNS BEAV CR STP	TN0060020	✓	✓	✓‡	✓‡
SPARTA STP	TN0061166	✓‡	✓‡		
PARIS STP	TN0061271	✓	✓		
SAVANNAH LAGOON	TN0061565	✓	✓		
KINGSTON STP	TN0061701	✓	✓		
KUB-EASTBRIDGE STP	TN0061743	✓	✓		

Facility name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N
NEWBERN STP	TN0062111	✓	✓		
SELMER STP	TN0062308	✓	✓		
BROWNSVILLE STP	TN0062367	✓	✓		
MILAN STP	TN0062375	✓	✓		
MUNFORD LAGOON	TN0062499	✓	✓		
MARTIN STP	TN0062545	✓	✓	✓	✓
HUMBOLDT STP	TN0062588	✓	✓	✓‡	✓‡
JAMESTOWN STP	TN0062634	✓	✓	✓	✓
ETOWAH STP	TN0063771	✓	✓		
SEVIERVILLE STP	TN0063959	✓	✓		
ROSSVILLE STP	TN0064092		✓		
MONTEREY STP	TN0064688	✓	✓		
SMITHVILLE STP	TN0065358	✓	✓	✓‡	✓‡
BARTLETT LAGOON	TN0066800	✓	✓	✓‡	
DICKSON STP	TN0066958	✓	✓	✓	✓‡
ATHENS UB-NORTH MOUSE CREEK	TN0067539	✓	✓	✓	✓‡
HARPETH VALLEY UD	TN0074748	✓	✓		
BROWNSVILLE LAGOON	TN0075078	✓	✓	✓	
SPRING HILL STP	TN0075868	✓	✓	✓	✓
JACKSON ENERGY AUTH- MIDDLE FK	TN0075876	✓	✓	✓‡	
TOWN OF OAKLAND	TN0077836	✓‡	✓‡		
BOLIVAR STP	TN0077917	✓	✓	✓	✓
RIPLEY WASTEWATER LAGOON	TN0078191	✓	✓		
LAKELAND STP	TN0078255	✓	✓‡	✓‡	
TRENTON STP	TN0078271				
ARLINGTON STP	TN0078603	✓	✓		
WAVERLY STP	TN0078808	✓‡	✓‡		
COLLIERVILLE NORTHWEST STP	TN0078841	✓	✓		
HALLSDALE POWEL UTILITY DISTRICT	TN0078905	✓	✓	✓‡	✓‡
LA FOLLETTE UTILITIES	TN0080021	✓	✓	✓	✓
WKUD–MELTON HILL POTW	TN0080721	✓‡	✓‡		
CITY OF PIPERTON	TN0080764	✓‡	✓‡	✓‡	✓‡
JONESBOROUGH	TN0081175	✓	✓		
Total	**116**	**112**	**114**	**43**	**33**

B.11 Wisconsin Supplemental Information

Phosphorus

Wisconsin has a long history of protecting its surface waters from excess phosphorus pollution. The state implemented normal regulations in 1992 for wastewater point source discharges, requiring many Wisconsin Pollutant Discharge Elimination System (WPDES) permit holders to comply with technology-based effluent limits (TBELs), typically set equal to 1.0 mg/L (Wisconsin Administrative Code [Wis. Adm. Code] chapter NR 217 subchapter II). Additionally, Wisconsin has implemented priority watershed projects throughout the state to help reduce nonpoint source pollution to meet water quality goals. A full description of these and other historic phosphorus efforts is provided at http://dnr.wi.gov/news/mediakits/mk_phosphorus.asp.

To further protect human health and welfare from excess phosphorus pollution, the following revisions to Wisconsin's phosphorus WQS for surface waters were adopted on December 1, 2010:

- Establishing the maximum allowable phosphorus concentration in Wisconsin's waters, also known as phosphorus criteria (Wis. Adm. Code s. NR 102.06) (Table B-8).
- Creating phosphorus standard implementation procedures for WPDES permits (Wis. Adm. Code ch. NR 217 subchapter III).
- Strengthening agricultural performance standards to help curb nonpoint source phosphorus pollution (Wis. Adm. Code ch. NR 151).[10]

Since December 2010, the Wisconsin Department of Natural Resources (WDNR) has been evaluating the need for phosphorus water quality-based effluent limits (WQBELs) in WPDES permits to comply with these standards. Wisconsin's Phosphorus Implementation Guidance provides a detailed discussion of the phosphorus standards and implementation procedures in WPDES permits, and is available for download at http://dnr.wi.gov/topic/surfacewater/phosphorus.html.

