Economic Impacts of Wisconsin's Phosphorus Regulations: An Updated Determination

This document is intended to evaluate substantial and widespread adverse social and economic impacts of Wisconsin's phosphorus regulations in accordance with s. 283.16(3)(a), Wis. Stats.

Wisconsin Department of Administration

Wisconsin Department of Natural Resources

10/22/2024

Summary

Wisconsin's phosphorus multi-discharger variance (MDV) was the result of efforts by numerous water quality stakeholders, state agencies, and legislators that occurred from 2013 to 2016. Following a 2015 Department of Administration (DOA) determination that phosphorus standards would cause substantial and widespread adverse social and economic impacts on a statewide basis, the Department of Natural Resources (DNR) prepared a variance package for federal approval of the MDV. The MDV was approved by the United States Environmental Protection Agency (EPA) on February 6, 2017. The MDV was approved for an initial 10-year period, expiring in February 2027. Section 283.16 of the Wisconsin Statutes allows the MDV to apply to a given permittee for up to four 5-year permit terms, if eligibility criteria are met on a discharger-specific basis. Roughly 160 Wisconsin Pollutant Discharge Elimination System (WPDES) permittees have utilized the MDV to avoid economic hardship and make stepwise phosphorus reductions in effluent and nonpoint sources.

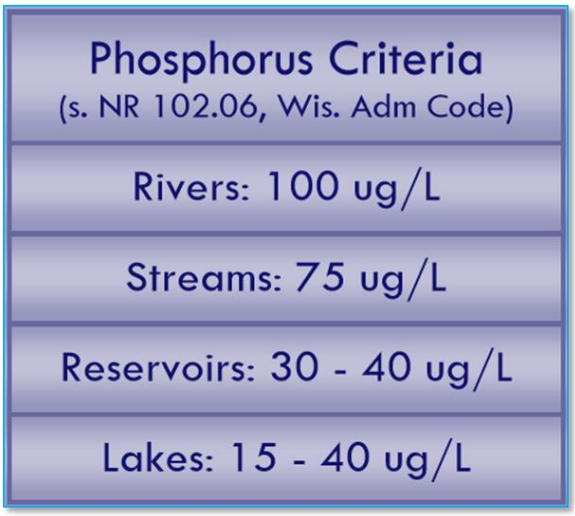


Figure 1: Phosphorus criteria adopted under rule in 2010

Section 283.16 (3), Wis. Stats. outlines the MDV reauthorization process relative to the determination that phosphorus effluent limits result in substantial and widespread adverse social and economic impacts. Prior to seeking reapproval of the variance from the EPA, DOA and DNR must evaluate whether the initial, 2015 determination, remains accurate. In summary, the following question is applicable: Would achieving compliance with water quality-based effluent limitations (WQBEL) for phosphorus, based on criteria without a variance, continue to result in substantial and widespread adverse social and economic impacts?

To answer this question, DOA and DNR have undertaken an evaluation utilizing recently available information such as updated site-specific compliance costs and secondary indicator scores as well as widespread economic impact projections. These updated values can be compared to initially-assumed values in the 2015 Economic Impact Analysis completed by ARCADIS, Sycamore Advisors, and University of Massachusetts.

Based on the analysis, as explained throughout this document, DOA finds the original 2015 economic determination to remain accurate. Absent continued use of the phosphorus MDV, Wisconsin municipalities and businesses would incur $900 million worth of capital cost expenditures in the coming years, resulting in an estimated 1,341 fewer jobs and gross state product reduction by at least $209.9 million.

Contents

MDV Foundational Elements: Then & Now

Section 1.1: MDV Background

On December 1, 2010, the DNR promulgated phosphorus standards intended to control excess phosphorus pollution in Wisconsin's waterways. These standards included numeric phosphorus criteria to assure a level of water quality that will protect human health from harmful and nuisance algal blooms and maintain the beneficial uses of these waterbodies. Since December 2010, DNR has been evaluating the need for phosphorus WQBELs in WPDES permits to comply with numeric phosphorus criteria. Many point sources face restrictive phosphorus limitations as a result of these criteria. Pursuant to s. NR 217.13 Wis. Adm. Code, many phosphorus WQBELs were set equal to the phosphorus criteria, shown in **Error! Reference source not found.**. Compliance with these restrictive WQBELs frequently requires substantial capital investments, yet treatment may only target a small fraction of the total phosphorus loading entering many Wisconsin surface waters. Nonpoint source phosphorus loadings frequently contribute the majority of phosphorus to Wisconsin's waters. However, in some effluent-dominated streams, and in many systems during dry weather conditions, point sources of phosphorus may be a larger contributor to phosphorus impairment.

The concept of an MDV is attractive for a number of reasons – both economic and environmental. DNR has extensive experience working with EPA to grant individual variances in accordance with s. 283.15 Wis. Stats. While individual variances may be an option for some permittees, the MDV offers administratively streamlined application processing, saving considerable staff time at DNR and EPA. Pollution minimization efforts for the MDV are made clear up front and combined across a large area, rather than limited to site-specific pollutant reductions. An economy of scale is achieved for nonpoint source pollution control projects, which indicates an MDV will result in better environmental outcomes.

The federal water quality standards regulations at 40 CFR 131 and the federal permitting regulations at 40 CFR 122 provide for the use of water quality standards variances. A water quality standards variance is a time limited designated use and criterion (i.e., interim requirements) that is targeted to a specific pollutant(s), source(s), and/or waterbody segment(s) that reflects the highest attainable condition during the specified time period. As such, a variance requires a public process and EPA review and approval under section 303(c) of the Clean Water Act. Typically, variances are implemented on an individual, permit-by-permit basis. Additional information regarding Wisconsin's individual variance program is available at http://dnr.wi.gov/topic/wastewater/variances.html.

There are several factors that can be used to demonstrate the need for an individual variance (s. 283.15, Wis. Stat.; 40 CFR 131), but a factor six economic demonstration is the most commonly used. Factor six, meaning the 6th justification listed at 40 CFR 131.10(g), is often referred to as an "economic hardship variance". The economic demonstration requires that a point source demonstrate that compliance with a water quality standard would result in "…substantial and widespread adverse social and economic impacts" (s. 283.15(4)(a)1.f., Wis. Stats.). Although this option is available, individual variances can be a time-consuming process for point sources, DNR, and EPA staff, and can lead to delays in the permit reissuance

process. For these reasons, Wisconsin has streamlined the process through the implementation of an MDV. 2013 Wisconsin Act 378 was enacted by the Wisconsin Legislature and became effective on April 25, 2014. This law required that the Wisconsin DOA, in consultation with DNR, determine "…whether attaining the water quality standard for phosphorus is not feasible because it would cause substantial and widespread social and economic impacts" (s. 283.16(2)(a), Wis. Stats.). Such a determination was to be made on a statewide basis or, optionally, for statewide categories of point sources.

EPA has acknowledged that MDVs may be established, and has authorized them for toxic substances, mainly mercury and chloride, in several states. Additionally, EPA has recognized that MDVs are distinctive from an individual discharger WQS variance in the "Water Quality Guidance for the Great Lakes System: Supplementary Information Document" (EPA–820–B–95–001; March 1995). Currently, EPA does not have guidance specific for MDVs, but has provided a few general factors for consideration when making a determination of substantial and widespread adverse social and economic impacts for multiple point sources (EPA-820-F-13-012, March 2013):

1. MDVs should only apply to permittees experiencing the same challenges in meeting WQBELs for the same pollutant(s), criteria and designated uses;
2. Permittees should be grouped based on specific characteristics or technical and economic scenarios that the permittees share and conduct a separate analysis for each group;
3. Sufficient information should be collected for each individual permittee, including engineering analyses and financial information, to adequately support the specification of permittee groups for each individual permittee to be covered by the variance;

To lay the groundwork for an MDV economic demonstration and meet the requirements of s. 283.16(2)(a), Wis. Stats., DOA contracted with ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute to evaluate economic impacts of phosphorus regulations on a statewide basis. These entities produced reports titled "Economic Impact Analysis" and "Addendum to Economic Impact Analysis: Statewide Economic Impacts" (April 24, 2015). These documents informed DOA's economic determination in 2015 and have continued to be a resource during implementation and reauthorization of the MDV.

Note: This report frequently refers to supplemental reports developed by ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute, entitled "Economic Impact Analysis" and "Addendum to Economic Impact Analysis: Statewide Economic Impacts" (April 24, 2015). These reports will be referred to in this document as "2015 EIA Report" and "EIA Addendum" for simplicity.

Section 1.2: 2015 Economic Determination

In 2015, DOA and DNR undertook an economic evaluation to satisfy the s. 283.16(2)(a), Wis. Stats. requirement to determine if phosphorus compliance costs resulted in substantial/widespread adverse impacts to the state. A preliminary economic determination was published on April 29, 2015, and a final economic determination was published on December 29, 2015, after receiving public comment.

Section 283.16(2)(a) of the Wisconsin Statutes:

> "The department of administration, in consultation with the department of natural resources, shall determine whether attaining the water quality standard for phosphorus, adopted under s. 281.15, through compliance with water quality based effluent limitations by point sources that cannot achieve compliance without major facility upgrades is not feasible because it would cause substantial and widespread adverse social and economic impacts on a statewide basis. The department of administration may make separate determinations under this paragraph for statewide categories of point sources."

These reports were largely based on economic impact information provided in the 2015 EIA Report and EIA Addendum. The prior determination documents incorporated a number of refinements based on WPDES program data and an improved secondary indicator scoring system. The documents also interpreted results of the 2015 EIA report, putting the data in context relevant to the concerns of WPDES permit holders and water quality stakeholders. Descriptions of primary and secondary indicators, and supporting justification for their use, are also included in the document.

Prior to finalizing the 2015 report, DOA published a preliminary economic determination document, subject to public notice and comment. This allowed for public input to be considered regarding a myriad of issues affecting the economic determination. In a response to comments document, included in the final variance package, roughly 90 comments are considered and provided with written responses from DOA and DNR. Ultimately, the document supported DOA's determination that phosphorus compliance costs result in substantial/widespread economic impacts to the State.

Section 1.3: Defining Categories of Dischargers

There are over 750 municipal and industrial point sources covered under an individual WPDES permit in Wisconsin, ranging from paper mills to municipal wastewater treatment facilities (WWTFs) to cheese making operations. Pursuant to s. 283.16(2)(a), Wis. Stats., the substantial and widespread adverse impacts determination may be made on either a statewide basis for all point sources, or for statewide categories of point sources. EPA guidance recommends that point sources be grouped by technical and economic characteristics to create as much uniformity within each category as possible. To be consistent with this guidance, DOA and DNR determined categorization was the most appropriate method to analyze costs to make a substantial and widespread adverse impact determination. This method must result in categories of point sources that are socially and economically important on a statewide basis to be consistent with s. 283.16(2)(a), Wis. Stat. Several factors were utilized to help split point sources into categories and are

described in this section.

First, it was important to determine what would constitute a "statewide category". To balance the requirements of s. 283.16(2)(a),Wis. Stat., and EPA's MDV factsheet (EPA-820-F-13-012, March 2013), the following criteria were developed:

1. The final category should have at least ten individual WPDES permit holders;
2. The final category should have important social and/or economic value to the state of Wisconsin; and
3. Point sources within the final category should have similar technical and economic characteristics.

With the above criteria in mind, EPA's economic guidance was reviewed to help identify categorical distinctions EPA makes for individual variance requests. This guidance separates municipal and industrial permittees and provides distinct "primary" and "secondary" indicators for each group to assess the social and economic impacts of a given regulator policy. For example, the primary screener for municipal discharges is based on median household income (MHI), while industrial variance requests rely on profitability and other factors. To be consistent with this guidance, municipal and industrial categories were separated for the 2015 EIA Report. EPA's guidance did not have other clear categorical distinctions that were applicable for this effort. Further categorization was, therefore, the result of applying the aforementioned criteria to the municipal and industrial categories.

Municipal WWTFs are very similar from a financial standpoint: EPA applies the same economic primary and secondary indictors to all municipal WWTFs, they all have the same mechanisms for financing facility upgrades, and they all serve a community function rather than being profit seeking. Given these similarities, it did not seem to be necessary to further divide the municipal WWTFs into additional financial categories. It is important to note that the 2015 EIA Report discussed differences between municipal lagoon and mechanical facilities. These differences do not result in a formal categorical distinction between lagoons and mechanical facilities, as the same economic eligibility criteria are applied to all municipal facilities. Technical differences are addressed when evaluating MDV applications and implementing the MDV in permits, on a facility-specific basis.

Several distinctive categories were generated among industries, both for technical and economic reasons. A clear technical difference among industries is whether they produce process wastewater or non-contact cooling water (NCCW) and/or other low-strength effluents. Industries that generate process wastewater include paper mills, aquaculture, cheese/dairy manufacturers, and food processors, among others. Dischargers that produce low-strength waste or NCCW include power plants and segregated outfalls from some cheese and canning/food processing facilities, and other industries. The low-strength waste group was further separated into two categories: power plants and NCCW discharges. Because the Public Service Commission of Wisconsin regulates power plants and the setting of rates, such plants are fundamentally different, from a financial perspective, from other discharges of low strength wastewater. This factor ultimately led to the power plant category being excluded from MDV eligibility.

The industries within the process wastewater group were separated into several categories. From a technical wastewater perspective, pulp and paper mills have a much higher concentration of recalcitrant phosphorus requiring additional processes for treatment (see p. 22 of the EIA Report). Therefore, paper

mills were separated into their own category to more accurately estimate compliance costs.

Economic factors drove aquaculture, cheese/dairy manufacturing, and other food processing plants to be divided into their own categories. For example, aquaculture was placed into a separate category because this industry's economic characteristics are more similar to agricultural production. Cheese manufacturing in Wisconsin is an important cultural industry and the state has become a worldwide leader in artisanal and specialty cheeses. Wisconsin's cheese industry has been less successful in gross cheese production, compared to California, and faces competition in the specialty cheese markets from Vermont, California, and other states. Additionally, this industry relies heavily on local dairy production and local milk prices, which makes this a unique category from a financial standpoint. There are a number of vegetable processing and animal slaughtering/meat processing facilities, which also warranted their own category called "food processing". Many of these facilities tend to be canning or freezing operations and are more active during the harvest season. These facilities also tend to rely heavily on local agriculture for its raw materials. Of the remaining process wastewater industrial dischargers, almost 40 facilities are covered under a WPDES permit, but do not meet the criteria to warrant a separate statewide category. Therefore, an 'other' category was created for these rather unique operations. Facilities in the 'other' category include metal finishing, airports, fire products manufacturing, greenhouses, and quarries, among others. A small number of dischargers exhibit technical and economic characteristics that would allow them to be appropriately grouped in more than one category; such situations have required DNR to exercise professional expertise and judgment in determining which category is most appropriate for a particular discharger.

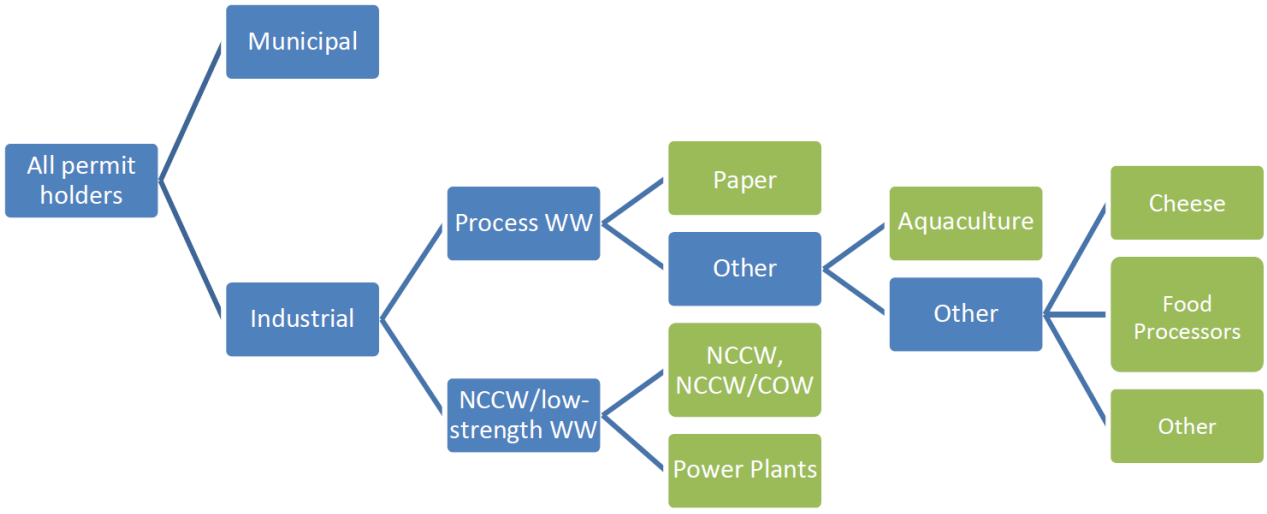


Figure 2: Logic matrix used to determine discharger categories in the 2015 EIA Report

Over seven years of MDV implementation to date, categories have generally functioned as intended. Neither DOA nor DNR is aware of any undue gap in MDV applicability created by how the discharger categories are defined. For the updated determination, no change to category definitions have been

proposed. As shown in Table 1, the municipal category is most heavily used. This is expected, as municipal facilities make up the largest number of dischargers in the state, and almost always have significant phosphorus in the influent waste stream. Industrial categories have varied in their usage of the MDV, with the majority of covered dischargers being in the Cheese Makers and Food Processors categories. Table 1 may seem to indicate that some of the industrial categories are under-utilized. This condition may change as phosphorus compliance schedules mature and additional facilities seek MDV coverage.

Table 1: Number of dischargers with current MDV coverage in each category

Category	Number of Dischargers with MDV Coverage
Municipal	130
Cheese Makers	10
Food Processors	6
Paper	2
Aquaculture	1
Other	1
NCCW	1

Chapter 2: Phosphorus Implementation Metrics

Section 2.1: Phosphorus Water Quality-Based Effluent Limits

As previously stated, many dischargers initially received phosphorus WQBELs set equal to the applicable phosphorus criterion. Section NR 217.13, Wis. Adm. Code describes the process for calculating WQBELs based on receiving water flows and in-stream concentrations of total phosphorus. The 2015 EIA Report assumed that 592 out of roughly 750 surface water dischargers would incur compliance costs associated with attaining phosphorus criteria. A 2016 analysis conducted by DNR staff indicated that roughly two thirds of dischargers would receive a phosphorus WQBEL set equal to the applicable phosphorus criterion. This means that WQBELs were commonly set at 0.1 mg/L or 0.075 mg/L. Where these limits are assigned to facilities (as of 2023), they are included in the Appendix A table.

Since 2010, DNR and partners have developed Total Maximum Daily Loads (TMDLs) for many of the larger phosphorus-impaired waterways across the state. These are shown in Figure 2 and include the following:

- Rock River (Approved 2012)
- Lower Fox River Basin (Approved 2012)
- Tainter Lake / Lake Menomin (Approved 2012)
- St. Croix River (Approved 2013)
- Milwaukee River Basin (Approved 2018)
- Wisconsin River Basin (Approved 2019)
- Upper Fox and Wolf Rivers Basin (Approved 2020)
- Northeast Lakeshore (Approved 2023)
- Fox-Illinois River Basin (in development)

TMDLs assign wasteload allocations to point sources and load allocations to nonpoint sources, in combination with a margin of safety, to ensure waterbodies meet applicable water quality criteria. When calculating phosphorus WQBELs in a TMDL area, the wasteload allocation for a specific discharger is expressed as a lbs/day value and subject to monthly and potentially six-month averaging periods. TMDL-based limitations may be less stringent than the water quality based effluent limitation calculated under s. NR 217.13 Wis. Adm. Code, in cases where nonpoint sources are the significant phosphorus sources responsible for the impairment. These less stringent limits may be included in permits in lieu of the more stringent s. NR 217.13 Wis. Adm. Code limits if the latter has not taken effect. In many cases, the development of a TMDL provides relaxed effluent limitations for wastewater point source dischargers. Whether these limitations can be met without a major facility upgrade is site-specific and based on the limitation itself, wastewater influent characteristics, plant design, and other factors.

To better understand the level of treatment required to achieve a TMDL-based effluent limit, mass limits can be translated into concentration equivalent values using an assumed flow value. Appendix A contains the most stringent limit applicable to each surface water discharger in the state, whether a s. NR 217.13 Wis. Adm. Code concentration limit or concentration-equivalent of a TMDL-based limit.

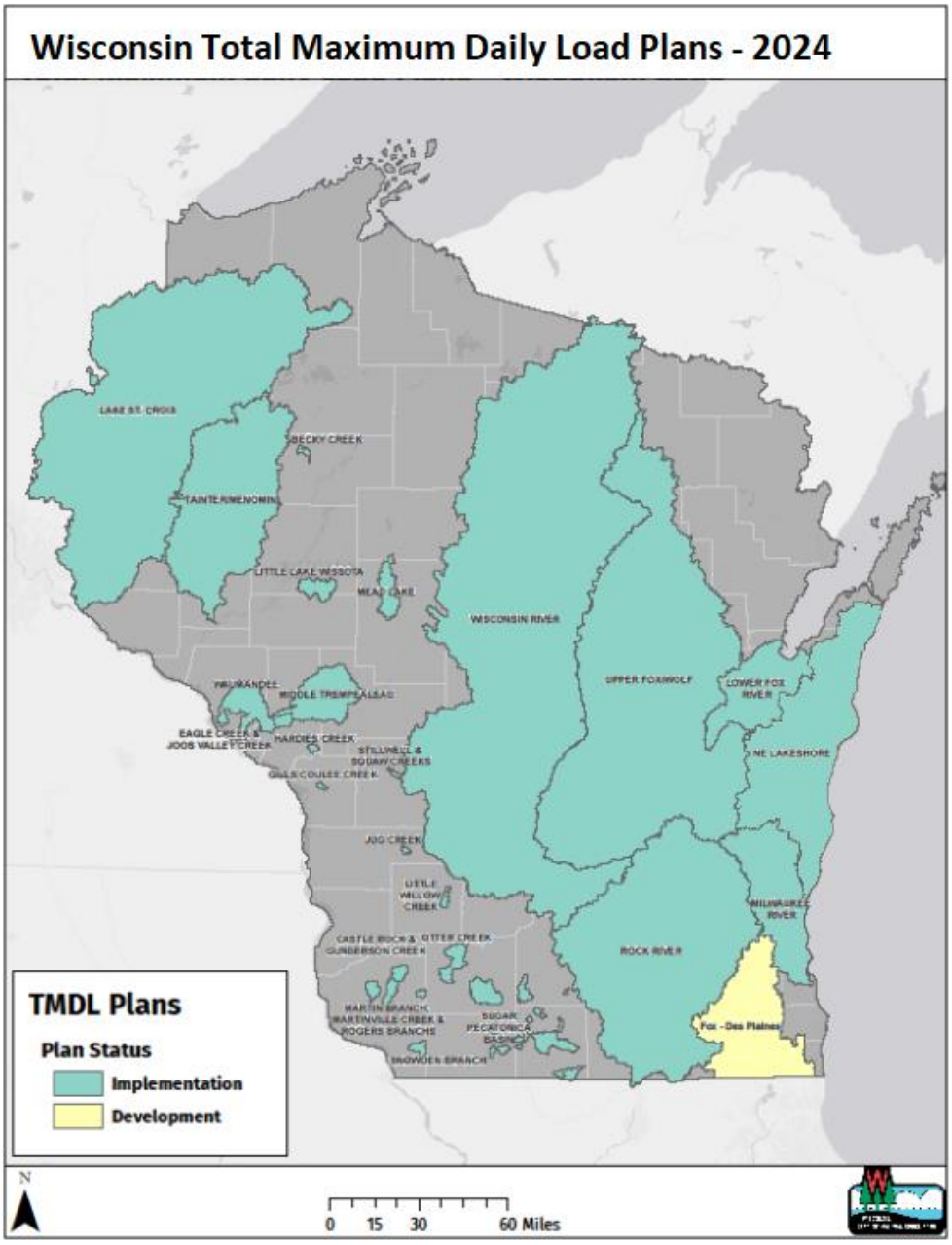


Figure 3: 2022 TMDL Development and Implementation Map

Table 2, below, compares limits for all surface water dischargers under two separate analyses: the 2015 EIA

Report and a recent evaluation completed by DNR in 2023. The 2023 evaluation pulled data from all final WQBELS for phosphorus. This includes limits that are not yet effective in permits due to compliance schedules or variances.

Table 2: Phosphorus WQBEL Concentrations Statewide

Limit range	Number of Facilities 2015 EIA	Number of Facilities 2023 Evaluation
<0.075 mg/L	20	29
=0.075 mg/L	344	211
0.075 mg/L - 0.2 mg/L	107	96
>0.2 mg/L	121	405
Total	592*	741

*Though all WPDES permittees were evaluated, roughly 150 permittees were excluded from the 2015 analysis due to not needing to install phosphorus treatment technology. These would typically fall within the ">0.2 mg/L" category for the 2023 evaluation.

Table 2 shows a shift in final phosphorus WQBELs away from being set equal to the criterion and towards the ">0.2 mg/L" category. For example, 344 WQBELs were set equal to the most commonly-applicable criterion (wadeable streams & rivers, 0.075 mg/L) in 2015, while in 2023 only 211 WQBELs were set equal to that criterion. TMDL limits tend to fall within the 0.2 – 0.3 mg/L concentration-equivalent range. For example, the average concentration-equivalent WQBEL calculated under the Wisconsin River TMDL (with site-specific criteria) is equal to 0.28 mg/L for a dataset of 104 dischargers. The median value of the same dataset is 0.34 mg/L.

This trend of modestly increased WQBELs has worked to reduce the number of facilities covered under the MDV. There are roughly a dozen examples of dischargers no longer needing MDV coverage due to a moderately increased WQBEL, following the adoption of the Wisconsin River TMDL in Upper Fox and Wolf Rivers TMDL in 2019 and 2020, respectively. DNR will continue to evaluate the achievability of WQBELs when dischargers apply for MDV coverage. Should increased WQBELs no longer mandate a major facility upgrade, the discharger would not be eligible for MDV coverage pursuant to s. 283.16(4), Wis. Stats. It is important to note that whether a WQBEL is attainable for a facility without a major upgrade is highly site-specific. Some facilities cannot achieve WQBELs in the 0.2 – 0.5 mg/L range, even with optimization of biological or chemical treatment. This is consistent with the assumptions applied in the 2015 EIA report, which grouped dischargers subject to WQBELs ranging from 0.1 mg/L to 0.5 mg/L in the same category for purposes of compliance cost estimation, with the assumption that a major facility upgrade is required.

Section 2.2: Watershed-based Compliance Alternatives

Nutrient pollution, due to its varied sources (point and nonpoint), has been a well-documented water quality challenge for decades. To help address this, DNR, in collaboration with stakeholders, developed

innovative compliance options as part of the 2010 phosphorus rulemaking, to reach water quality goals in a more economically efficient manner. This spurred the development of Wisconsin's adaptive management (AM) and water quality trading (WQT) programs. The premise behind these compliance options is that point source dischargers could invest a smaller amount of money towards nonpoint source pollution control projects (compared to a facility upgrade), and potentially have a greater water quality benefit. These compliance options have been selected by some WPDES Permittees and continue to be explored by others as they work towards phosphorus compliance.

During the early periods of WQT and AM implementation, dischargers identified challenges with participation in these programs; insufficient political support, unwilling partnerships, eligibility constraints, economic limitations, and compliance risks are some of the reasons cited that make WQT and AM infeasible for some permittees. In light of these challenges, made apparent in the 2010 – 2013 timeframe, the MDV was conceived to provide yet another mechanism to address low-level phosphorus effluent limits.

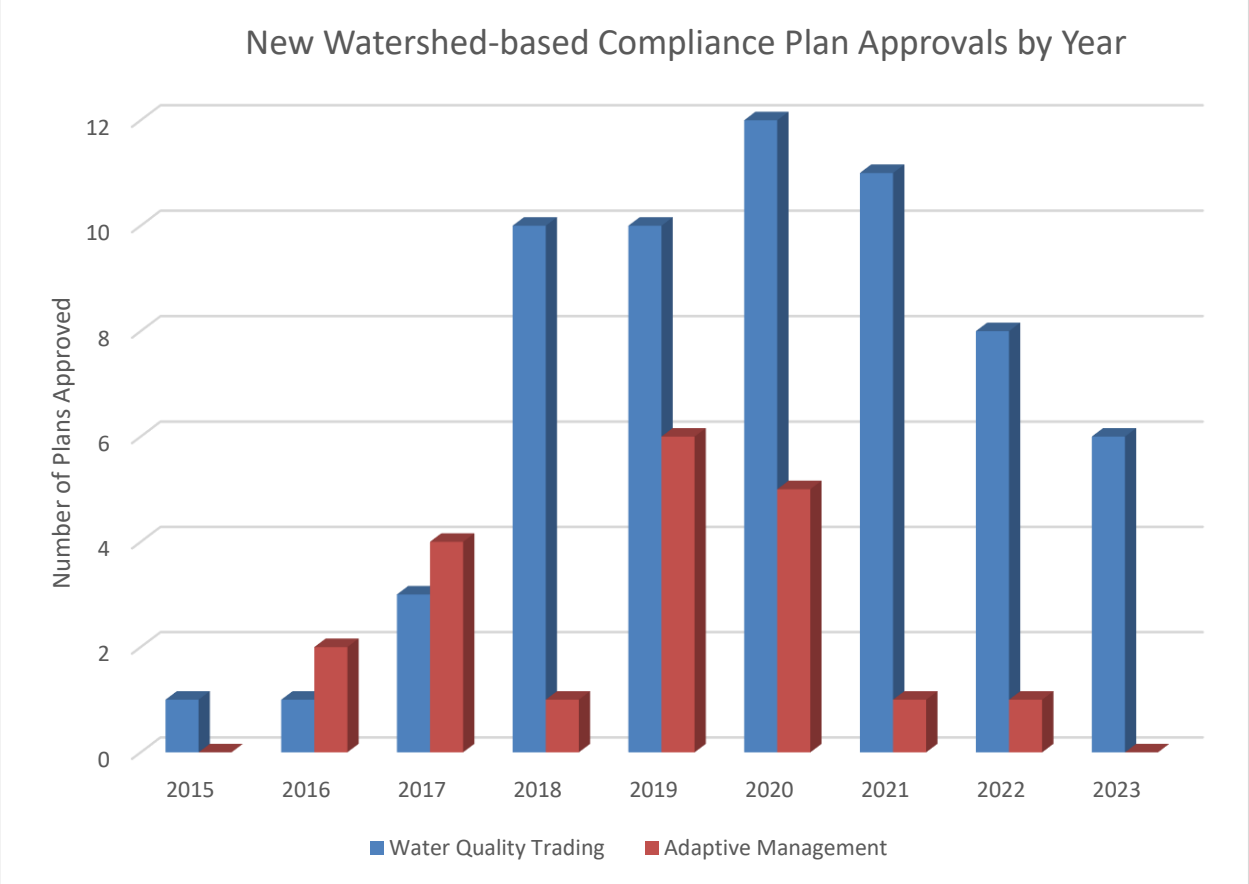


Figure 4: Annual totals for water quality trading and adaptive management plan approvals

WQT and AM activity markedly increased in the 2017 – 2020 timeframe due to several factors. As initial compliance schedules ended, often 7 years after the initial phosphorus WQBEL was issued, dischargers had completed the phosphorus planning process and were able (and required) to make an informed compliance option selection. Efforts to address the perceived barriers to trading may have also spurred more trading activity. Modest WQT policy revisions were adopted in DNR guidance in 2020. Further, 2019 Wisconsin Act

151 established the framework for a Water Quality Trading Clearinghouse, which began operating in 2023. At the outset of 2023, 62 dischargers have approved water quality trades and 23 permittees have approved AM plans.

While watershed-based compliance options are not appropriate in all situations, many permittees have the opportunity to use trading or AM to permanently comply with phosphorus criteria. These solutions are often implemented at a much lower cost than tertiary filtration. Appendix A contains phosphorus compliance status of all facilities, including those that have engaged in WQT or AM. Over 10 percent of all permittees have implemented solutions using these watershed-based compliance options (Figure 5). See Appendix A Supplement for category definitions.

For those facilities that have implemented trading and AM, a major facility upgrade is no longer necessary. Therefore, compliance costs incurred by permittees who have implemented trades and AM programs are not considered to be within the scope of the updated MDV economic evaluation.

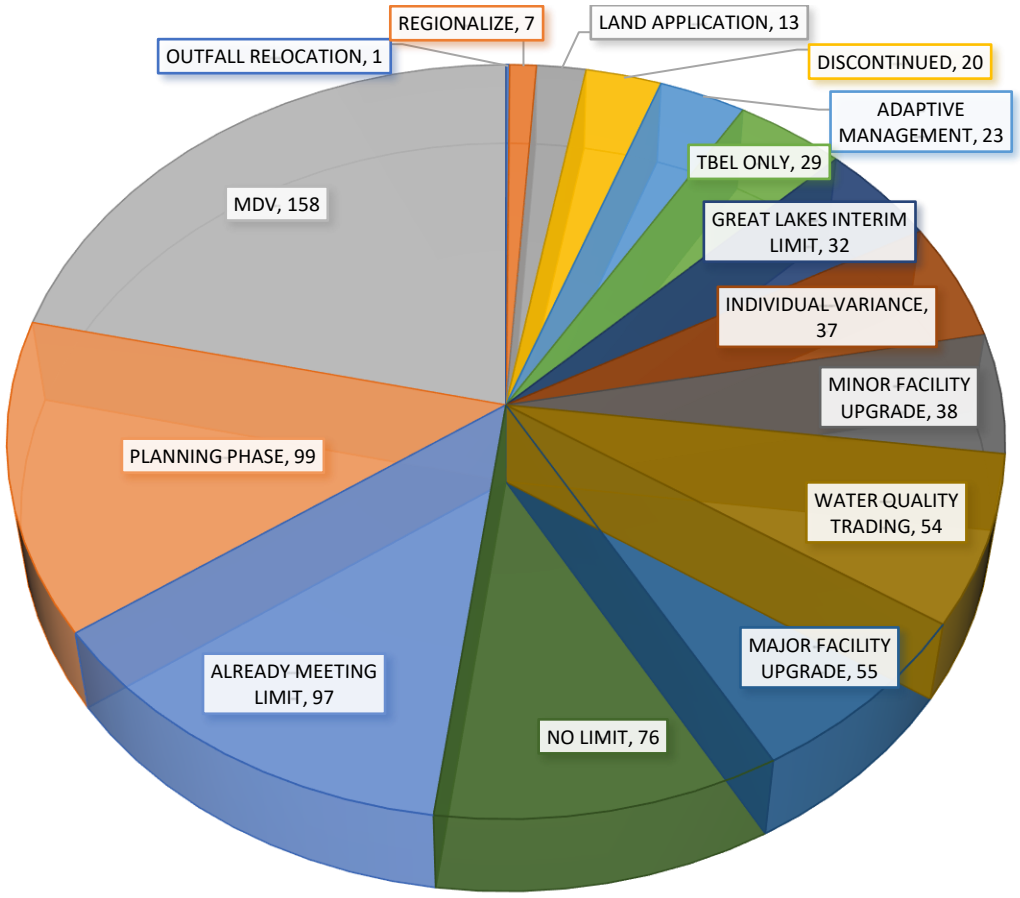


Figure 5: Phosphorus Planning Outcomes Statewide - Appendix A Summary Graphic

Section 2.3: Treatment Technology

The process to establish a justification for the MDV, as provided in statute at s. 283.16(2)(a), Wis. Stats., requires DOA to determine "whether attaining the water quality standard for phosphorus, adopted under s. 281.15, through compliance with water quality based effluent limitations by point sources that cannot achieve compliance without major facility upgrades is not feasible because it would cause substantial and widespread adverse social and economic impacts on a statewide basis." This initial determination was completed by DOA on October 6, 2015, and serves as the initial foundational basis for the MDV's variance justification in accordance with 40 CFR §131.10(g)(6).