Many point sources face restrictive phosphorus limitations under these standards. Almost 80 percent of wastewater permittees face more restrictive phosphorus limits than Wisconsin's TBEL of 1.0 mg/L. Under NR 217, 60 percent of those facilities will receive phosphorus WQBELs set equal to the phosphorus criteria shown in Table B-8.[11] The remaining point sources are given less restrictive limits based on the assimilative capacity of the receiving and/or downstream surface water; however, WQBELs consistent with TMDLs can be used in lieu of the NR 217-derived limits.

WQBELs derived through NR 217 target only the point source fraction of phosphorus loading entering Wisconsin surface waters. In most watersheds, compliance with water quality criteria requires addressing both point and nonpoint sources of phosphorus. Figure B-12 highlights the ratio of point to nonpoint phosphorus mass loads for HUC 8 watersheds within the MARB. Figure B-12 summarizes TP loads on an annual basis. To express needed mass reductions from both point and nonpoint sources of

[10] Changes to Wis. Adm. Code ch. NR 151 were formally promulgated January 2011.

[11] Data gathered from Final EIA Determination.

phosphorus, Wisconsin relies on the development of TMDLs and water quality protection and restoration plans.

Wisconsin develops TMDLs by evaluating phosphorus loads on a monthly basis to account for the seasonal variation in the loadings, to ensure adequate protection during critical periods, and to ensure allocations correspond with the compliance periods for the phosphorus criteria and delisting protocols for the Clean Water Act (CWA) section 303(d) list of impaired waters.[12] TMDLs produce both wasteload and load allocations needed to attain WQS. The wasteload allocations are implemented through NR 217, and the load allocations are implemented through NR 151. Figure B-13 highlights the completed TMDLs currently in the implementation phase, the reaches currently listed as impaired for phosphorus, and the prioritization for future studies.

Table B-8. Applicable statewide phosphorus criteria pursuant to Wis. Adm. Code s. NR 102.06

Water body type	Applicable criteria (µg/L)
Rivers	100
Streams	75
Reservoirs:	
• Stratified	30
• Not stratified	40
Lakes:	
• Stratified, two-story fishery	15
• Stratified, seepage	20
• Stratified, drainage	30
• Nonstratified, drainage	40
• Nonstratified, seepage	40
Great Lakes:	
• Lake Michigan	7
• Lake Superior	5
Impoundments	Varies by inflowing water body type
Ephemeral streams, lakes, and reservoirs of less than 5 acres in surface area, wetlands (including bogs), and limited aquatic life waters[a]	None

Notes: µg/L = micrograms per liter.

[a] Limits may still be set for discharges to these receiving waters based on downstream protection, if necessary. See section 2.04 of the Phosphorus Implementation Guidance for detail.

[12] For more information, visit http://dnr.wi.gov/topic/surfacewater/documents/2014/2014wiscalm.pdf.

Implementing point source reductions is handled through the WPDES Permit Program, with issued permit limits consistent with allocations contained in the TMDL. Nonpoint sources are addressed through implementing the performance standards and prohibitions contained in NR 151. Typically, an offer of state or federal cost-sharing is required to implement the nonpoint practices. To help address shortfalls in funding for nonpoint source reductions and help offset the often-costly point source reductions, WDNR, in collaboration with its stakeholders, developed innovative compliance options as part of the 2010 phosphorus rulemaking for reaching water quality goals in a more economically efficient manner. That action spurred the development of Wisconsin's adaptive management (AM) and WQT programs. Making the compliance options available enables point source dischargers to invest a smaller amount of money toward nonpoint source pollution control projects and potentially have a greater water quality benefit.[13] These programs are considered a viable solution for many point sources working toward phosphorus compliance.

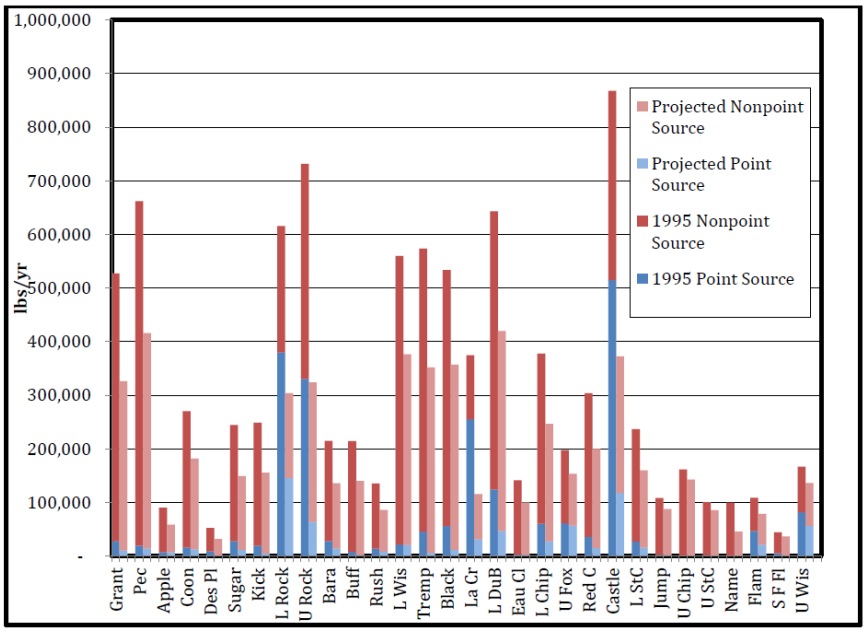


Figure B-12. Estimated 1995 baseline and projected future point and nonpoint phosphorus loadings for MARB by HUC 8 watershed.[14]

[13] For details about Wisconsin's AM and WQT programs, visit http://dnr.wi.gov/, using keywords "adaptive management" or "water quality trading."

[14] See *Wisconsin's Nutrient Reduction Strategy* at https://dnr.wi.gov/topic/surfacewater/nutrientstrategy.html.

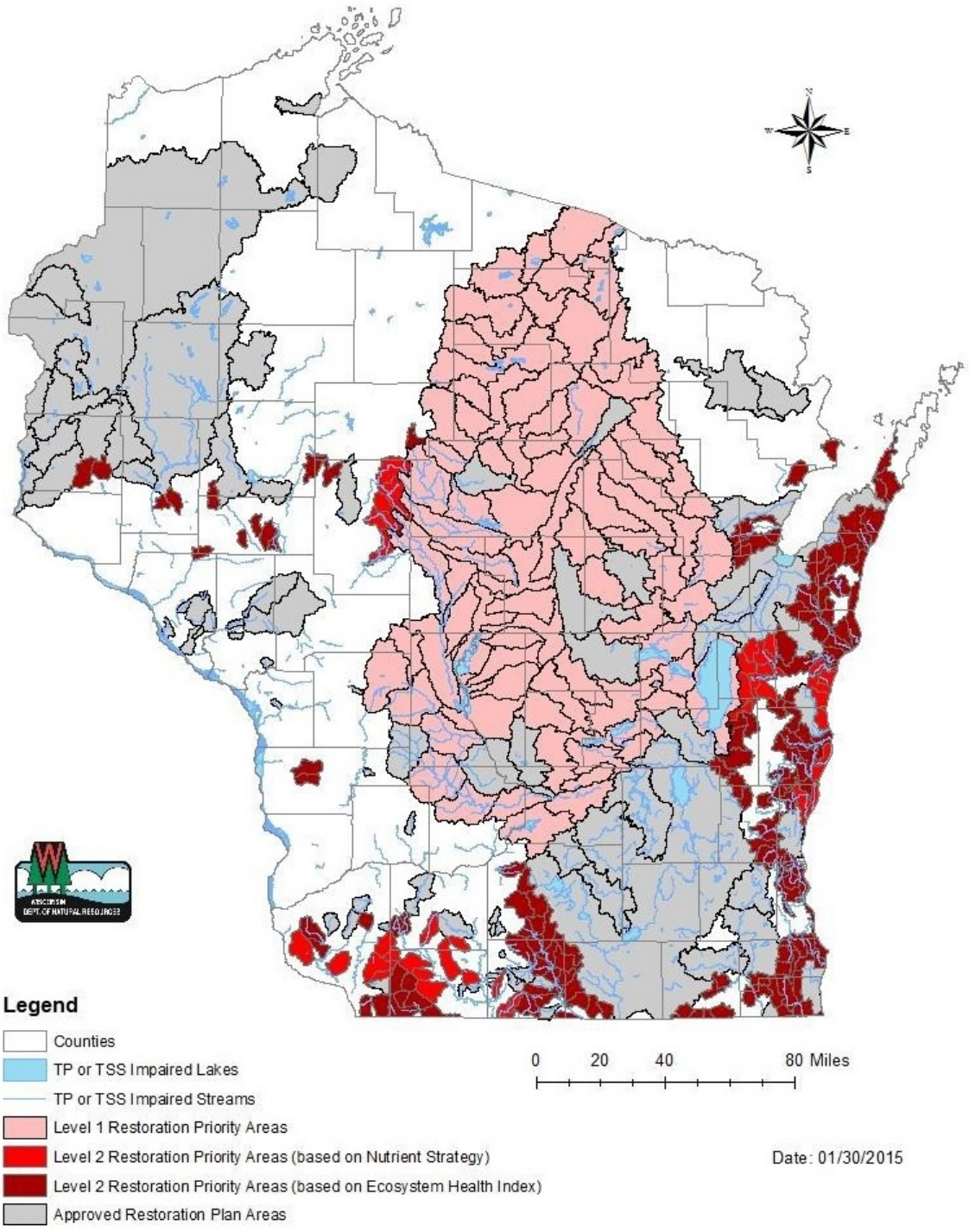


Figure B-13. Level 1 and Level 2 water quality restoration priority areas and existing water quality restoration or protection plans by HUC 12 watershed.[15]

[15] See *Wisconsin's Water Quality Restoration and Protection Prioritization Framework* at https://dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=113522370.