Information supporting the initial determination was provided in supplemental reports developed by ARCADIS, Sycamore Advisors, and the University of Massachusetts Donahue Institute. These firms were contracted to provide key economic information to support the initial 2015 determination. The reports included a Final Economic Impact Analysis (dated December 29, 2015) and an Addendum to the Economic Impact Analysis (dated April 24, 2015).

Within the 2015 EIA Report, ARCADIS estimated compliance costs for all WPDES permit holders who were expected to be subject to low phosphorus WQBELs. Cost estimates relied on a set of assumptions that defined what treatment technology would commonly be required to meet phosphorus WQBELs on a consistent basis. To structure the assessment, the 592 evaluated municipal and industrial wastewater treatment facilities were divided into three groups based on their final WQBEL for total phosphorus:

- >0.5 to 1 mg/L
- >0.1 to 0.5 mg/L
- less than or equal to 0.1 mg/L

Facilities were also grouped by basic treatment type – either lagoon or mechanical plant. This provided a set of assumptions to inform what equipment was likely to already be in place at a given facility.

Regardless of existing treatment type, the EIA analysis assumed that any WQBELs lower than 0.5 mg/L required tertiary filtration to achieve. Limits of 0.5 mg/L and higher were assumed to be met by biological or chemical phosphorus removal. Setting the threshold for filtration at 0.5 mg/L is appropriate for a statewide analysis where facility-specific information is not available. Some facilities are able to treat to lower levels without filtration. It should be noted that some facility types are unlikely to achieve 0.5 mg/L even after optimizing traditional treatment. These include shallow stabilization ponds and recirculating sand filters.

In 2022, DNR conducted a review of currently available treatment technology as required under s. 283.16(3)(b), Wis. Stats. The review indicated that a subset of Wisconsin facilities were able to achieve lower effluent limits than the originally-specified 0.5 mg/L using biological or chemical phosphorus treatment. Based on 2021 data, 23 of the 119 facilities covered under the MDV could comply with limits lower than 0.5 mg/L. Lower interim limits are issued in individual WPDES permits accordingly, on a site-

specific basis pursuant to s. 283.16(7), Wis. Stats. There was no indication that an entire category of dischargers could meet a lower interim limit than 0.5 mg/L. DNR assigns lower interim limits, as needed pursuant to s. 283.16(7), Wis. Stats., when approving coverage under the MDV. These lower interim limits may be 0.5, 0.4. or 0.3 mg/L expressed as a monthly average, for example.

The treatment technology review also Investigated novel or emerging technologies including algae-based treatment systems, absorptive media systems, ion exchange, and constructed wetlands. While some of these technologies have shown success in a controlled setting, such as laboratory testing or small-scale installations, there was no evidence to suggest that these emerging treatment technologies would enable compliance with low-level phosphorus WQBELs at a lower cost than the tertiary filtration prescribed in the EIA analysis. The 2022 treatment technology evaluation is attached to this document – see Appendix J.

It is important to note that DNR reviews each MDV application to verify that tertiary filtration is indeed required to meet the applicable WQBELs. In cases where a facility has existing traditional treatment capable of meeting WQBELs, coverage under the MDV is not granted. In these cases, the WQBEL is made effective in the reissued permit. Achievable WQBELs are shown in the Appendix A table.

Many facilities have been able to comply with phosphorus WQBELs without installing tertiary filtration. Those facilities no longer fall within the scope of the MDV economic determination at s. 283.16(2), Wis. Stats., due to not being considered "point sources that cannot achieve compliance without major facility upgrades". Site-specific compliance costs for these facilities are not considered in the updated economic determination. Conversely, those facilities whose regulatory requirements currently require (after a compliance schedule or variance) a major facility upgrade resulting in substantial adverse economic impacts have compliance costs included in the updated determination.

For the purposes of determining whether the 2015 economic determination remains accurate, consideration of advances in treatment technology is essential. If new developments in treatment technology were to render the compliance cost assumptions of the 2015 EIA Report inaccurate for every discharger, the 2015 economic determination would be called into question. Based on consultation with DNR, including the aforementioned review of treatment technology required under s. 283.16(3)(b), Wis. Stats., this is not the case. The treatment technologies used in the 2015 EIA Report remain the industry standard lowest-cost facility upgrade for meeting low-level phosphorus effluent limits.

Chapter 3: Substantial Impact Analysis

Note: This chapter contains discussion pertaining to primary screener and secondary indicator score updates used in the economic determination. For a complete background on primary screening metrics, refer to section 5 of the 2015 Economic Determination.

Section 3.1: Updated Compliance Costs

As discussed above, the 2015 EIA Report estimated compliance costs based on information available at the time. Cost curves for installation of tertiary filtration were used to determine compliance costs for each discharger based on flow rate and facility type.

The 2015 analysis assumed that low-level phosphorus limits mandated a major facility upgrade, as it was not possible to predict which dischargers would find alternative compliance solutions such as WQT or AM. As discussed in section 2.2 of this document, a substantial number of dischargers have utilized these compliance options, and therefore projected facility upgrade compliance costs for those dischargers are not included in updated total compliance cost values.

The changing landscape of phosphorus WQBELs Is also considered when updating compliance costs. As discussed in section 2.1 of this document, some WQBELs have been relaxed in accordance with Ch. NR 217 Wis. Adm. Code when initial WQBELs had not yet gone into effect. Those dischargers who can meet WQBELs, either with current equipment or through minor upgrades, are not included in compliance cost totals.

Based on currently available information, phosphorus compliance costs total, by category, as follows:

Table 3. Updated phosphorus compliance cost totals (capital costs) by discharger category

Discharger Category	Compliance Costs Total	
Municipal	$	643,325,412.06
Cheese Manufacturers	$	26,267,428.36
Food Processors	$	26,139,413.87
Paper Industry	$	124,645,423.83
Aquaculture	$	47,322,128.37
NCCW/Other	$	32,327,554.92

The above figures are a sum of capital costs for all permittees within each category, largely sourced from final compliance alternatives plans and MDV applications. These represent site-specific cost estimates at a project planning level of accuracy. Where site-specific information was not available, the initial 2015 EIA Report numbers were used. All dollar values are adjusted to December 2023 values, using the ENR Construction Cost Index. The total statewide capital cost required to meet phosphorus WQBELs, for those facilities where a major facility upgrade is required, totals to $900,027,361.41.

Table 4. Updated phosphorus compliance costs (capital costs) for municipal facilities by county.

County	Total Capital Costs (Municipal Facilities)
Adams	$ -
Ashland	$ -
Barron	$ 7,382,921.35
Bayfield	$ -
Brown	$ 12,359,611.74
Buffalo	$ 11,899,519.40
Burnett	$ 3,660,670.00
Calumet	$ 5,307,269.80
Chippewa	$ 2,264,138.80
Clark	$ 29,070,054.64
Columbia	$ 5,500,789.44
Crawford	$ 9,994,876.42
Dane	$ 5,322,379.30
Dodge	$ 28,977,344.41
Door	$ -
Douglas	$ 3,325,117.60
Dunn	$ 1,702,210.53
Eau Claire	$ 2,160,329.82
Florence	$ -
Fond Du Lac	$ 11,400,142.77
Forest	$ -
Grant	$ 22,869,428.30
Green	$ 1,260,336.00
Green Lake	$ 9,424,168.87
Iowa	$ 29,034,238.46
Iron	$ 1,602,184.73
Jackson	$ 16,449,687.29
Jefferson	$ 14,245,182.00
Juneau	$ 8,136,356.00
Kenosha	$ 27,726,883.30
Kewaunee	$ 4,003,282.19
La Crosse	$ 6,184,255.41
Lafayette	$ 10,189,685.18
Langlade	$ -
Lincoln	$ -

County	Total Capital Costs (Municipal Facilities)
Manitowoc	$ 13,216,322.58
Marathon	$ 27,096,545.06
Marinette	$ -
Marquette	$ 9,556,176.49
Milwaukee	$ -
Monroe	$ 17,028,850.43
Oconto	$ 5,258,836.00
Oneida	$ 1,730,178.38
Outagamie	$ 7,597,826.91
Ozaukee	$ 2,066,650.20
Pepin	$ 2,137,925.73
Pierce	$ 13,485,466.91
Polk	$ 5,005,443.33
Portage	$ 4,622,256.01
Price	$ 3,887,136.00
Racine	$ 21,242,523.60
Richland	$ 6,393,656.86
Rock	$ 5,829,633.02
Rusk	$ 1,209,162.49
Sauk	$ 14,894,383.97
Sawyer	$ -
Shawano	$ 5,166,556.64
Sheboygan	$ 11,214,448.03
St. Croix	$ -
Taylor	$ 9,298,655.23
Trempealeau	$ 33,862,599.69
Vernon	$ 18,389,453.43
Vilas	$ -
Walworth	$ 25,131,438.58
Washington	$ 5,810,870.40
Waukesha	$ -
Waupaca	$ 10,163,536.66
Waushara	$ 447,750.70
Winnebago	$ 19,752,317.13
Wood	$ 50,375,747.87

Section 3.2: Primary Screener

In the municipal WWTF category, the primary screener compares phosphorus compliance cost per customer to MHI, using EPA's method for calculating a "Municipal Preliminary Screener Value" provided at http://water.epa.gov/scitech/swguidance/standards/economics/index.cfm (Interim Economic Guidance for Water Quality Standards: Workbook 1995/03/01 823/B-95-002). When a municipal WWTF seeks coverage under the MDV, the municipal WWTF must use updated, site-specific information available at that time to compare phosphorus compliance costs per customer to MHI by calculating a Municipal Preliminary Screener Value for the municipality.

For municipal permittees, phosphorus compliance costs are deemed to have a substantial impact and a permitted WWTF may be eligible for coverage under the MDV, in the following two scenarios:

1. Based on data that are available at the time that a municipal WWTF is seeking coverage under the MDV, if the estimated per-customer cost is at least 2% of Median Household Income (MHI), then phosphorus compliance costs are deemed to have a substantial impact on municipal WWTFs if at least two secondary indicator points are met

2. Based on data that are available at the time that a municipal WWTF is seeking coverage under the MDV, if the estimated per-customer cost is at least 1% of MHI but less than 2% of MHI, then phosphorus compliance costs are deemed to have a substantial impact on municipal WWTFs if at least three secondary indicator points are met . The substantial impact is less obvious for municipal WWTFs with service areas in this MHI range, so these municipal WWTFs face a higher secondary indicator threshold.

Because the primary screener system for municipal facilities is well established in EPA and DNR guidance, and relies heavily on site-specific information at the time MDV a facility requests MDV coverage, no changes to the primary screener system are proposed for the updated economic determination.

Two primary screeners were used to determine if industrial dischargers face substantial impacts from phosphorus compliance costs. The first primary screener compared the phosphorus compliance costs of individual WPDES permit holders to the compliance costs of other discharges within the same category. As previously stated, applicable industrial categories are aquaculture, cheesemakers, food processors, NCCW, paper, and other. Within each category, the first primary screener ranks permittees by estimated phosphorus compliance costs. If an individual permittee bears a significant compliance cost compared to other members of the category, the phosphorus rule likely causes a substantial impact, such as competitive disadvantage or impaired profitability. Therefore, the first indicator allows the top 75 percent of a category's permittees with nonzero compliance costs to be considered for MDV coverage and proceed to secondary indicator scoring.

This indicator allows a discharger to compare its site-specific compliance costs to other projected compliance costs within the applicable discharge category. Again, if the site-specific costs are in the top 75 percent of costs within the category, these costs may be substantial. Table 13 in Appendix H of this document provides the threshold for determining if a specific industry in the top 75 percent of dischargers incurring costs within their category.

At the time the 2015 analysis was completed, there was no standard method or guidance for determining what constitutes substantial impact for industrial discharges. Selecting a threshold based on compliance costs within the category made intuitive sense because a facility paying more for phosphorus compliance is going to be at a competitive disadvantage compared to other companies that don't face these compliance costs. Several analyses were conducted to determine what threshold may be appropriate for considering substantial impacts. The 75th percentile impact was deemed appropriate given the distribution of compliance costs within categories.

It is important to note that in February of 2023, EPA released a document titled *Clean Water Act Financial Capability Assessment Guidance* (800B24001, revised March 2024) intended to supplement the aforementioned *Interim Economic Guidance for Water Quality Standards.* The guidance expands the 1995 methodology to include two new tests/considerations for determining the magnitude of economic impacts. The first involves evaluation of impacts to low-income households within a community using a lowest quintile poverty indicator score. The second consideration is evaluation of alternative financing and funding options, referred to as a financial alternatives analysis. These tests are not being quantitatively incorporated into the MDV eligibility criteria as part of the updated economic determination. These concepts may need to be employed at a discharger-specific level, however, to validate compliance costs. For example, if a discharger is able to receive significant financial assistance such as grants or principal forgiveness, that increased financial capability would need to be considered when calculating a primary screener value. The guidance is available at EPA's webpage: https://www.epa.gov/wqs-tech/economic-guidance-water-quality-standards.

Section 3.3: Secondary Indicator Scores

Taken together, the secondary indicators should identify those counties that have particular susceptibility to the costs of phosphorus standards, either because local economic conditions limit the capacity to adapt productively to increased costs, or because affected industries' costs are particularly large in relation to a local economy. When selecting indicators, DOA consulted with economists and analysts at the Wisconsin Department of Workforce Development, the Wisconsin Department of Revenue, and the Wisconsin Department of Health Services, as well as consultants at the University of Massachusetts Donahue Institute. Those experts concurred that there is no standard array of data sets used for many types of analysis. They concurred that individual arrays of data sets are selected for specific questions. Seven indicators emerged from the experts' consensus: (MHI), personal current transfer receipts as a share of total income, jobs per square mile, population change, change in net earnings by place of residence, job growth, and capital costs as a share of total wages. MHI is not a secondary indicator for municipal WWTFs (this indicator was used as a primary screener for that category). Capital costs as a share of total wages is not a secondary indicator for municipal WWTFs because total wages are available at the county level, not at the municipal level. The NCCW category and the "other" category of industrial dischargers are not industries for which wage data is available; therefore this indicator (capital costs as a share of total wages) does not apply to these categories. The most recent data available at the time of this report was written were used to update the secondary indicators: population data is available for 2022; other data sets are available for 2021. These datasets are the same for all categories of permittees, excluding capital costs as a share of total wages,

which uses category-specific data and category-specific analyses. This section identifies and explains the importance of each of these secondary indictors.

With two exceptions, each secondary indicator offers one point if the threshold is met. One exception is net earnings change 2011-2021. This indicator offers two points if the threshold is met. As reported by the U.S. Department of Commerce Bureau of Economic Analysis, total income is divided into three categories: (1) net earnings (typically associated with work); (2) dividends, interest, and rent (typically associated with investment payouts); and (3) personal current transfer receipts (typically associated with government payments like Social Security and Medicare). Transfer receipts are sometimes seen as a drag on productive activity. Investment income often happens when retirees cash out of investments made long ago. Net earnings are the direct result of present-day productive work. Change in net earnings is probably one of the best predictors of future trends in a community's MHI, jobs per square mile, population change, and job growth.

The second exception is the category's capital costs as a share of total county payroll. This does not apply to municipal WWTFs, NCCW, or the "Other" category for reasons discussed above. In categories where it applies, this indicator was given extra weight in response to comments made by EPA and environmental groups during initial development of the secondary indicators. Also, directly comparing capital costs to county payroll is somewhat analogous to EPA economic guidance for water quality standards (in particular, dividing per-household compliance costs by MHI, to derive compliance costs as a share of MHI). See Interim Economic Guidance for Water Quality Standards Workbook, EPA March 1995.

The purpose of the secondary indicators for municipal WWTFs is to indicate the community's ability to obtain financing and describe the socioeconomic health of the community. As previously mentioned, municipal WWTFs finance phosphorus compliance costs by increasing user fees/revenues from the communities they serve. If the community faces socioeconomic decline and/or hardship, increased sewerage payments are likely to have a substantial negative impact on the community. The secondary indicators that help demonstrate the socioeconomic status of the community include: personal current transfer receipts as a share of total income, jobs per square mile, population change, net earnings by place of residence change, job growth, and capital costs as a share of total wages.

Descriptions of Secondary Indicators

Median Household Income

Median Household Income figures came from the Census Bureau's American Community Survey, which indicated that U.S. median household income was $69,021 in 2021. This indicator is met if the county MHI is below U.S. MHI.

Two notes relating to the use of MHI as a primary screener for municipal WWTFs: (1) Because MHI is the primary screener for municipal WWTFs, MHI is the only secondary indicator that is not used as a secondary indicator for municipal WWTFs; and (2) Because MHI in the municipal WWTF primary screener was MHI for affected communities in the county, it may differ slightly from MHI for the entire county used as a secondary indicator elsewhere.

Personal Current Transfer Receipts as a Share of Total Personal Income

While MHI gauges current income levels, it tells little about future trajectory. For insight into future income trends, it is useful to delve into the source of income. The U.S. Commerce Department's Bureau of Economic Analysis divides income into three categories: the "earnings" category, which is generally money earned from work; the "dividends interest and rent" category, which is investment income; and the "personal current transfer receipts" category, which reflects transfers ,mostly from governments to individuals. Nationally, transfer receipts constitute 21.7 percent of total income. This indicator is met if the county's percent of its total income derived from personal current transfer receipts is greater than the national average.

Transfer receipts achieve important goals for small amounts of money, but transfer receipts are not regarded as engines of economic activity to the same extent as earnings and investment. Communities relying heavily on transfer receipts are likely to face slower income growth. If current MHI is a relevant indicator, then likely future income growth seems equally relevant (though conceptually distinct). Slower income growth would make it more difficult to adjust to the cost of phosphorus standards.

Jobs per Square Mile

When asking how easily a community can adjust to phosphorus standards, it may be useful to consider how many jobs there are per square mile. Particularly in central Wisconsin and in northern Wisconsin, there are many communities with few jobs per square mile surrounded by many other communities with few jobs per square mile. Workers looking for jobs and utilities looking for ratepayers may have to look farther and wider in those cases. In communities with fewer jobs per square mile, finding a new job may take more time, may require a larger pay cut, and may require a commute that consumes more time, money, and fuel. Together, these factors suggest that, all else equal, low job density tends to increase a community's sensitivity to changing phosphorus standards.

The Wisconsin Department of Workforce Development's Quarterly Census of Employment and Wages supplies the numerator (jobs). The most recent annual figures available at this writing are from 2021. The U.S. Census Bureau's Quick Facts supplies the denominator (land area in square miles). Statewide, the average is 51.7 jobs per square mile. This indicator is met if the county's jobs per square mile is lower than the Wisconsin Statewide average. A statewide average was deemed the most appropriate comparison available because the Quarterly Census of Employment and Wages is based on employment covered by Unemployment Insurance laws whose scope and coverage vary considerably from state to state; the Bureau of Labor Statistics does not encourage or facilitate cross-state comparison or national summation of these job figures.

If phosphorus standards caused Wisconsin employers to restrict investment, restrain expansion, or reduce current employment, the number of jobs per square mile can affect how easily and how productively workers can resettle. Much of the northern tier of the state and much of the southwest corner of the state has very low job density.

Population Change

Compared to the faster-growing communities, communities with slower-than-national population change will spread their electricity and water costs across fewer rate payers, and they will have fewer consumers and workers to kick-start economic activity. Cultural trends and technological trends may be making people and jobs more mobile with each passing year. This would cause communities to compete more intensely to attract investment, jobs, wealth, and development. It may also suggest that below-par population growth could compound over time to widen the gap.

The Wisconsin DOA's Demographic Services Center publishes January 1 population estimates for each county, each year. This indicator increases the odds of qualifying for MDVs if the county's population change was 3.2 percent or less (less than half the nation's rate).

Net Earnings by Place of Residence

When reporting total personal income, the U.S. Department of Commerce's Bureau of Economic Analysis divides income into three categories: the "dividends interest and rent" category, which is typically associated with investment returns, rather than new, productive investments, this may reflect people cashing out of their retirement funds; the "personal current transfer receipts" category, which is discussed above; and the "net earnings by place of residence" category, which is generally money earned from work and is often considered a core driver of economic activity. Communities with slower growth in net earnings will have fewer resources to draw upon when paying for the cost of phosphorus compliance. Moreover, fast growth in net earnings is likely to boost future MHI, reduce future transfer receipts as a share of income, raise job density, and benefit population growth. Because this indicator has such broad, deep, forward-looking implications, it is worth two points in the scoring process.

Between 2011 and 2021, U.S. nominal net earnings by place of residence increased by 49.4 percent. This indicator is met if the county's net earnings by place of residence increased by less than the national rate for the most recent ten-year period at issued, based on the then most-current published figures for the U.S. Bureau of Economic Analysis.

Job Growth

The pace at which a community adds (or loses) jobs may affect its ability to attract and retain workers, its ability to attract and retain businesses requiring local consumers, and its ability to pay higher electricity and water rates to comply with phosphorus standards.

The U.S. Department of Commerce's Bureau of Economic Analysis publishes annual employment figures. These figures indicate that U.S. job growth was 7.1 percent from 2011 to 2021. This indicator is met if the county's employment declined or grew less than half the U.S. rate of growth for the most recent ten-year period at issue, based on the then most-current figures published from the U.S. Bureau of Economic Analysis.

Capital Costs as a Share of Total Wages

The methods for estimating compliance costs for the purposes of this determination are detailed in Section 4 of the 2015 Economic Determination document. Total wages for each county came from the Census

Bureau's County Business Patterns. Each category has specific benchmarks for this indicator. This indicator does not apply to Municipal WWTFs or to dischargers in the categories designated NCCW or "Other".

In categories where it applies, this indicator is worth 2 points. This weighting reflects, in part, response to comments made by EPA and environmental groups regarding the 2015 preliminary economic determination. Also, directly comparing capital costs to county payroll is somewhat analogous to EPA economic guidance for water quality standards (in particular, dividing per-household compliance costs by median household income, to derive compliance costs as a share of median household income). See Interim Economic Guidance for Water Quality Standards Workbook, EPA March 1995.

Chapter 4: Widespread Impact Analysis

Section 4.1: 2015 Widespread Determination

Included in the s. 283.16(2)(a), Wis. Stat., determination is the evaluation of "widespread adverse social and economic impact", sometimes referred to as the "widespread test". The widespread test is also presented in EPA guidance as an important determination to justify the need for MDVs as well as individual variances. To make a widespread social and economic impact determination, the 2015 EIA Report focused on quantifying the effects of phosphorus compliance on Wisconsin's economy. Specifically, Section 3.0 of the EIA Report and the "Economic Impacts with Upstream Offsets" Section of the Addendum are the key sources of information for the widespread test. The purpose of this section is to review the information in the 2015 EIA Report and EIA Addendum, apply updated values relevant to current compliance costs, and evaluate ongoing widespread impacts of phosphorus regulations absent an MDV.

The 2015 analysis utilized the Regional Economic Models, Inc. (REMI) model of the Wisconsin economy to demonstrate the broad-reaching economic impacts of phosphorus compliance costs. The REMI model is a dynamic economic forecasting software application that is used by many consulting firms, educational institutes, and government agencies (local, state, and federal) for a number of applications from determining the economic impacts of various economic stressors ranging from highway projects to projecting the economic impacts of environmental policies. The key data input needed for the REMI model was the phosphorus compliance costs by facility. For industrial categories, the compliance costs were assigned to each applicable category of discharge in the REMI model to define the incremental cost increases of doing business in the state of Wisconsin as a result of the phosphorus rule. Compliance costs incurred by municipal WWTFs were distributed among five categories in the REMI model. Since the mechanism to finance these costs is through user rate increases, these categories include: residential, commercial, industrial, public, and other.

Using the general methods above (see supplemental reports for more details), the total economic impacts of Wisconsin's phosphorus compliance costs were estimated. Total economic impacts are the best estimates of how compliance costs will affect gross state product (state GDP), jobs, wages and population change. These indicators were deemed the most defensible metrics for assessing the widespread impacts of the phosphorus rule and were analyzed on a statewide basis as well as for categories of discharges. Statewide results help demonstrate the total adverse economic impacts of implementing the phosphorus rule in Wisconsin and are shown in Table 5. The purpose of the sector-by-sector analysis was to determine if implementing the phosphorus rule on any particular category caused widespread impacts to the state, and to conform to EPA's recommendation to conduct a separate analysis for each category. This sector-by-sector analysis is presented in Section 3.3 of the 2015 EIA Report.

Table 5: Adverse statewide impacts on Wisconsin's economy due to phosphorus compliance

	2017	2025
Total Employment (# of Jobs)	-1,548	-4,442
Gross State Product (Millions of Fixed 2014 Dollars)	-$169.4	-$604.2
Total Wages (Millions of Fixed 2014 Dollars)	-$65.7	-$234.8
Population (Individuals)	-1,954	-10,711

The employment impacts of the water compliance regulations associated with Wisconsin's water quality regulations for phosphorus are shown in Figure 6. The jobs impacts accelerate during the 2016-2025 period and then remain roughly steady through 2035.

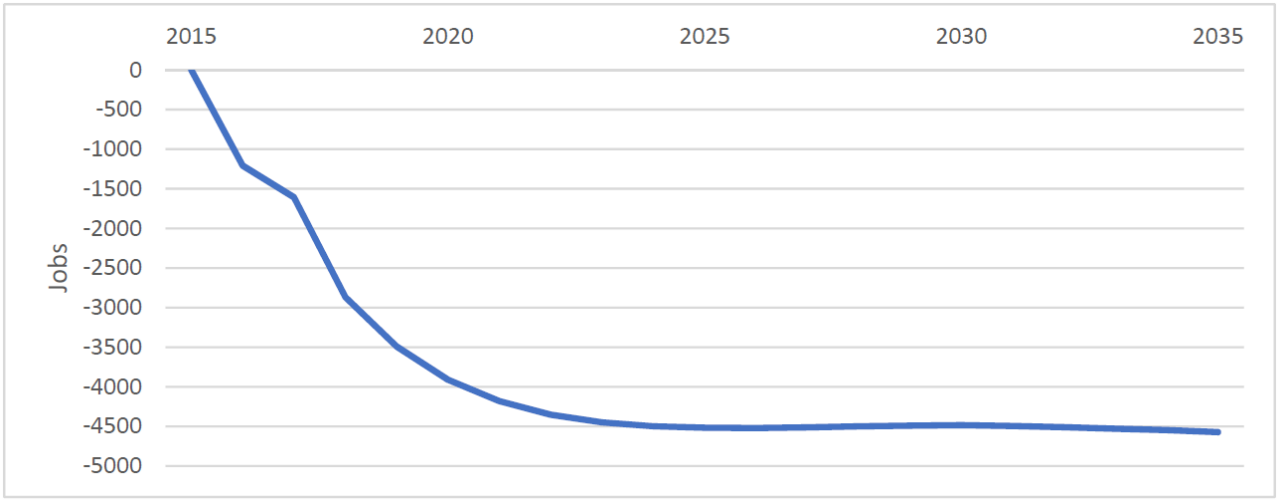


Figure 6: Statewide Employment Impact

Source: Regional Economic Models, Inc., as calculated by the University of Massachusetts Donahue Institute.

The increase in industry expenses and consumer expenses due to water quality compliance will circulate through the Wisconsin economy and result in lower gross state product ("GSP" – the value of goods produced in the state). The decline in GSP (Figure 7) is gradual through 2025 and is a result of industries reducing relative production levels in the state in response to higher costs and consumption declining as consumers and businesses have less money to spend. The overall effect is estimated to be a $616.6 million reduction in Wisconsin GSP in 2025 compared to the levels that would have been expected without the increase in costs for water quality compliance by the state's industries and municipalities. The annual loss in GSP (all in constant 2014 dollars) gradually becomes greater during the 2025-2035 period. By 2035, the

reduction in Wisconsin GSP is estimated to exceed $700 million compared to what it would have been without the phosphorus regulations.

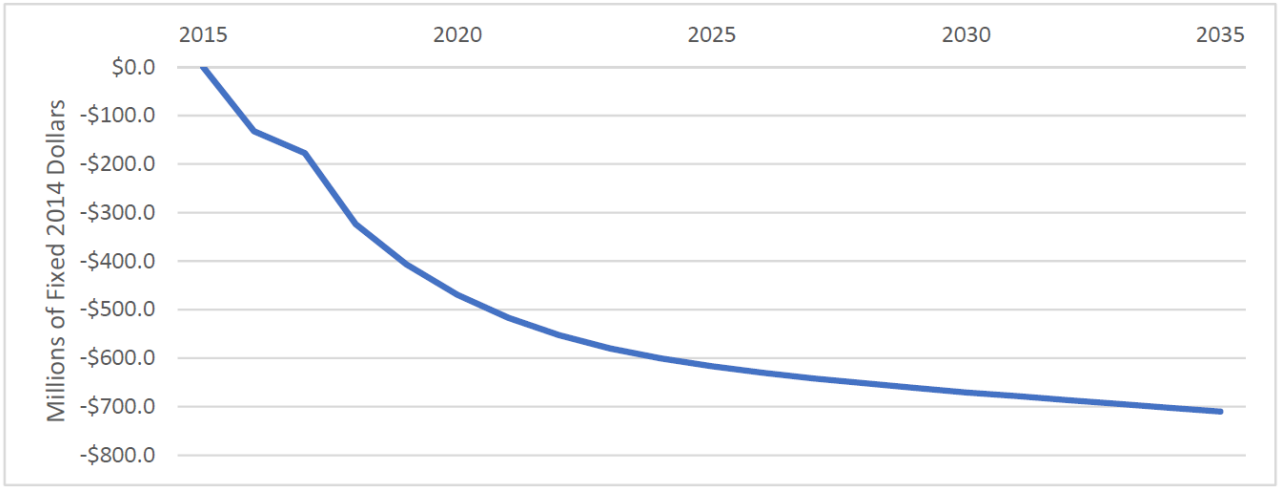


Figure 7: Statewide Gross State Product Impact

Source: Regional Economic Models, Inc., as calculated by the University of Massachusetts Donahue Institute.

The REMI model results, published as part of the 2015 EIA Report and Addendum, demonstrate the direct link between Wisconsin's dischargers incurring compliance costs and broader economic impacts.

In order to understand how changes in compliance costs might affect the overall impact of water compliance in Wisconsin, two additional REMI simulations were run for the industries that would incur the largest costs for water quality compliance (paper, power generation, and municipal utilities). The REMI analysis, based on the three industries, shows that the impacts to Wisconsin's employment and gross state product are expected to roughly scale with changes in the cost of compliance. This means that a 25 percent increase in the cost of water compliance should be accompanied by a 25 percent increase in the magnitude of the impacts to employment or gross state product, and a 10 percent decrease in the cost should be accompanied by a 10 percent decrease in the impact magnitudes. This is borne out by the results shown in Table 6 and Table 7 illustrating the impacts of the original as well as high and low impacts based on increasing or lowering the respective industry costs.

Table 6: Jobs Impact Projections Based on Varied Compliance Cost Scenarios

Scenario	Paper(300 mg/L)	Paper (1000 mg/L)	Power	Municipal
	Jobs	Jobs	Jobs	Jobs
Original	-702	-1,647	-862	-1,420
High (+25%)	-878	-2,050	-1,074	-1,774
Low (-10%)	-630	-1,499	-776	-1,280

Table 7: Gross State Product Projections based on Varied Compliance Cost Scenarios

Scenario	Paper(300 mg/L)	Paper (1000 mg/L)	Power	Municipal
	Gross State Product (millions)	Gross State Product (millions)	Gross State Product (millions)	Gross State Product (millions)
Original	-$101.6	-$237.9	-$150.5	-$152.9
High (+25%)	-$127.1	-$295.9	-$187.7	-$191.2
Low (-10%)	-$91.3	-$221.6	-$135.7	-$136.1

Section 4.2: Economic Evaluation in Context of 2023 Data

The scalable relationship between magnitude of compliance cost and level of broader economic impact allows for approximation of economic impacts based on varied compliance costs. When compliance costs were reduced by 10 percent, the REMI model responded with reduced economic impact of roughly 10 percent. Specifically, GSP increased, on average, by 9.1 percent. Jobs results responded more directly with a 9.6 percent increase between the original and -10 percent compliance cost scenarios.

Updated capital costs for all categories total $900 million statewide. This value represents a 74 percent reduction from the initially projected $3.45 billion capital cost total. Using the assumption of full scalability of widespread impacts, future gross state product and jobs impacts can be predicted. The results of this analysis are shown in Table 8 below.

The results of this exercise could be considered conservative because they only evaluate a portion of compliance costs – those not yet incurred by dischargers. Dischargers have incurred compliance costs due to phosphorus regulations, and will continue to do so even with a statewide MDV available for a subset of municipalities and industries. It is also worth noting that $991 million of the $3.45 billion initially-projected capital costs are within the power sector – which was ultimately excluded from MDV coverage. Those costs have, in theory, been incurred over the past seven years with associated widespread impacts to some degree. This factor adds an additional layer of conservatism to the analysis.

Table 8: Projection of current widespread impacts based on downward scalability of the initial analysis.