Although the two programs are similar, AM projects and WQT projects are different. In both cases, point sources can take credit for phosphorus reductions within the watershed toward phosphorus compliance. Because the practices used to generate phosphorus reductions might be the same, the compliance options are often confused with one another. AM and WQT projects have different permit requirements as well as different timing requirements:

- **Different end goals.** AM projects focus on achieving water quality criterion for phosphorus in the surface water; WQT projects focus on offsetting phosphorus from a discharge to comply with a permit limit.
- **Monitoring.** Because AM projects focus on water quality improvements, in-stream monitoring is required under AM; it is not required under WQT.
- **Timing.** Practices used to generate reductions in a WQT strategy must be established before the phosphorus limit takes effect; AM is a watershed project that can be implemented throughout the permit term.
- **Quantifying reductions needed.** Under Wisconsin's WQT policy, WQT requires trade ratios to be used to quantify reductions used to offset a permit limit; the reductions needed for AM are based on the receiving water, not the effluent, and trade ratios are not necessary in the calculation.
- **Eligibility.** The AM and WQT programs have different eligibilities.

Many point sources are developing and/or implementing WQT or AM projects to seek phosphorus compliance in lieu of installing treatment technologies (Figure B-14). Information about these and other projects is available at http://dnr.wi.gov/topic/SurfaceWater/AmWqtMap.html. WDNR anticipates that AM and WQT projects will continue to be developed over the next 5–10 years as point sources make compliance decisions for phosphorus.

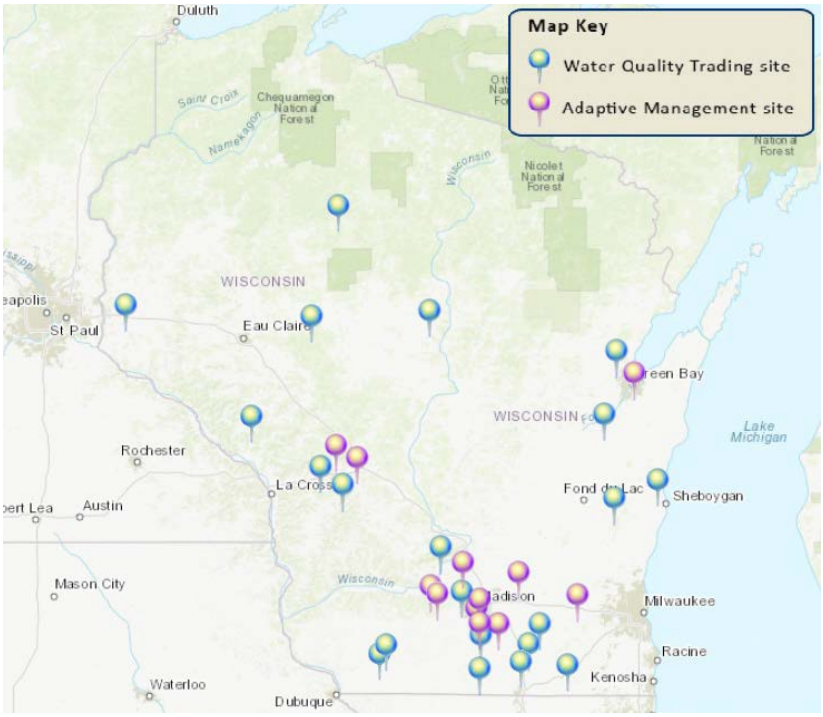


Figure B-14. AM and WQT project participants as of October 2018.

As of late 2018, over 30 WPDES permittees statewide had selected WQT or AM as a phosphorus compliance option. Wisconsin mandates that all WQT projects result in an improvement in water quality. They represent environmentally and economically beneficial compliance solutions. Phosphorus reductions used for compliance are quantified using best-available modeling technology as well as a trade ratio to account for factors such as downstream delivery and practice uncertainty. Despite the widespread need and relatively low costs associated with installing nonpoint BMPs, some common hurdles have been identified during project development. In some instances, industrial or municipal wastewater treatment operations are not readily equipped to work at a watershed scale to implement nonpoint source phosphorus reductions. A greater degree of uncertainty is associated with relying on BMPs for compliance than is associated with a facility upgrade. Spending pollution control dollars outside the facility also might be controversial in some situations. To address some of those challenges, the conservation community has formed a variety of partnerships. Local environmental organizations such as county land and water conservation departments, watershed and agricultural groups, and other nongovernmental organizations have begun partnering with point sources to implement compliance-driven projects. These projects range from native prairie restoration on a single farm field to regional nutrient reduction initiatives fueled by discharger resources. Many of the projects have the potential for added value through positive publicity consistent with increased corporate responsibility and facility rebranding occurring across the wastewater industry.

Despite these additional options, some facilities have found that compliance with restrictive phosphorus limitations is simply not economically feasible. In those cases, point sources might seek an individual phosphorus variance based on substantial and widespread social and economic impacts. Facilities with an approved variance might be allowed to discharge higher concentrations of pollutant for a period, but also must commit to making strides towards reducing effluent phosphorus and achieving compliance with the final limit. These strides are outlined in a pollutant minimization plan and can be tailored to the facility's unique situation.

Because of the expected increase in phosphorus variances associated with the 2010 rule change and the opportunities for watershed-based offsets, a multidischarger variance (MDV) for phosphorus was established to help streamline and improve the variance process. Wisconsin enacted the concept of a multidischarger phosphorus variance in Wis. Adm. Code s. 283.16 in 2013, and U.S. EPA approved it in 2017. The MDV allows a discharger 5–20 years to comply with restrictive phosphorus limits, while making meaningful contributions to local water quality. During the variance term, point sources are required to optimize their treatment processes for phosphorus, make stepwise reductions in effluent phosphorus concentrations, and implement a watershed project.

Similar to the pollutant minimization plans for individual variances, a MDV watershed plan is designed to make economically feasible reductions in phosphorus entering surface waters of the state. There are three types of watershed projects for the MDV. The point source discharger has the discretion to select the option that works best for it:

- The discharger can make payments to county land and water conservation departments located in the same HUC 8 basin in the amount of $50 per pound times the difference between what it discharges and a target value. Payments are capped for any one point source at $640,000 per year.

- The discharger can enter into an agreement with WDNR to implement a plan or project designed to result in an annual reduction of phosphorus from other sources in the HUC 8 basin in an amount equal to the difference between what it discharges and a target value.
- The discharger can enter into an agreement with a third party that is approved by WDNR to implement a plan or project designed to result in an annual reduction of phosphorus from other sources in the HUC 8 basin in an amount equal to the difference between what it discharges and a target value.

As of late 2018, 54 point sources have been approved for coverage under the MDV (Figure B-15). The vast majority of MDV watershed plans use the county payment option. As a result, an estimated $900,000 will be available to county land and water conservation departments in 2019.