Scenario	Main Categories (total)			
	Gross State Product (millions)		Jobs	
	Value	Percent Change	Value	Percent Change
Original	-642.9	0%	-4631	0%
Low (-10%)	-584.7	9.1%	-4185	9.6%
Current (-74%)	-209.9	67.3%	-1341	71.0%

These projections indicate that gross state product would decline by $209.9 million, and 1,341 jobs would be lost within the categories evaluated, assuming the MDV is not reauthorized, and compliance costs are incurred by Wisconsin municipalities and industries over the next several years.

Chapter 5: Conclusion

The Wisconsin DOA finds that implementation of the Wisconsin phosphorus water quality standards, absent ongoing use of the MDV, will cause substantial and widespread adverse social and economic impacts to all currently eligible categories of municipal and industrial wastewater dischargers. Therefore, it directs the Wisconsin DNR to move forward with the formal process of requesting reauthorization of the phosphorus MDV from the EPA for the purposes of phosphorus reduction.

DOA's conclusion is based on statewide categories, primary and secondary economic indicators, and multifaceted data provided by ARCADIS, The University of Massachusetts, Sycamore, DOA and the DNR. Preliminary information was shared with the public on October 10, 2023, with listening sessions held in November of 2023. Public comments and suggestions were accepted, reviewed, and taken into consideration for the purpose of rendering an updated determination.

Without a variance to address the existing phosphorus regulations, roughly 200 wastewater dischargers are expected to see substantial economic impacts. The overall cost to Wisconsin communities will be a minimum of $900 million in capital expenditures, which will rise to above $1 billion due to interest costs applied to borrowing needed to meet increased capital costs.

When looking at all the sectors impacted it is not just their individual costs and their ability to absorb them, but how they will likely implement that absorption through rate/cost increases affecting all other sectors that rely on output to run their operations. In turn, businesses may potentially take one of four avenues if denied a variance: decrease investment, postpone expansion in Wisconsin, shift production to another state, or cease operations all together. Based on the methodology and quantitative analysis produced by the 2015 EIA Report, an MDV is critical and will achieve reduction in phosphorus amounts without placing additional undue burdens on existing utilities and business. Without the multi-discharger variance, affected businesses will realize the full impact of the regulatory costs totaling statewide to at least 1,341 fewer jobs and a $209.9 million reduction in gross state product. These results help illustrate that widespread economic impacts will occur throughout the state.

In addition to the widespread analysis, DOA recommends continuing to use the multi-step approach that was developed in 2015, to determine if phosphorus compliance costs are substantial to permittees. This standard methodology provides a predictable process for municipal and industrial dischargers to determine if phosphorus compliance costs are substantial for the permittee and community. Based on the methodology, it is believed that costs are substantial for municipal discharges if the estimated per-customer cost is at least 2 percent of MHI, and the municipality's county scores at least two points in the secondary indicator section or if the estimated per-customer cost is at least 1 percent of MHI but less than 2 percent of MHI, and the municipality's county scores at least three points in the secondary indicator section. Industrial dischargers are believed to have substantial impacts if they meet either of two conditions: 1) their site-specific compliance costs are greater than the specific cost threshold set in Table 13 for determining they are within the top 75 percent of permittees incurring costs; or 2) the discharge is located in a county that is listed in Table 14 of this determination as being a county within the top 75

percent of counties incurring costs. Permittees that meet both tests are believed to have a substantial impact, though must achieve a secondary indicator score of at least two points in order to confirm this determination. Permittees that meet only one primary screener must achieve a secondary indicator score of at least three points to qualify for MDV coverage. Facilities will need to provide sufficient, current site-specific information to determine whether these indicators and scoring are met, and thereby whether they potentially qualify for the MDV pursuant to s. 283.16(4)(a)(1), Wis. Stats.

Due to the current information presented in this report, especially the combination of primary and secondary indicators affecting communities throughout Wisconsin, it is the recommendation of the Wisconsin DOA that the Wisconsin DNR seek ongoing regulatory flexibility in implementing the phosphorus rule.

Phosphorus Planning Outcomes Description (Appendix A Supplement)

ADAPTIVE MANAGEMENT**:** The permittee has an approved adaptive management plan addressing phosphorus requirements.

ALREADY MEETING LIMIT**:** The facility was able to meet the applicable phosphorus limit immediately upon or soon after permit issuance.

DISCONTINUED**:** The facility closed or otherwise ceased discharge. Those that transition to a general permit also fall within this category.

GREAT LAKES - INTERIM LIMIT**:** Facilities in this category discharge directly to Lake Michigan or Lake Superior. Phosphorus limits are set at 0.6 mg/L in accordance with s. NR 217.13(4), Wis. Adm. Code.

INDIVIDUAL VARIANCE**:** The permittee has an approved individual phosphorus variance, or has indicated intent to apply for an individual phosphorus variance.

LAND APPLICATION**:** The facility will be ceasing discharge to surface waters and transitioning to land-based treatment such as spray irrigation or a ridge and furrow system.

MAJOR FACILITY UPGRADE**:** The facility has completed or is in the process of completing installation of tertiary filtration or similar treatment technology to meet low-level phosphorus limits.

MDV**:** The permittee has been granted coverage under the MDV, or has indicated intent to apply for the MDV to temporarily address phosphorus requirements.

MINOR FACILITY UPGRADE**:** The facility is able to comply with phosphorus WQBELs via traditional treatment means such as biological or chemical phosphorus removal. Facilities that achieve compliance through minor operation modifications or source reduction are also included in this category.

NO LIMIT**:** The facility does not have a phosphorus limit included in the WPDES permit. While all facilities are evaluated for phosphorus limits, some facilities may not trigger reasonable potential to cause or contribute to an exceedance of phosphorus criteria in the receiving or downstream waters.

PLANNING PHASE**:** The facility has received a phosphorus limit and associated compliance schedule pursuant to s. NR 217.17 Wis. Adm. Code. The final limit is not effective during the compliance schedule period. The permittee must use this time to optimize treatment, plan, and select a compliance option.

REGIONALIZE**:** The facility has ceased discharge by sending wastewater to another facility.

OUTFALL RELOCATION**:** The discharge will be relocated to a different receiving water with more assimilative capacity for effluent phosphorus.

TBEL ONLY**:** The technology-based effluent limit applicable for the facility is the lowest applicable limit, after evaluating the need for WQBELs.

WATER QUALITY TRADING**:** The facility has achieved compliance with phosphorus WQBELs via water quality trading.