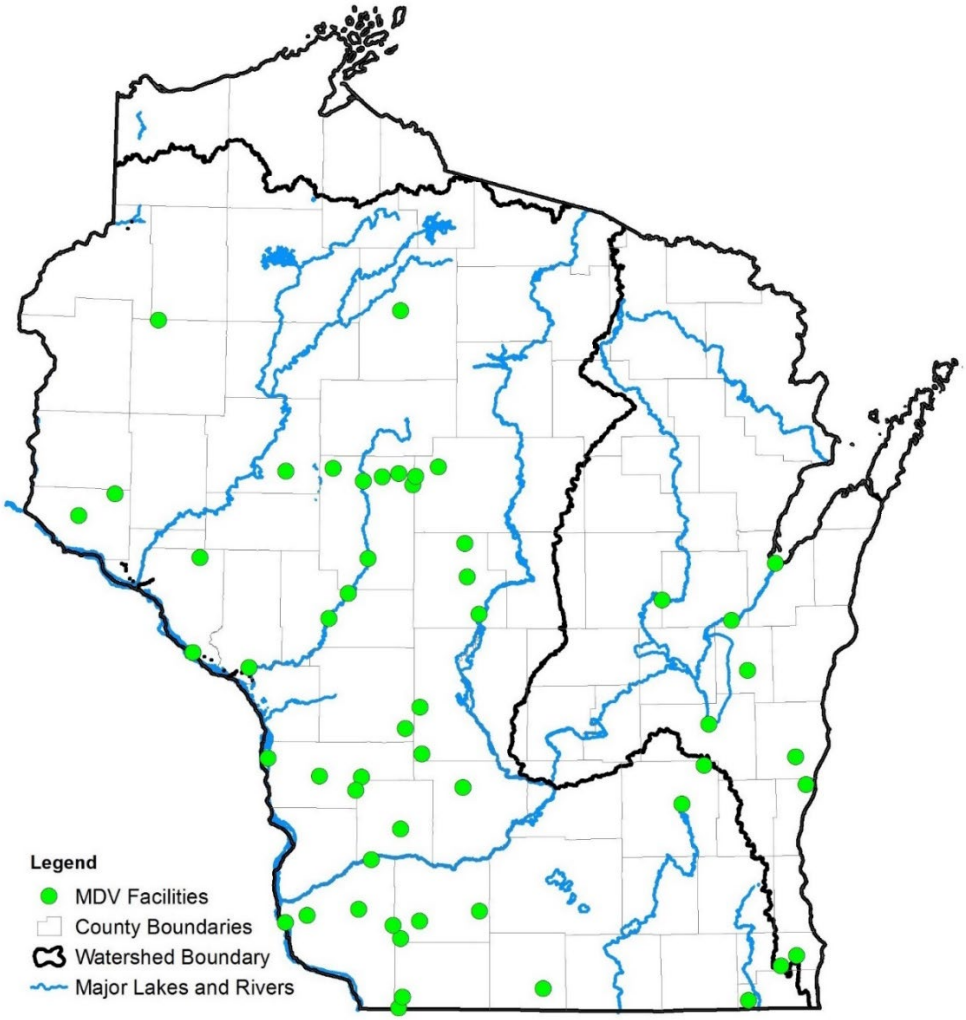


Figure B-15. WPDES facilities in Wisconsin with an approved MDV for phosphorus (2018 list).

WDNR expects to see similar funding levels in future years, increased because of additional dischargers seeking coverage under the MDV, but reduced payments for those already enrolled because of their phosphorus optimization efforts. An established planning and reporting process for counties electing to receive MDV dollars defines expectations for projects funded through the program. At a minimum, 65

percent of the funds must be spent on implementing Wisconsin's NR 151 agricultural performance standards. Many facilities enrolled in the MDV program are working toward compliance through trading or AM over a longer time frame.[16]

Nitrogen

It is common practice for Wisconsin to include TN limitations in WPDES permits for groundwater discharges to ensure that drinking water standards are maintained in water supplies. That is not the case, however, for WPDES permits for surface water discharges at this time. Wisconsin does not have numeric TBELs or WQS for TN. Therefore, TN permitting decisions for surface water discharges are based on narrative standards. In-stream monitoring throughout Wisconsin continues to be conducted to help determine if surface water quality is being adversely affected by excess TN and, if so, where the deleterious effects are occurring. In addition, WDNR has expanded the effluent monitoring requirements for TN in WPDES permits to gather additional information about TN effluent concentrations across the state. Those efforts have improved WDNR's ability to evaluate the need for restrictive TN limitations in WPDES permits but have not resulted in restrictive TN effluent limitations being included in WPDES permits so far.

Several phosphorus-based regulatory programs will also help curb TN pollution. Nonpoint source practices installed through WQT, AM, and the proposed multidischarger phosphorus variance will reduce phosphorus and nitrogen pollution entering surface water. Additionally, WDNR is currently developing a robust tracking system to retain information about BMPs installed and phosphorus, nitrogen, and total suspended solid pollution reduced as a result of these and other programs throughout the state.

Impaired Waters

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Title 33 of the United States Code §1251(a)). CWA section 303(d) requires states to publish a list every 2 years of all waters that do not meet WQS. The law requires that states establish priority rankings for waters on the list and develop TMDLs for those waters. An essential component of a TMDL is calculating the maximum amount of a pollutant that can occur in a water body that still allows that water body to meet WQS.

Tackling excess nutrients in our waterways is especially challenging in the 303(d) program for most states, in part because most states rely on narrative WQS on which to base impairment decisions. Wisconsin adopted numeric phosphorus criteria for streams, rivers, and lakes in 2010, however, and can readily apply those criteria to listing a water body, identifying nutrients as the cause of the impairment, and establishing water quality targets for TMDLs.

The listing process has led to the identification and tracking of approximately 1,535 impaired waters throughout Wisconsin (Figure B-16). Of those, 921 waters are impaired by excess levels of phosphorus. TMDLs are currently in development to address 155 of the phosphorus listings, and TMDLs have been approved by U.S. EPA that address 111 phosphorus listings. WDNR is currently working with multiple stakeholders on developing TMDLs for the restoration of HUC 12 watersheds identified as high priority

[16] More information about the multidischarger phosphorus variance is available at https://dnr.wi.gov/topic/SurfaceWater/phosphorus/variance/.

on the current impaired waters list. A TMDL was developed for the Wisconsin River watershed to address nutrient- and sediment-related impairments in that watershed. EPA approved the TMDL in April 2019.

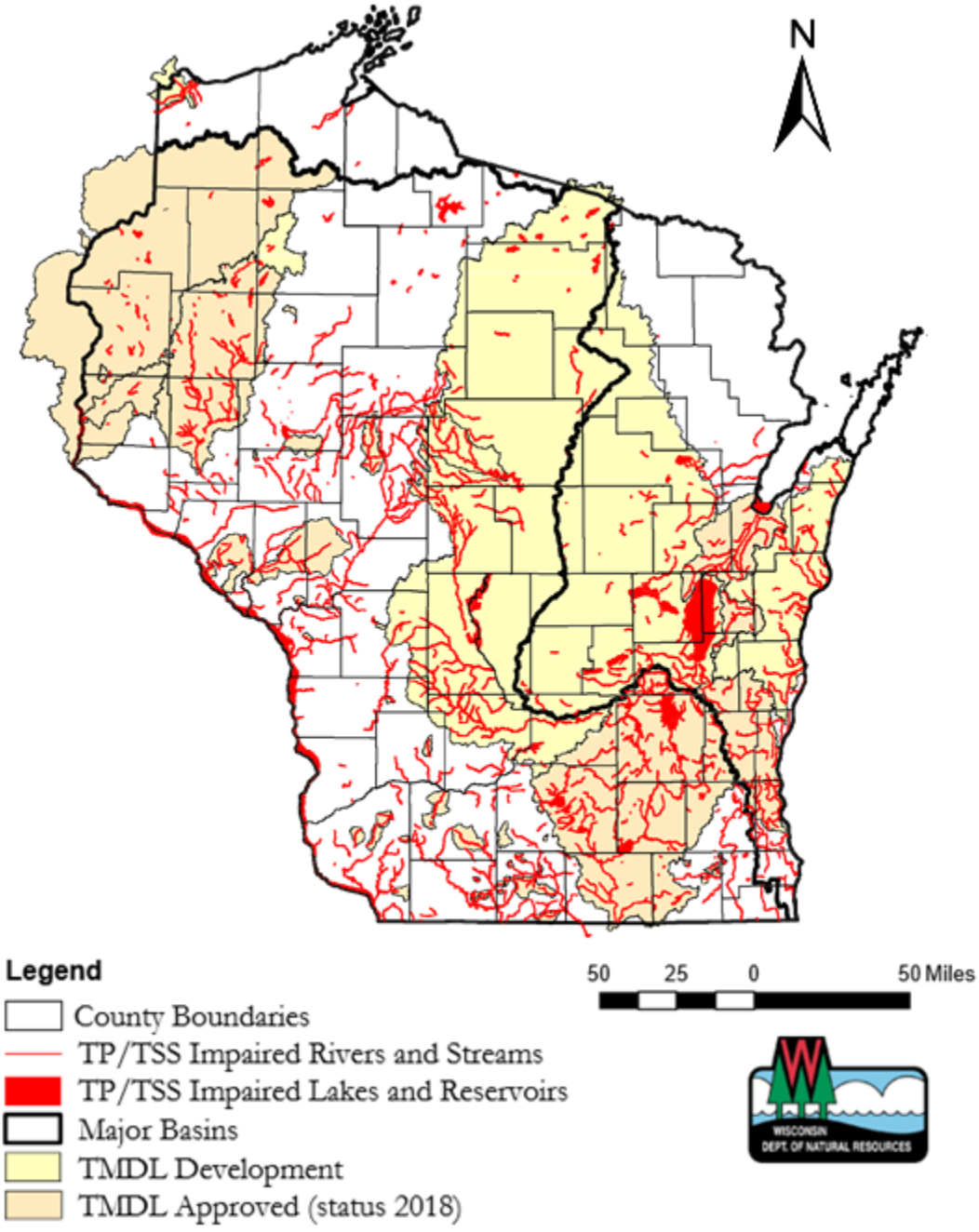


Figure B-16. Wisconsin's 2018 U.S. EPA-approved 303(d) impaired waters listings for phosphorus or sediment and major basins (2018 list).

Addressing nutrient pollution in Wisconsin's waters is a top priority for WDNR's impaired waters program. WDNR revamped its TMDL development prioritization framework in 2015 to incorporate a systematic and objective modeling analysis that identifies watershed areas experiencing the most ecological degradation and vulnerability to future degradation and focuses planning efforts on two pollutants: TP and total suspended solids.

Following TMDL implementation, expectations are often high for an impaired water's condition to begin to change. The TMDL program analysis focuses on approaches for detecting improving conditions and identifying driving factors associated with improvements. A water body remains on the 303(d) list until it is fully recovered and meets WQS. Since 2002, Wisconsin has delisted 180 individual streams, lakes, and beaches, representing approximately 600 stream miles and 59,000 lake acres. Most of the delisted impairments to date, however, have not been related to eutrophication.

Appendix C NUTRIENT PARAMETERS INCLUDED IN THE NPDES PERMIT COUNTS

From the universe of major sewage treatment plants, U.S. EPA tallied facilities with effluent monitoring and limits for various forms of nitrogen (excluding ammonia) and phosphorus. This appendix documents the parameters included in counts of nutrient monitoring and limit requirements.