Appendix A. Facility-specific Information Table

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Beaver Dam Wastewater Treatment Facility	0023345	Dodge	ADAPTIVE MANAGEMENT	0.163	Municipal	NO
Blue Mounds Wastewater Treatment Facility	0031658	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Burlington Water Pollution Control	0022926	Racine	ADAPTIVE MANAGEMENT	0.100	Municipal	NO
Cambridge Oakland Wastewater Commission	0026948	Jefferson	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Cedarburg Wastewater Treatment Facility	0020222	Ozaukee	ADAPTIVE MANAGEMENT	0.145	Municipal	NO
Cuba City Wastewater Treatment Facility	0022217	Grant	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Dane Iowa Wastewater Commission WWTF	0049816	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Deerfield Wastewater Treatment Facility	0023744	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Grafton Water & Wastewater Utility	0020184	Ozaukee	ADAPTIVE MANAGEMENT	0.011	Municipal	NO
Green Bay Metropolitan Sewerage District	0065251	Brown	ADAPTIVE MANAGEMENT	0.129	Municipal	NO
Madison Metropolitan Sewerage District WWTF	0024597	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Mount Horeb Wastewater Treatment Facility	0020281	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Mukwonago Wastewater Treatment Plant	0020265	Waukesha	ADAPTIVE MANAGEMENT	0.100	Municipal	NO
New Richmond Wastewater Treatment Facility	0021245	St. Croix	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Oconomowoc Wastewater Treatment Plant	0021181	Waukesha	ADAPTIVE MANAGEMENT	0.169	Municipal	NO
Oregon Wastewater Treatment Facility	0020681	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Plymouth Utilities WWTF	0030031	Sheboygan	ADAPTIVE MANAGEMENT	0.263	Municipal	NO
Sparta Wastewater Treatment Facility	0020737	Monroe	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Stoughton Wastewater Treatment Facility	0020338	Dane	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Tomah Wastewater Treatment Facility	0021318	Monroe	ADAPTIVE MANAGEMENT	0.170	Municipal	NO
US Army Headquarters, Fort McCoy WWTP	0022420	Monroe	ADAPTIVE MANAGEMENT	0.075	Municipal	NO
Western Racine County Sewerage District	0028754	Racine	ADAPTIVE MANAGEMENT	0.115	Municipal	NO
WI DNR Nevin Fish Hatchery	0002585	Dane	ADAPTIVE MANAGEMENT	0.016	Fish	NO
Adams Wastewater Treatment Facility	0023159	Adams	ALREADY MEETING LIMIT	0.366	Municipal	NO
Agropur Inc Weyauwega Plant	0001449	Waupaca	ALREADY MEETING LIMIT	0.118	NCCW	NO
Ahlstrom Mosinee LLC	0003671	Marathon	ALREADY MEETING LIMIT	0.367	Paper	NO
Allenton Sanitary District WWTP	0028053	Washington	ALREADY MEETING LIMIT	0.868	Municipal	NO
Aspen Health & Rehabilitation Center	0029742	Douglas	ALREADY MEETING LIMIT	2.700	Other	NO
ATI Ladish, LLC	0000728	Milwaukee	ALREADY MEETING LIMIT	0.024	NCCW	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Baraboo Wastewater Treatment Facility	0020605	Sauk	ALREADY MEETING LIMIT	0.366	Municipal	NO
Berlin Wastewater Treatment Facility	0021229	Waushara	ALREADY MEETING LIMIT	0.385	Municipal	NO
Birchwood Manufacturing Co	0042528	Barron	ALREADY MEETING LIMIT	0.100	Other	NO
Blenker Sherry Sanitary District WWTF	0031950	Wood	ALREADY MEETING LIMIT	0.363	Municipal	NO
Burnett Dairy Cooperative	0039039	Burnett	ALREADY MEETING LIMIT	1.914	Cheese	NO
Cambria Wastewater Treatment Facility	0023523	Columbia	ALREADY MEETING LIMIT	0.367	Municipal	NO
Catawba Kennan Joint Sewage Commission	0061701	Price	ALREADY MEETING LIMIT	2.400	Municipal	NO
Cedar Valley Cheese Inc	0051535	Ozaukee	ALREADY MEETING LIMIT	0.044	Cheese	NO
Colfax Wastewater Treatment Facility	0023663	Dunn	ALREADY MEETING LIMIT	1.001	Municipal	NO
Coon Valley Wastewater Treatment Facility	0020958	Vernon	ALREADY MEETING LIMIT	3.300	Municipal	NO
Cornell Wastewater Treatment Facility	0021300	Chippewa	ALREADY MEETING LIMIT	6.000	Municipal	NO
Cumberland City of	0020354	Barron	ALREADY MEETING LIMIT	0.075	Municipal	NO
Dunn Paper - Ladysmith, LLC	0003204	Rusk	ALREADY MEETING LIMIT	1.400	Paper	NO
Eagle River City of	0022004	Vilas	ALREADY MEETING LIMIT	0.332	Municipal	NO
Edgerton Wastewater Treatment Facility	0020346	Rock	ALREADY MEETING LIMIT	0.435	Municipal	NO
Elmwood Village WWTP	0023922	Pierce	ALREADY MEETING LIMIT	1.900	Municipal	NO
Foremost Farms USA Appleton	0039993	Outagamie	ALREADY MEETING LIMIT	1.490	NCCW	NO
Foremost Farms USA Reedsburg	0000035	Sauk	ALREADY MEETING LIMIT	0.052	NCCW	NO
Foremost Farms USA Richland Center	0004413	Richland	ALREADY MEETING LIMIT	0.075	NCCW	NO
Forest Junction Sanitary District	0032123	Calumet	ALREADY MEETING LIMIT	0.490	Municipal	NO
Forestville Wastewater Treatment Facility	0028894	Door	ALREADY MEETING LIMIT	0.470	Municipal	NO
Galloway Company	0027553	Winnebago	ALREADY MEETING LIMIT	0.307	NCCW	NO
General Mitchell International Airport	0046477	Milwaukee	ALREADY MEETING LIMIT	1.000	Other	NO
Glenwood City Wastewater Treatment Facility	0060381	St. Croix	ALREADY MEETING LIMIT	1.008	Municipal	NO
Grande Cheese Corp Wyocena	0051764	Columbia	ALREADY MEETING LIMIT	0.089	NCCW	NO
Grantsburg Village of	0060429	Burnett	ALREADY MEETING LIMIT	1.568	Municipal	NO
Gresham Wastewater Treatment Facility	0022781	Shawano	ALREADY MEETING LIMIT	0.180	Municipal	NO
Ho Chunk RV Resort and Campground	0061263	Juneau	ALREADY MEETING LIMIT	0.066	Municipal	NO
Holy Family Convent Wastewater Facility	0028142	Manitowoc	ALREADY MEETING LIMIT	0.777	Municipal	NO
Hudson Wastewater Treatment Facility	0024279	St. Croix	ALREADY MEETING LIMIT	0.812	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Hustisford Wastewater Treatment Facility	0020303	Dodge	ALREADY MEETING LIMIT	1.198	Municipal	NO
Iola Wastewater Treatment Facility	0021717	Waupaca	ALREADY MEETING LIMIT	0.361	Municipal	NO
Jefferson Wastewater Treatment Facility	0024333	Jefferson	ALREADY MEETING LIMIT	0.161	Municipal	NO
Johnson Creek Wastewater Treatment Facility	0022161	Jefferson	ALREADY MEETING LIMIT	0.170	Municipal	NO
Joy Global Surface Mining Inc	0025321	Milwaukee	ALREADY MEETING LIMIT	0.247	NCCW	NO
Juneau Wastewater Treatment Facility	0021474	Dodge	ALREADY MEETING LIMIT	0.168	Municipal	NO
Kenosha Beef International	0050784	Kenosha	ALREADY MEETING LIMIT	0.075	Food	NO
Kewaunee Wastewater Treatment Facility	0020176	Kewaunee	ALREADY MEETING LIMIT	1.139	Municipal	NO
Knapp Wastewater Treatment Facility	0060500	Dunn	ALREADY MEETING LIMIT	3.800	Municipal	NO
Lakeland Sanitary District	0022837	Oneida	ALREADY MEETING LIMIT	0.366	Municipal	NO
Lakeside Foods, Inc. New Richmond	0002836	St. Croix	ALREADY MEETING LIMIT	0.075	NCCW	NO
Lebanon Sanitary District #2 WWTF	0023051	Dodge	ALREADY MEETING LIMIT	1.198	Municipal	NO
Little Rapids Corporation, Shawano Paper Mill	0001341	Shawano	ALREADY MEETING LIMIT	0.222	Paper	NO
Lodi Canning Co	0002658	Columbia	ALREADY MEETING LIMIT	0.366	NCCW	NO
LSP Whitewater Limited Partnership	0049069	Jefferson	ALREADY MEETING LIMIT	0.075	Other	NO
Madison Gas & Electric Blount Station	0001961	Dane	ALREADY MEETING LIMIT	0.125	NCCW	NO
Markesan Wastewater Treatment Facility	0024619	Green Lake	ALREADY MEETING LIMIT	0.367	Municipal	NO
Marshall Wastewater Treatment Facility	0024627	Dane	ALREADY MEETING LIMIT	0.581	Municipal	NO
Mauston Wastewater Treatment Facility	0024635	Juneau	ALREADY MEETING LIMIT	0.523	Municipal	NO
Milton Wastewater Treatment Facility	0060453	Rock	ALREADY MEETING LIMIT	0.435	Municipal	NO
Montreal City of	0022306	Iron	ALREADY MEETING LIMIT	1.950	Municipal	NO
MSI Express Inc	0069965	Fond du Lac	ALREADY MEETING LIMIT	0.062	NCCW	NO
Mullins Cheese Inc - Knowlton	0054127	Marathon	ALREADY MEETING LIMIT	0.431	Cheese	NO
Nasonville Dairy, Inc.	0040312	Wood	ALREADY MEETING LIMIT	0.143	Cheese	NO
Nestle Purina PetCare Co	0002518	Jefferson	ALREADY MEETING LIMIT	0.100	NCCW	NO
New Lisbon Wastewater Treatment Facility	0020699	Juneau	ALREADY MEETING LIMIT	0.366	Municipal	NO
Plain Wastewater Treatment Facility	0036048	Sauk	ALREADY MEETING LIMIT	0.075	Municipal	NO
Plum City Wastewater Treatment Plant	0021431	Pierce	ALREADY MEETING LIMIT	1.300	Municipal	NO
Plymouth Town Sanitary District #1 WWTF	0031054	Rock	ALREADY MEETING LIMIT	2.242	Municipal	NO
Port Edwards Wastewater Treatment Facility	0020451	Wood	ALREADY MEETING LIMIT	0.366	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Poynette Wastewater Treatment Facility	0021091	Columbia	ALREADY MEETING LIMIT	0.366	Municipal	NO
Prentice Village of	0021075	Price	ALREADY MEETING LIMIT	1.300	Municipal	NO
Reeseville Wastewater Treatment Facility	0028509	Dodge	ALREADY MEETING LIMIT	1.655	Municipal	NO
Rice Lake Utilities City of	0021865	Barron	ALREADY MEETING LIMIT	0.600	Municipal	NO
Richland Center Renewable Energy	0064718	Richland	ALREADY MEETING LIMIT	0.075	Food	NO
Ridgeland Wastewater Treatment Plant	0021296	Dunn	ALREADY MEETING LIMIT	0.839	Municipal	NO
River Falls Municipal Utility WWTF	0029394	Pierce	ALREADY MEETING LIMIT	0.770	Municipal	NO
Schreiber Foods Inc - West Bend	0026751	Washington	ALREADY MEETING LIMIT	0.200	Food	NO
Schroeders Greenhouse	0046248	Brown	ALREADY MEETING LIMIT	19.539	Other	NO
Seneca Foods Corporation Cambria	0003891	Columbia	ALREADY MEETING LIMIT	0.026	NCCW	NO
Sensient Flavors LLC	0002534	Dodge	ALREADY MEETING LIMIT	0.075	NCCW	NO
Silver Lake Sanitary District	0061301	Waushara	ALREADY MEETING LIMIT	0.811	Municipal	NO
Star Prairie Wastewater Treatment Facility	0060984	St. Croix	ALREADY MEETING LIMIT	5.000	Municipal	NO
Tomahawk City of	0021946	Lincoln	ALREADY MEETING LIMIT	0.366	Municipal	NO
United States Geological Survey	0045756	La Crosse	ALREADY MEETING LIMIT	0.100	Other	NO
Valero Renewable Fuels Company, LLC	0002038	Jefferson	ALREADY MEETING LIMIT	0.170	Power Plant	NO
Warrens Monroe Wastewater Treatment Facility	0060259	Monroe	ALREADY MEETING LIMIT	0.366	Municipal	NO
Waste Management Omega Hills Landfill	0049514	Washington	ALREADY MEETING LIMIT	0.081	Other	NO
Waupaca Foundry Inc Plant No 1	0026379	Waupaca	ALREADY MEETING LIMIT	0.026	NCCW	NO
Webster Village of	0028843	Burnett	ALREADY MEETING LIMIT	0.330	Municipal	NO
Westboro Sanitary District #1	0061107	Taylor	ALREADY MEETING LIMIT	2.200	Municipal	NO
Wheeler Wastewater Treatment Facility	0060852	Dunn	ALREADY MEETING LIMIT	0.999	Municipal	NO
White Hill Cheese Co LLC	0065757	Lafayette	ALREADY MEETING LIMIT	0.075	Cheese	NO
WI Air National Guard	0023078	Juneau	ALREADY MEETING LIMIT	0.366	Municipal	NO
WI Dells Lk Delton Sewerage Commission	0031402	Columbia	ALREADY MEETING LIMIT	0.366	Municipal	NO
WI DNR Art Oehmcke State Fish Hatchery	0058271	Oneida	ALREADY MEETING LIMIT	0.045	Fish	NO
WI DNR Gov Tommy Thompson Fish Hatchery	0049191	Washburn	ALREADY MEETING LIMIT	0.590	Fish	NO
WI DNR Kettle Moraine Springs Fish Hatchery	0026255	Sheboygan	ALREADY MEETING LIMIT	0.038	Fish	NO
WI DNR Osceola Fish Hatchery	0004197	Polk	ALREADY MEETING LIMIT	0.060	Fish	NO
Wisconsin Dairy State Cheese, Inc.	0055751	Wood	ALREADY MEETING LIMIT	0.927	Cheese	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
WPS Fox Energy Center	0061891	Outagamie	ALREADY MEETING LIMIT	0.824	Power	NO
Arkema Inc.	0027731	Ozaukee	DISCONTINUED	NO LIMIT	NCCW	NO
Bloomfield Healthcare and Rehabilitation Center	0030805	Iowa	DISCONTINUED	NO LIMIT	Other	NO
Brookside Dairy	0003191	Winnebago	DISCONTINUED	NO LIMIT	Cheese	NO
Cellu Tissue Corporation Neenah	0000680	Winnebago	DISCONTINUED	NO LIMIT	Paper	NO
Dairyland Power Cooperative Genoa	0003239	Vernon	DISCONTINUED	NO LIMIT	Power	NO
DRS Technologies	0062723	Milwaukee	DISCONTINUED	0.075	NCCW	NO
Green Bay Packaging, Inc. - Mill Division	0000973	Brown	DISCONTINUED	NO LIMIT	NCCW	NO
Northern Wisconsin Center For Dev Disabled	0039144	Chippewa	DISCONTINUED	NO LIMIT	Other	NO
Pentair Flow and Filtration Solutions	0055816	Walworth	DISCONTINUED	NO LIMIT	Other	NO
Poly Vinyl Company Inc	0066699	Sheboygan	DISCONTINUED	0.360	NCCW	NO
PPG Industries Inc	0029149	Milwaukee	DISCONTINUED	NO LIMIT	NCCW	NO
Schreiber Foods Inc MGB Plant	0004499	Brown	DISCONTINUED	NO LIMIT	NCCW	NO
Stella Jones Corporation	0056880	La Crosse	DISCONTINUED	NO LIMIT	Other	NO
Village of Kimberly	0065358	Outagamie	DISCONTINUED	NO LIMIT	Municipal	NO
Village of Little Chute	0065366	Outagamie	DISCONTINUED	NO LIMIT	Municipal	NO
West Shore Pipeline Granville North Site	0065048	Washington	DISCONTINUED	NO LIMIT	Other	NO
WI DNR Copper Falls State Park	0030449	Ashland	DISCONTINUED	NO LIMIT	Municipal	NO
WPL - Rock River Generating	0002402	Rock	DISCONTINUED	NO LIMIT	Power	NO
Wisconsin Public Service Corp Pulliam	0000965	Brown	DISCONTINUED	NO LIMIT	Power	NO
Wrightstown Sanitary District No 2 WWTF	0022357	Brown	DISCONTINUED	NO LIMIT	Municipal	NO
Ashland Sewage Utility	0030767	Ashland	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Ashland/NSP Lakefront Superfund Site	0065382	Ashland	GREAT LAKES INTERIM LIMIT	0.600	Other	NO
Baileys Harbor Wastewater Treatment Facility	0035840	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Bell Sanitary District 1	0061336	Bayfield	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Cleveland Wastewater Treatment Facility	0030848	Manitowoc	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Clover Sanitary District	0032069	Bayfield	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Dominion Energy Kewaunee, Inc.	0001571	Kewaunee	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Egg Harbor Wastewater Treatment Facility	0035661	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Ephraim Wastewater Treatment Facility	0061271	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Fish Creek SD1 Wastewater Treatment Facility	0035203	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Greater Bayfield WWTP Commission	0063053	Bayfield	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Kenosha Wastewater Treatment Facility	0028703	Kenosha	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Madeline Sanitary District	0030759	Ashland	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Manitowoc Public Utilities	0027189	Manitowoc	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Manitowoc Wastewater Treatment Facility	0024601	Manitowoc	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Milwaukee Metro Sew Dist Combined	0036820	Milwaukee	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
NextEra Energy Point Beach LLC	0000957	Manitowoc	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Northern States Power,d/b/a Xcel Energy	0002887	Ashland	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Ocean Spray Cranberries Inc Kenosha	0062561	Kenosha	GREAT LAKES INTERIM LIMIT	0.600	Food	NO
Port Washington	0020460	Ozaukee	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Racine Wastewater Utility	0025194	Racine	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Sheboygan Wastewater Treatment Plant	0025411	Sheboygan	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Sister Bay Wastewater Treatment Facility	0022071	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
South Milwaukee Wastewater Treat Facility	0028819	Milwaukee	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Sturgeon Bay Utilities WWTF	0021113	Door	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Superior Sewage Disposal System	0025593	Douglas	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Two Rivers Wastewater Treatment Facility	0026590	Manitowoc	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Washburn City of	0022675	Bayfield	GREAT LAKES INTERIM LIMIT	0.600	Municipal	NO
Wisconsin Electric Power Co Oak Creek Elm Rd	0000914	Milwaukee	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Wisconsin Electric Power Co Port Washington	0000922	Ozaukee	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Wisconsin Power and Light Edgewater	0001589	Sheboygan	GREAT LAKES INTERIM LIMIT	0.600	Power	NO
Wisconsin University Milwaukee Power Plant	0040282	Milwaukee	GREAT LAKES INTERIM LIMIT	0.600	NCCW	NO
Alma Wastewater Treatment Facility	0022101	Buffalo	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
Argyle Wastewater Treatment Facility	0022225	Lafayette	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Arpin Wastewater Treatment Facility	0031267	Wood	INDIVIDUAL VARIANCE	0.210	Municipal	LIKELY