Parameter code	Parameter description	Pollutant code	Chemical Abstracts Service Registry number
00600	Nitrogen, total [as N]	2817	7727-37-9
00602	Nitrogen, Dissolved	99999	
00605	Nitrogen, organic total [as N]	2817	7727-37-9
00607	Nitrogen, organic, dissolved [as N]	2817	7727-37-9
00613	Nitrite nitrogen, dissolved [as N]	2806	14797-65-0
00615	Nitrogen, nitrite total [as N]	2806	14797-65-0
00618	Nitrogen, nitrate dissolved	5713	14797-55-8
00620	Nitrogen, nitrate total [as N]	5713	14797-55-8
00621	Nitrate nitrogen, dry weight	5713	14797-55-8
00623	Nitrogen, Kjeldahl, dissolved [as N]	2817	7727-37-9
00625	Nitrogen, Kjeldahl, total [as N]	2817	7727-37-9
0625D	Nitrogen, Kjeldahl, total [as N] [per discharge]	2817	7727-37-9
00630	Nitrite + Nitrate total [as N]	10354	
00631	Nitrite plus nitrate dissolved 1 det.	10354	
00640	Nitrogen, inorganic total	2817	7727-37-9
00650	Phosphate, total [as PO4]	5878	14265-44-2
00653	Phosphate total soluble	5878	14265-44-2
00655	Phosphate, poly [as PO4]	5878	14265-44-2
00660	Phosphate, ortho [as PO4]	5878	14265-44-2
00662	Phosphorus, total recoverable	5889	7723-14-0
00664	Dock discharge of phosphorus	5889	7723-14-0
00665	Phosphorus, total [as P]	5889	7723-14-0
0665S	Phosphorus, total [as P] [per season]	5889	7723-14-0
00666	Phosphorus, dissolved	5889	7723-14-0
00667	Phosphorus, dissolved reactive [drp as P]	5889	7723-14-0
00670	Phosphorus, total organic [as P]	5889	7723-14-0
00671	Phosphate, ortho, dissolved [as P]	5878	14265-44-2
01299	Nitrogen-nitrate in water [pct]	5713	14797-55-8
04157	Phosphorus [reactive as P]	5889	7723-14-0
04175	Phosphate, ortho [as P]	5878	14265-44-2
49579	Nitrogen, total Kjeldahl	2817	7727-37-9
50785	Phosphorus, ortho	5889	7723-14-0
51084	Nitrogen, total available [water]	2817	7727-37-9
51086	Nitrogen, nitrate [NO_3] [water]	5713	14797-55-8
51087	Nitrogen, Kjeldahl, total [TKN] [water]	2817	7727-37-9
51092	Phosphate, total [P2O5], water	11195	17101-36-9
51100	Nitrogen, total, as NO_3 [water]	5713	14797-55-8
51425	Nitrogen, Total as N	99999	N/A

Parameter code	Parameter description	Pollutant code	Chemical Abstracts Service Registry number
51426	Phosphorus, Total as P	99999	N/A
51445	Nitrogen, Total	2817	7727-37-9
51447	Nitrogen, Nitrite Total	2806	14797-65-0
51448	Nitrogen, Nitrate Total	5713	14797-55-8
51449	Nitrogen, Kjeldahl Total	2817	7727-37-9
51450	Nitrite Plus Nitrate Total	10354	N/A
51451	Phosphorus, Total	5889	7723-14-0
51489	Nitrogen, Total as NO_3 + NH_3	12586	N/A
51622	Limiting Nutrient [Nitrogen or Phosphorus]	99999	N/A
51662	Nitrogen, Kjeldahl, Total [TKN], insoluble	2817	7727-37-9
51663	Phosphorus, insoluble	5889	7723-14-0
51675	Annual Nitrate Nitrogen Discharged	5713	14797-55-8
51699	Phosphorus, Total [Avg Seasonal Load Cap]	5889	7723-14-0
51764	Phosphorus Adsorption	5889	7723-14-0
70505	Phosphate, total, color method [as P]	5889	7723-14-0
70506	Phosphate, dissolved color method [as P]	5878	14265-44-2
70507	Phosphorus, in total orthophosphate	5889	7723-14-0
71850	Nitrogen, nitrate total [as NO_3]	5713	14797-55-8
71888	Phosphorus, total soluble [as PO4]	5878	14265-44-2
81393	Nitrogen, total Kjeldahl, % removal	2817	7727-37-9
81639	Nitrogen Kjeldahl, total [TKN]	2817	7727-37-9
82386	Nitrogen, oxidized	2817	7727-37-9
82539	Nitrogen, Kjeldahl	2817	7727-37-9