Augusta Wastewater Treatment Facility	0023272	Eau Claire	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Avoca Wastewater Treatment Facility	0060151	Iowa	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Browntown Wastewater Treatment Facility	0032051	Green	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Chelsea Sanitary District	0035718	Taylor	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Clayton Village of	0036706	Polk	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Clyman Wastewater Treatment Facility	0020702	Dodge	INDIVIDUAL VARIANCE	0.168	Municipal	LIKELY
Dallas Village of	0023698	Barron	INDIVIDUAL VARIANCE	0.730	Municipal	LIKELY
Dodge Sanitary District No 1	0061191	Trempealeau	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
Gays Mills Wastewater Treatment Facility	0022268	Crawford	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
Gibbsville Sanitary District	0031577	Sheboygan	INDIVIDUAL VARIANCE	0.589	Municipal	LIKELY
Glen Flora Village of	0029963	Rusk	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Gratiot Wastewater Treatment Facility	0024139	Lafayette	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Highland Wastewater Treatment Facility	0036790	Iowa	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Kossuth Sanitary District No. 2 WWTF	0035874	Manitowoc	INDIVIDUAL VARIANCE	0.858	Municipal	LIKELY
Lime Ridge Wastewater Treatment Facility	0036447	Sauk	INDIVIDUAL VARIANCE	0.171	Municipal	LIKELY
Merrillan Wastewater Treatment Facility	0024732	Jackson	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Milladore Wastewater Treatment Facility	0022381	Wood	INDIVIDUAL VARIANCE	0.366	Municipal	LIKELY
Mindoro San Dist 1 WWTF	0029106	La Crosse	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Oakdale Wastewater Treatment Facility	0031259	Monroe	INDIVIDUAL VARIANCE	0.368	Municipal	LIKELY
Ontario Wastewater Treatment Facility	0020753	Vernon	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Orfordville Wastewater Treatment Facility	0021709	Rock	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Poplar Village of	0049760	Douglas	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Potosi-Tennyson Sewage Commission WWTF	0021547	Grant	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
Readstown Wastewater Treatment Facility	0021661	Vernon	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
Rib Lake Village of	0029017	Taylor	INDIVIDUAL VARIANCE	0.366	Municipal	LIKELY
Rockdale Wastewater Treatment Facility	0026352	Dane	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Roxbury Sanitary District #1 WWTF	0028975	Dane	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Saxon Sanitary District #1	0031704	Iron	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Siren, Village of	0028924	Burnett	INDIVIDUAL VARIANCE	0.040	Municipal	LIKELY
Soldiers Grove Wastewater Treatment Facility	0022241	Crawford	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
South Wayne Wastewater Treatment Facility	0022292	Lafayette	INDIVIDUAL VARIANCE	0.100	Municipal	LIKELY
St Joseph Sanitary District	0031186	La Crosse	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY
Stetsonville, Village of	0060216	Taylor	INDIVIDUAL VARIANCE	0.164	Municipal	LIKELY
Wilton Wastewater Treatment Facility	0022462	Monroe	INDIVIDUAL VARIANCE	0.075	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
AFP advanced food products llc	0039781	Polk	LAND APPLICATION	NO LIMIT	NCCW	NO
Anderson Custom Processing	0065455	Dane	LAND APPLICATION	NO LIMIT	Other	NO
Archer Daniels Midland Company	0057592	Chippewa	LAND APPLICATION	NO LIMIT	NCCW	NO
Bay City Village	0061255	Pierce	LAND APPLICATION	NO LIMIT	Municipal	NO
Deer Park Wastewater Treatment Facility	0025356	St. Croix	LAND APPLICATION	3.500	Municipal	NO
Del Monte Foods Inc - Cambria Plant #108	0026620	Columbia	LAND APPLICATION	0.000	Food	NO
Foremost Farms USA Clayton	0003018	Polk	LAND APPLICATION	NO LIMIT	NCCW	NO
Foremost Farms USA Marshfield	0037982	Wood	LAND APPLICATION	NO LIMIT	NCCW	NO
Green Lake Sanitary District	0036846	Green Lake	LAND APPLICATION	0.082	Municipal	NO
Newton Meats And Sausage	0042650	Manitowoc	LAND APPLICATION	0.048	NCCW	NO
Packerland Whey Products Inc	0070581	Kewaunee	LAND APPLICATION	NO LIMIT	Cheese	NO
Seneca Foods Corporation Oakfield	0002267	Fond Du Lac	LAND APPLICATION	NO LIMIT	Food	NO
Weyauwega Star Dairy	0039527	Waupaca	LAND APPLICATION	NO LIMIT	NCCW	NO
Abbyland Foods Abbotsford Plan	0057436	Marathon	MAJOR FACILITY UPGRADE	0.145	Food	NO
AMPI Jim Falls Division	0003476	Chippewa	MAJOR FACILITY UPGRADE	0.100	NCCW	NO
Appleton Wastewater Treatment Facility	0023221	Outagamie	MINOR FACILITY UPGRADE	0.177	Municipal	NO
Badger State Ethanol LLC	0062103	Green	MAJOR FACILITY UPGRADE	0.092	NCCW	NO
Baldwin Wastewater Treatment Facility	0026891	St. Croix	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
BelGioioso Cheese Inc	0051128	Brown	MAJOR FACILITY UPGRADE	0.169	NCCW	NO
Bloomer Wastewater Treatment Facility	0020575	Chippewa	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Bloomfield Village	0049794	Walworth	MAJOR FACILITY UPGRADE	0.082	Municipal	NO
Brookfield, City of	0023469	Waukesha	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Chetek City of	0021598	Barron	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Clear Lake Village of	0023639	Polk	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Coleman Wastewater Treatment Facility	0022080	Marinette	MAJOR FACILITY UPGRADE	0.420	Municipal	NO
Consolidated Koshkonong Sanitary Dist	0021059	Rock	MAJOR FACILITY UPGRADE	0.435	Municipal	NO
Dairyland Power Coop Alma site	0040223	Buffalo	MAJOR FACILITY UPGRADE	0.060	Power	NO
Delafield Hartland Water Pollution Control Commission	0032026	Waukesha	MAJOR FACILITY UPGRADE	0.128	Municipal	NO
Fort Atkinson Wastewater Treatment Facility	0022489	Jefferson	MAJOR FACILITY UPGRADE	0.471	Municipal	NO
Fox West Regional Sewerage Commission	0024686	Winnebago	MAJOR FACILITY UPGRADE	0.140	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Georgia-Pacific Consumer Operations LLC	0001848	Brown	MAJOR FACILITY UPGRADE	0.182	Paper	NO
Georgia-Pacific Consumer Operations LLC	0001261	Brown	MAJOR FACILITY UPGRADE	0.210	Paper	NO
Grassland Dairy Products Inc	0002984	Clark	MAJOR FACILITY UPGRADE	0.075	Cheese	NO
Hartford Water Pollution Control Facility	0020192	Washington	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Heart of the Valley Metro Sewerage District	0031232	Outagamie	MAJOR FACILITY UPGRADE	0.150	Municipal	NO
Holmen Wastewater Treatment Facility	0024261	La Crosse	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Howards Grove Wastewater Trtmt Fac	0021679	Sheboygan	MAJOR FACILITY UPGRADE	0.265	Municipal	NO
Ixonia Utility District #1 WWTF	0031038	Jefferson	MAJOR FACILITY UPGRADE	0.860	Municipal	NO
Jackson (Village) Wastewater Treatment Plant	0021806	Washington	MAJOR FACILITY UPGRADE	0.143	Municipal	NO
Jamestown Sanitary District No 3 WWTF	0031755	Grant	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
La Crosse, City of	0029581	La Crosse	MAJOR FACILITY UPGRADE	0.100	Municipal	NO
Lactalis USA Belmont Inc	0054470	Lafayette	MAJOR FACILITY UPGRADE	0.075	Cheese	NO
Little Suamico Sanitary District No 1	0031968	Oconto	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Mayville Wastewater Treatment Facility	0024643	Dodge	MAJOR FACILITY UPGRADE	0.163	Municipal	NO
McCain Foods USA Inc Plover	0054518	Portage	MAJOR FACILITY UPGRADE	0.316	Food	NO
Medford City of	0036731	Taylor	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Menomonie Wastewater Treatment Facility	0024708	Dunn	MAJOR FACILITY UPGRADE	0.100	Municipal	NO
Neenah Inc., Neenah Mill	0037842	Winnebago	MAJOR FACILITY UPGRADE	0.246	Paper	NO
Neenah Menasha Sewerage Commission	0026085	Winnebago	MAJOR FACILITY UPGRADE	0.170	Municipal	NO
New Glarus Wastewater Treatment Facility	0020061	Green	MAJOR FACILITY UPGRADE	0.120	Municipal	NO
Newburg Village	0024911	Washington	MAJOR FACILITY UPGRADE	0.500	Municipal	NO
Oshkosh Wastewater Treatment Plant	0025038	Winnebago	MAJOR FACILITY UPGRADE	0.318	Municipal	NO
Random Lake Village	0021415	Sheboygan	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Reedsburg Wastewater Treatment Facility	0020371	Sauk	MDV	0.366	Municipal	NO
Roberts Wastewater Treatment Facility	0028835	St. Croix	MAJOR FACILITY UPGRADE	0.040	Municipal	NO
Saputo Cheese USA Inc Lena	0027308	Oconto	MAJOR FACILITY UPGRADE	0.170	Cheese	NO
Saputo Cheese USA Inc Waupun	0002003	Fond Du Lac	MAJOR FACILITY UPGRADE	0.075	Cheese	NO
Saukville Village Sewer Utility	0021555	Ozaukee	MAJOR FACILITY UPGRADE	0.150	Municipal	NO
Shullsburg Wastewater Treatment Facility	0028321	Lafayette	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Stanley Wastewater Treatment Facility	0021857	Chippewa	MAJOR FACILITY UPGRADE	0.075	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Sun Prairie Wastewater Treatment Facility	0020478	Dane	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Sussex Wastewater Treatment Facility	0020559	Waukesha	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Transcontinental Menasha	0026999	Winnebago	MAJOR FACILITY UPGRADE	0.351	NCCW	NO
Turtle Lake Village of	0025631	Barron	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Walworth County Metro	0031461	Walworth	MAJOR FACILITY UPGRADE	0.144	Municipal	NO
Waukesha City	0029971	Waukesha	MAJOR FACILITY UPGRADE	0.075	Municipal	NO
Waupun Wastewater Treatment Facility	0022772	Dodge	MAJOR FACILITY UPGRADE	0.068	Municipal	NO
West Bend City	0025763	Washington	MAJOR FACILITY UPGRADE	0.000	Municipal	NO
Abbotsford Wastewater Treatment Facility	0023141	Marathon	MDV	0.163	Municipal	LIKELY
Abrams Sanitary District 1	0049859	Oconto	MDV	0.075	Municipal	LIKELY
Agropur Inc Luxemburg	0050237	Kewaunee	MDV	0.123	Cheese	LIKELY
Ahlstrom-Munksjo NA Specialty Solutions LLC	0001473	Outagamie	MDV	0.108	Paper	LIKELY
Almena Village of	0023183	Barron	MDV	0.075	Municipal	LIKELY
AMPI Blair Cheese Plant	0003760	Trempealeau	MDV	0.075	NCCW	LIKELY
Appleton Property Ventures LLC	0000990	Outagamie	MDV	0.203	Paper	LIKELY
Auburndale Wastewater Treatment Facility	0022411	Wood	MDV	0.299	Municipal	LIKELY
Bagley Wastewater Treatment Facility	0060771	Grant	MDV	0.1	Municipal	LIKELY
Barneveld Wastewater Treatment Facility	0029131	Iowa	MDV	0.075	Municipal	LIKELY
Belgium Wastewater Treatment Facility	0023353	Ozaukee	MDV	0.577	Municipal	LIKELY
Benton Wastewater Treatment Facility	0020672	Lafayette	MDV	0.075	Municipal	LIKELY
Black Creek Wastewater Treatment Facility	0021041	Outagamie	MDV	0.174	Municipal	LIKELY
Black River Falls WWTF	0021954	Jackson	MDV	0.1	Municipal	LIKELY
Blanchardville Wastewater Treatment Facility	0021105	Lafayette	MDV	0.075	Municipal	LIKELY
Blue River Wastewater Treatment Facility	0023418	Grant	MDV	0.075	Municipal	LIKELY
Bristol Utility District 1	0022021	Kenosha	MDV	0.075	Municipal	LIKELY
Cadott Wastewater Treatment Facility	0023515	Chippewa	MDV	0.075	Municipal	LIKELY
Cascade Wastewater Treatment Facility	0031372	Sheboygan	MDV	0.100	Municipal	LIKELY
Casco Wastewater Treatment Facility	0023566	Kewaunee	MDV	1.471	Municipal	LIKELY
Cashton Wastewater Treatment Facility	0020915	Monroe	MDV	0.075	Municipal	LIKELY
Cazenovia Wastewater Treatment Facility	0031801	Sauk	MDV	0.334	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Cedar Grove Cheese Factory	0050245	Sauk	MDV	0.075	Cheese	LIKELY
City of Fond du Lac WTRRF	0023990	Fond Du Lac	WQT	0.274	Municipal	NO
Clark County Health Care Center WWTF	0029700	Clark	MDV	0.075	Other	LIKELY
Clinton Wastewater Treatment Facility	0022039	Rock	MDV	0.075	Municipal	LIKELY
Colby City WWTF	0023655	Marathon	MDV	0.138	Municipal	NO
Crystal Lake Sanitary District	0035114	Barron	MDV	0.075	Municipal	LIKELY
Curtiss Wastewater Treatment Facility	0031445	Clark	MDV	0.075	Municipal	LIKELY
Dale Sanitary District No 1 WWTF	0030830	Outagamie	MDV	0.429	Municipal	LIKELY
De Soto Wastewater Treatment Facility	0029793	Crawford	MDV	0.1	Municipal	LIKELY
Dickeyville Wastewater Treatment Facility	0023817	Grant	MDV	0.075	Municipal	LIKELY
Dodgeville Wastewater Treatment Facility	0026913	Iowa	MDV	0.075	Municipal	LIKELY
Domtar - Nekoosa	0003620	Wood	MDV	0.340	Paper	NO
Domtar Paper Co LLC	0026042	Marathon	MDV	0.349	Paper	NO
Dorchester Wastewater Treatment Facility	0021571	Clark	MDV	0.075	Municipal	LIKELY
Downsville Sanitary District #1 WWTF	0031682	Dunn	MDV	0.1	Municipal	LIKELY
Eagle Lake Sewer Utility	0031526	Racine	MDV	0.075	Municipal	LIKELY
East Troy Wastewater Treatment Facility	0020397	Walworth	MDV	0.075	Municipal	LIKELY
Eden Wastewater Treatment Facility	0030716	Fond Du Lac	MDV	0.223	Municipal	LIKELY
Edgar Wastewater Treatment Facility	0021784	Marathon	MDV	0.322	Municipal	LIKELY
Ellsworth Coop Creamery	0022942	Pierce	MDV	0.075	Cheese	LIKELY
Ellsworth Wastewater Treatment Facility	0021253	Pierce	MDV	0.075	Municipal	LIKELY
Ettrick Wastewater Treatment Facility	0020621	Trempealeau	MDV	0.075	Municipal	LIKELY
Fennimore Wastewater Treatment Facility	0023981	Grant	MDV	0.075	Municipal	LIKELY
Fenwood Wastewater Treatment Facility	0031411	Marathon	MDV	0.153	Municipal	LIKELY
Fonks Home Center Inc., Harvest View Estates	0026689	Racine	MDV	0.075	Municipal	LIKELY
Fonks Home Center Inc., Hickory Haven	0030660	Racine	MDV	0.075	Municipal	LIKELY
Foremost Farms USA Chilton	0027618	Calumet	MDV	0.210	Cheese	LIKELY
Foremost Farms USA Lancaster	0062308	Grant	MDV	0.075	Cheese	LIKELY
Foremost Farms USA Plover	0003859	Portage	MDV	0.234	Cheese	LIKELY
Fountain City WWTF	0024040	Buffalo	MDV	0.1	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Galesville Wastewater Treatment Plant	0021725	Trempealeau	MDV	0.075	Municipal	LIKELY
Genoa City Village	0021083	Walworth	MDV	0.075	Municipal	LIKELY
Genoa Wastewater Treatment Facility	0022284	Vernon	MDV	0.100	Municipal	LIKELY
Grande Cheese Co Brownsville	0050016	Dodge	MDV	0.689	Cheese	LIKELY
Grande Cheese Company - Juda	0063207	Green	MDV	0.075	Cheese	LIKELY
Granton Wastewater Treatment Facility	0020885	Clark	MDV	0.075	Municipal	LIKELY
Green Lake Wastewater Treatment Facility	0021776	Green Lake	MDV	0.607	Municipal	LIKELY
Hatfield Sanitary District	0036641	Jackson	MDV	0.1	Municipal	LIKELY
Hazel Green Wastewater Treatment Facility	0024210	Grant	MDV	0.075	Municipal	LIKELY
Hilbert Wastewater Treatment Facility	0021270	Calumet	MDV	0.266	Municipal	LIKELY
Hillsboro Wastewater Treatment Facility	0020583	Vernon	MDV	0.227	Municipal	LIKELY
Hillshire Brands Co.	0023094	Outagamie	MDV	0.206	Food	LIKELY
Hollandale Wastewater Treatment Facility	0031330	Iowa	MDV	0.075	Municipal	LIKELY
Horicon Wastewater Treatment Facility	0020231	Dodge	MDV	0.063	Municipal	LIKELY
Hub Rock Sanitary District #1 WWTF	0049689	Richland	MDV	0.075	Municipal	LIKELY
Hustler Wastewater Treatment Facility	0032085	Juneau	MDV	0.156	Municipal	LIKELY
Independence Wastewater Treatment Plant	0024287	Trempealeau	MDV	0.1	Municipal	LIKELY
Iron Ridge Wastewater Treatment Facility	0020486	Dodge	MDV	0.075	Municipal	LIKELY
Jamestown Sanitary District No 2 WWTF	0030627	Grant	MDV	0.075	Municipal	LIKELY
Jennie O Turkey Store Inc Barron Plant	0070408	Barron	MDV	0.075	Food	LIKELY
Johnsonville LLC	0001759	Sheboygan	MDV	0.056	Food	LIKELY
Junction City Wastewater Treatment Facility	0028070	Portage	MDV	0.367	Municipal	LIKELY
Kendall Wastewater Treatment Facility	0020516	Monroe	MDV	0.249	Municipal	LIKELY
Krakow Sanitary District WWTF	0028169	Shawano	MDV	0.075	Municipal	LIKELY
La Farge Wastewater Treatment Plant	0024465	Vernon	MDV	0.1	Municipal	LIKELY
Lake Mills Wastewater Treatment Facility	0031194	Jefferson	MDV	0.075	Municipal	LIKELY
Lakeland Sanitary District # 1	0061387	Barron	MDV	0.075	Municipal	LIKELY
Lakeside Foods Inc - Reedsburg	0057738	Sauk	MDV	0.087	Food	LIKELY
Lakeside Foods, Inc. - Belgium Plant	0000817	Ozaukee	MDV	0.746	Food	LIKELY
Lakeview Neurological Rehab Center-Midwest	0029807	Racine	MDV	0.075	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Lancaster Wastewater Treatment Facility	0024503	Grant	MDV	0.075	Municipal	LIKELY
Larsen Winchester SD WWTF	0031925	Winnebago	MDV	0.017	Municipal	LIKELY
Lebanon Sanitary District #1 WWTF	0031364	Dodge	MDV	1.199	Municipal	LIKELY
Lena Wastewater Treatment Facility	0061361	Oconto	MDV	0.075	Municipal	LIKELY
Linden Wastewater Treatment Facility	0021580	Iowa	MDV	0.25	Municipal	LIKELY
Livingston Wastewater Treatment Facility	0022187	Grant	MDV	0.075	Municipal	LIKELY
Lomira Wastewater Treatment Facility	0020532	Dodge	MDV	0.075	Municipal	LIKELY
Luck Village of	0021482	Polk	MDV	0.075	Municipal	LIKELY
Lynn Dairy / Lynn Protein, Inc.	0051152	Clark	MDV	0.075	Cheese	LIKELY
Lyons Sanitary District No 2	0031941	Walworth	MDV	0.075	Municipal	LIKELY
Maine Wastewater Treatment Facility	0022136	Marathon	MDV	0.361	Municipal	LIKELY
Marathon Water & Sewer Department	0020273	Marathon	MDV	0.366	Municipal	LIKELY
Maribel Wastewater Treatment Facility	0061051	Manitowoc	MDV	0.927	Municipal	LIKELY
Melrose Wastewater Treatment Facility	0024678	Jackson	MDV	0.1	Municipal	LIKELY
Milan S D Wastewater Treatment Facility	0031500	Marathon	MDV	0.162	Municipal	LIKELY
Milk Specialties Global - Adell	0001236	Sheboygan	MDV	0.380	Cheese	LIKELY
Mondovi Wastewater Treatment Facility	0020591	Buffalo	MDV	0.075	Municipal	LIKELY
Morrison Sanitary District No 1	0036773	Brown	MDV	0.743	Municipal	LIKELY
Mount Calvary Wastewater Treatment Facility	0035963	Fond Du Lac	MDV	0.203	Municipal	LIKELY
Mount Hope Wastewater Treatment Facility	0020907	Grant	MDV	0.075	Municipal	LIKELY
Neillsville Wastewater Treatment Facility	0021202	Clark	MDV	0.075	Municipal	LIKELY
Nekoosa Wastewater Treatment Facility	0020613	Wood	MDV	0.364	Municipal	LIKELY
North Lake Poygan S D WWTF	0036251	Winnebago	MDV	0.532	Municipal	LIKELY
Norwalk Wastewater Treatment Facility	0024961	Monroe	MDV	0.075	Municipal	LIKELY
Onion River Wastewater Commission	0036811	Sheboygan	MDV	0.114	Municipal	LIKELY
Osseo Wastewater Treatment Facility	0025046	Trempealeau	MDV	0.075	Municipal	LIKELY
Owen Wastewater Treatment Facility	0020940	Clark	MDV	0.075	Municipal	LIKELY
Paddock Lake Wastewater TRTMNT FAC	0025062	Kenosha	MDV	0.075	Municipal	LIKELY
Palmyra Wastewater Treatment Facility	0031020	Jefferson	MDV	0.075	Municipal	LIKELY
Patch Grove Wastewater Treatment Facility	0022705	Grant	MDV	0.075	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Phillips City of	0021539	Price	MDV	0.040	Municipal	LIKELY
Pittsville Water And Sewer Dept WWTF	0020494	Wood	MDV	0.092	Municipal	LIKELY
Platteville Wastewater Treatment Facility	0020435	Grant	MDV	0.075	Municipal	LIKELY
Potter Wastewater Treatment Facility	0029025	Calumet	MDV	0.929	Municipal	LIKELY
Poygan Poy Sippi SD 1 WWTF	0035513	Winnebago	MDV	0.332	Municipal	LIKELY
Prescott Wastewater Treatment Facility	0022403	Pierce	MDV	0.100	Municipal	LIKELY
Randolph Wastewater Treatment Facility	0031160	Dodge	MDV	0.075	Municipal	LIKELY
Reedsville Wastewater Treatment Facility	0021342	Manitowoc	MDV	0.251	Municipal	LIKELY
Rewey Wastewater Treatment Facility	0031569	Iowa	MDV	0.075	Municipal	LIKELY
Richland Center Wastewater Treatment Fac	0020109	Richland	MDV	0.075	Municipal	LIKELY
Ridgeway Wastewater Treatment Facility	0031348	Iowa	MDV	0.075	Municipal	LIKELY
Rockland SD1 Wastewater Treatment Facility	0022802	Manitowoc	MDV	0.251	Municipal	LIKELY
Rozellville Sanitary District No 1	0029076	Marathon	MDV	0.125	Municipal	LIKELY
Rushing Waters Fisheries, Inc	0002488	Jefferson	MDV	0.075	Fish	LIKELY
Salem Lakes, Village	0031496	Kenosha	MDV	0.100	Municipal	LIKELY
Seneca Foods Corporation Gillett	0000345	Oconto	MDV	0.11	NCCW	LIKELY
Sharon Wastewater Treatment Facility	0022608	Walworth	MDV	0.075	Municipal	LIKELY
Spring Green Golf Club Sanitary Dist #2 WWTF	0028363	Iowa	MDV	0.075	Municipal	LIKELY
Spring Valley Wastewater Treatment Facility	0022373	Pierce	MDV	0.075	Municipal	LIKELY
St Cloud Village Utility Commission	0026867	Fond Du Lac	MDV	0.207	Municipal	LIKELY
Stitzer Sanitary District WWTF	0036285	Grant	MDV	0.075	Municipal	LIKELY
Stoddard Wastewater Treatment Facility	0028304	Vernon	MDV	0.100	Municipal	LIKELY
Taylor Wastewater Treatment Facility	0021881	Jackson	MDV	0.075	Municipal	LIKELY
The Procter & Gamble Paper Products Co	0001031	Brown	MDV	0.044	Paper	LIKELY
Theresa Wastewater Treatment Facility	0022322	Dodge	MDV	0.527	Municipal	LIKELY
Thorp Wastewater Treatment Facility	0025615	Clark	MDV	0.075	Municipal	LIKELY
Trempealeau Wastewater Treatment Facility	0020966	Trempealeau	MDV	0.100	Municipal	LIKELY
Twin Lakes Wastewater Treatment Fac	0021695	Kenosha	MDV	0.075	Municipal	LIKELY
Union Center Wastewater Treatment Facility	0025640	Juneau	MDV	0.102	Municipal	LIKELY
Unity Wastewater Treatment Facility	0060526	Clark	MDV	0.059	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Valders Wastewater Treatment Facility	0021831	Manitowoc	MDV	0.258	Municipal	LIKELY
Valley Ridge Clean Water Commission WWTF	0036854	Crawford	MDV	0.100	Municipal	LIKELY
Vesper Wastewater Treatment Facility	0030309	Wood	MDV	0.188	Municipal	LIKELY
Village of Kewaskum	0021733	Washington	MDV	0.110	Municipal	LIKELY
Village of Union Grove	0028291	Racine	MDV	0.075	Municipal	LIKELY
Viola Wastewater Treatment Facility	0021148	Vernon	MDV	0.100	Municipal	LIKELY
Waumandee Sanitary District #1	0061646	Buffalo	MDV	0.075	Municipal	LIKELY
Wazee Area Wastewater Commission	0036889	Jackson	MDV	0.1	Municipal	LIKELY
Westfield Wastewater Treatment Facility	0022250	Marquette	MDV	0.292	Municipal	LIKELY
Wheatland Estates MHC WI LLC	0031011	Kenosha	MDV	0.1	Municipal	LIKELY
Whitehall Wastewater Treatment Facility	0030970	Trempealeau	MDV	0.075	Municipal	LIKELY
Whitelaw Wastewater Treatment Facility	0022047	Manitowoc	MDV	0.741	Municipal	LIKELY
Whitewater Wastewater Treatment Facil	0020001	Walworth	MDV	0.12	Municipal	LIKELY
Wrightstown Sanitary District No 1 WWTF	0022438	Brown	MDV	0.800	Municipal	LIKELY
Yorkville Sewer Utility District No 1	0029831	Racine	MDV	0.075	Municipal	LIKELY
Antigo, City of	0022144	Langlade	MINOR FACILITY UPGRADE	0.366	Municipal	NO
Arla Foods Production LLC	0027197	Brown	MINOR FACILITY UPGRADE	1.565	NCCW	NO
Ashippun Sanitary District WWTF	0031381	Dodge	MINOR FACILITY UPGRADE	1.198	Municipal	NO
Bear Creek Wastewater Treatment Facility	0028061	Outagamie	MINOR FACILITY UPGRADE	1.231	Municipal	NO
Briggs Stratton Corporation	0026514	Milwaukee	MINOR FACILITY UPGRADE	0.100	NCCW	NO
Brillion Wastewater Treatment Facility	0020443	Calumet	MINOR FACILITY UPGRADE	0.952	Municipal	NO
Brownsville Wastewater Treatment Facility	0021601	Dodge	MINOR FACILITY UPGRADE	0.689	Municipal	NO
Campbellsport Wastewater Treatment Facility	0020818	Fond Du Lac	MINOR FACILITY UPGRADE	0.570	Municipal	NO
Chilton Wastewater Treatment Facility	0022799	Calumet	MINOR FACILITY UPGRADE	0.167	Municipal	NO
Clarks Mills Sanitary District	0036030	Manitowoc	MINOR FACILITY UPGRADE	0.233	Municipal	NO
Dousman Wastewater Treatment Facility	0021351	Waukesha	MINOR FACILITY UPGRADE	0.128	Municipal	NO
Elroy Wastewater Treatment Facility	0023931	Juneau	MINOR FACILITY UPGRADE	0.339	Municipal	NO
Essity Professional Hygiene North America LLC	0037389	Winnebago	MINOR FACILITY UPGRADE	0.273	Paper	NO
Footville Wastewater Treatment Facility	0024023	Rock	MINOR FACILITY UPGRADE	2.243	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Fredonia Municipal Sewer And Water Utility	0020800	Ozaukee	MINOR FACILITY UPGRADE	1.000	Municipal	NO
Great Lakes Research Institute	0045942	Milwaukee	MINOR FACILITY UPGRADE	0.239	Fish	NO
Hill Point Sanitary District WWTF	0035483	Sauk	MINOR FACILITY UPGRADE	0.328	Municipal	NO
Holland SD 1 Wastewater Treatment Facility	0028207	Brown	MINOR FACILITY UPGRADE	0.797	Municipal	NO
Kerry Biofunctional Ingredients Inc	0003875	Marathon	MINOR FACILITY UPGRADE	0.341	Cheese	NO
Lodi Wastewater Treatment Facility	0022918	Columbia	MINOR FACILITY UPGRADE	0.366	Municipal	NO
Lyndon Station Wastewater Treatment Facility	0060488	Juneau	MINOR FACILITY UPGRADE	0.365	Municipal	NO
Milk Specialties Co, Inc	0003107	Grant	MINOR FACILITY UPGRADE	0.570	Cheese	NO
Mullins Cheese Inc Marshfield	0053694	Marathon	MINOR FACILITY UPGRADE	0.234	Cheese	NO
Necedah Wastewater Treatment Facility	0020133	Juneau	MINOR FACILITY UPGRADE	0.366	Municipal	NO
New Holstein Wastewater Treatment Facility	0020893	Calumet	MINOR FACILITY UPGRADE	0.138	Municipal	NO
North Freedom Wastewater Treatment Facility	0028011	Sauk	MINOR FACILITY UPGRADE	0.366	Municipal	NO
ODells Bay Sanitary District No. 1	0036536	Juneau	MINOR FACILITY UPGRADE	0.365	Municipal	NO
Phelps Sanitary District #1	0029050	Vilas	MINOR FACILITY UPGRADE	0.365	Municipal	NO
Prairie Farm Village of	0025178	Barron	MINOR FACILITY UPGRADE	0.000	Municipal	NO
Rhinelander, City of	0020044	Oneida	MINOR FACILITY UPGRADE	0.389	Municipal	NO
Ripon Wastewater Treatment Facility	0021032	Fond du Lac	MINOR FACILITY UPGRADE	0.306	Municipal	NO
Sartori Company-West Main Building	0041904	Sheboygan	MINOR FACILITY UPGRADE	0.293	NCCW	NO
Sherwood Wastewater Treatment Facility	0031127	Calumet	MINOR FACILITY UPGRADE	0.595	Municipal	NO
Stockbridge Wastewater Treatment Facility	0021393	Calumet	MINOR FACILITY UPGRADE	0.266	Municipal	NO
TA Operating LLC	0035998	Columbia	MINOR FACILITY UPGRADE	0.353	Municipal	NO
Waterloo Wastewater Treatment Facility	0030881	Jefferson	MINOR FACILITY UPGRADE	0.218	Municipal	NO
Wonewoc Wastewater Treatment Facility	0029688	Juneau	MINOR FACILITY UPGRADE	0.365	Municipal	NO
Wrightstown Wastewater Treatment Facility	0022497	Brown	MINOR FACILITY UPGRADE	0.683	Municipal	NO
Amani Sanitary District	0031861	Polk	NO LIMIT	NO LIMIT	Municipal	NO
Amnicon Foundation	0026808	Douglas	NO LIMIT	NO LIMIT	Municipal	NO
Applied Material Solutions Inc Burlington	0065684	Racine	NO LIMIT	NO LIMIT	Other	NO
Arkansaw Wastewater Treatment Facility	0060232	Pepin	NO LIMIT	NO LIMIT	Municipal	NO
Arlington Wastewater Treatment Facility	0021512	Columbia	NO LIMIT	0.381	Municipal	NO
Aurora Sanitary District # 1	0031852	Florence	NO LIMIT	NO LIMIT	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Badger Meter Inc	0033529	Milwaukee	NO LIMIT	NO LIMIT	NCCW	NO
Bay Valley Foods LLC	0037702	Brown	NO LIMIT	NO LIMIT	NCCW	NO
BNSF Railway Company	0070726	Douglas	NO LIMIT	NO LIMIT	Other	NO
Boaz Wastewater Treatment Facility	0036749	Richland	NO LIMIT	NO LIMIT	Municipal	NO
Bostwick Valley MHP WWTF	0028908	La Crosse	NO LIMIT	NO LIMIT	Municipal	NO
Brighton Dale Links WWTP	0060348	Kenosha	NO LIMIT	NO LIMIT	Municipal	NO
Cady Cheese LLC	0053597	St. Croix	NO LIMIT	NO LIMIT	Cheese	NO
Chaseburg Wastewater Treatment Fac	0025348	Vernon	NO LIMIT	NO LIMIT	Municipal	NO
Chemtrade Solutions LLC	0065471	Winnebago	NO LIMIT	NO LIMIT	Other	NO
Columbia Forest Products	0003735	Ashland	NO LIMIT	NO LIMIT	Other	NO
Crivitz Wastewater Treatment Facility	0060372	Marinette	NO LIMIT	NO LIMIT	Municipal	NO
Didion Milling Inc - Ethanol Plant	0066401	Columbia	NO LIMIT	NO LIMIT	Other	NO
Drummond Sanitary District 1	0031615	Bayfield	NO LIMIT	NO LIMIT	Municipal	NO
Fall Creek Wastewater Treatment Facility	0025976	Eau Claire	NO LIMIT	NO LIMIT	Municipal	NO
Ferryville Wastewater Treatment Facility	0020974	Crawford	NO LIMIT	NO LIMIT	Municipal	NO
Fish, Crystal and Mud Lake Rehabilitation Dist	0049964	Dane	NO LIMIT	0.000	Other	NO
Foremost Farms USA Milan	0057541	Marathon	NO LIMIT	NO LIMIT	NCCW	NO
Foremost Farms USA Sparta	0047546	Monroe	NO LIMIT	NO LIMIT	NCCW	NO
Gillett Wastewater Treatment Facility	0022063	Oconto	NO LIMIT	NO LIMIT	Municipal	NO
Gilman, Village of	0030937	Taylor	NO LIMIT	NO LIMIT	Municipal	NO
Glidden Sanitary District	0029599	Ashland	NO LIMIT	NO LIMIT	Municipal	NO
Goodman Veneer and Lumber	0065269	Marinette	NO LIMIT	NO LIMIT	Other	NO
Graf Creamery	0001732	Shawano	NO LIMIT	NO LIMIT	NCCW	NO
Grand Geneva Resort & Spa	0029327	Walworth	NO LIMIT	NO LIMIT	Municipal	NO
Grand View Sanitary District	0035131	Bayfield	NO LIMIT	NO LIMIT	Municipal	NO
Hormel Foods Corporation	0025941	Rock	NO LIMIT	NO LIMIT	NCCW	NO
Kimberly Clark Corporation Marinette	0000540	Marinette	NO LIMIT	NO LIMIT	Paper	NO
Klondike Cheese Corp	0054241	Green	NO LIMIT	NO LIMIT	NCCW	NO
Knight Town of	0028941	Iron	NO LIMIT	NO LIMIT	Municipal	NO
Lake Holcombe Sanitary District #1 WWTF	0028339	Chippewa	NO LIMIT	NO LIMIT	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Lakeside Foods Inc - Eden	0000485	Fond du Lac	NO LIMIT	NO LIMIT	Food	NO
Lakeside Foods Inc - Manitowoc Plant	0041475	Manitowoc	NO LIMIT	NO LIMIT	NCCW	NO
Lakeside Foods Inc - Random Lake	0032760	Sheboygan	NO LIMIT	NO LIMIT	Food	NO
Lakewood Sanitary District No 1	0049841	Oconto	NO LIMIT	NO LIMIT	Municipal	NO
Laona Sanitary District #1	0028592	Forest	NO LIMIT	NO LIMIT	Municipal	NO
Maiden Rock Wastewater Treatment Facility	0032361	Pierce	NO LIMIT	NO LIMIT	Municipal	NO
Maple Grove Estates Sanitary District	0036552	La Crosse	NO LIMIT	NO LIMIT	Municipal	NO
Mellen City of	0020311	Ashland	NO LIMIT	NO LIMIT	Municipal	NO
Metallics Inc	0054500	La Crosse	NO LIMIT	NO LIMIT	Other	NO
MHC Rainbow Lake, LLC	0030481	Kenosha	NO LIMIT	NO LIMIT	Municipal	NO
Midwest Energy Resources Company	0038946	Douglas	NO LIMIT	NO LIMIT	Power	NO
Mule Hide Mfg. Company	0003034	Chippewa	NO LIMIT	NO LIMIT	Paper	NO
Northern States Power Co. a Wisconsin Corp.	0070785	La Crosse	NO LIMIT	NO LIMIT	NCCW	NO
Ogema Sanitary District	0028461	Price	NO LIMIT	NO LIMIT	Municipal	NO
Payne and Dolan, Inc. - Capitol Sand & Gravel	0033286	Dane	NO LIMIT	NO LIMIT	Other	NO
Pinewood Properties LLC	0030911	La Crosse	NO LIMIT	NO LIMIT	Municipal	NO
Port Wing Town Of	0029670	Bayfield	NO LIMIT	NO LIMIT	Municipal	NO
Premium Waters Inc	0047147	Oconto	NO LIMIT	NO LIMIT	Food	NO
Radisson Village of	0060798	Sawyer	NO LIMIT	NO LIMIT	Municipal	NO
Rockland Water Sewer Utilities WWTF	0028967	La Crosse	NO LIMIT	NO LIMIT	Municipal	NO
School District of Superior	0035866	Douglas	NO LIMIT	NO LIMIT	Municipal	NO
Sevastopol SD No. 1 WWTF	0026654	Door	NO LIMIT	NO LIMIT	Municipal	NO
Sheldon Village of	0025453	Rusk	NO LIMIT	NO LIMIT	Municipal	NO
Sinsinawa Dominicans Inc WWTF	0030520	Grant	NO LIMIT	NO LIMIT	Municipal	NO
Springside Cheese Corporation	0053015	Oconto	NO LIMIT	NO LIMIT	NCCW	NO
Suring Wastewater Treatment Facility	0020877	Oconto	NO LIMIT	NO LIMIT	Municipal	NO
Tony Village of	0026000	Rusk	NO LIMIT	NO LIMIT	Municipal	NO
UW Madison Charter Street Heating Plant	0038296	Dane	NO LIMIT	NO LIMIT	Power	NO
Wabeno Sanitary District #1	0022012	Forest	NO LIMIT	NO LIMIT	Municipal	NO
Waupaca Foundry Inc Plant 4	0043699	Marinette	NO LIMIT	NO LIMIT	NCCW	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Wausaukee Wastewater Treatment Facility	0060011	Marinette	NO LIMIT	NO LIMIT	Municipal	NO
Whitecap Mountains Sanitary District	0031747	Iron	NO LIMIT	NO LIMIT	Municipal	NO
WI DNR Brule River State Fish Hatchery	0004171	Douglas	NO LIMIT	NO LIMIT	Fish	NO
WI DNR Les Voigt State Fish Hatchery	0004162	Bayfield	NO LIMIT	NO LIMIT	Fish	NO
WI DNR Peninsula State Park WWTF	0029343	Door	NO LIMIT	NO LIMIT	Municipal	NO
WI DOC Flambeau Correctional Center	0030066	Sawyer	NO LIMIT	NO LIMIT	Municipal	NO
WI Electric Power Co Concord Station	0061441	Jefferson	NO LIMIT	NO LIMIT	Power	NO
Wilson Wastewater Treatment Facility	0032140	St. Croix	NO LIMIT	NO LIMIT	Municipal	NO
Wisconsin Power and Light Co Columbia Energy Center	0002780	Columbia	NO LIMIT	NO LIMIT	Power	NO
Wisconsin Public Service Corp Weston	0042765	Marathon	NO LIMIT	NO LIMIT	Power	NO
Ahlstrom Munksjo NA Specialty Solutions LLC	0000825	Outagamie	PLANNING PHASE	0.226	Paper	LIKELY
Ahlstrom Munksjo NA Specialty Solutions, LLC	0003026	Oneida	PLANNING PHASE	0.330	Paper	LIKELY
Algoma Wastewater Treatment Facility	0020745	Kewaunee	PLANNING PHASE	1.471	Municipal	NO
Amherst Wastewater Treatment Facility	0023213	Portage	PLANNING PHASE	0.362	Municipal	LIKELY
Athens Wastewater Treatment Facility	0022365	Marathon	PLANNING PHASE	0.274	Municipal	LIKELY
Billerud Wisconsin LLC	0037991	Wood	PLANNING PHASE	0.359	Paper	LIKELY
Birnamwood Wastewater Treatment Facility	0022691	Shawano	PLANNING PHASE	0.187	Municipal	NO
Bonduelle USA Inc Fairwater	0002666	Fond du Lac	PLANNING PHASE	0.282	NCCW	LIKELY
Bowler Wastewater Treatment Facility	0021237	Shawano	PLANNING PHASE	0.298	Municipal	LIKELY
Brandon Wastewater Treatment Facility	0023442	Fond Du Lac	PLANNING PHASE	0.651	Municipal	NO
Briess Malt & Ingredients Co	0066257	Manitowoc	PLANNING PHASE	0.046	Food	LIKELY
Butte Des Morts Consolidated SD 1	0032492	Winnebago	PLANNING PHASE	0.293	Municipal	LIKELY
Caroline SD 1 Wastewater Treatment Facility	0022829	Shawano	PLANNING PHASE	0.108	Municipal	LIKELY
Cedar Grove Wastewater Trtmnt Facil	0020711	Sheboygan	PLANNING PHASE	0.168	Municipal	NO
Chili Wastewater Treatment Facility	0030961	Clark	PLANNING PHASE	0.075	Municipal	LIKELY
Clintonville Wastewater Treatment Facility	0021466	Waupaca	PLANNING PHASE	0.235	Municipal	LIKELY
Dane County Regional Airport	0048747	Dane	PLANNING PHASE	0.075	Other	LIKELY
Darling Ingredients Inc	0038083	Green Lake	PLANNING PHASE	0.018	NCCW	LIKELY
Denmark Wastewater Treatment Facility	0021741	Brown	PLANNING PHASE	0.239	Municipal	LIKELY
Elk Mound Wastewater Treatment Facility	0023914	Dunn	PLANNING PHASE	0.075	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Embarrass Cloverleaf Lakes SD	0023949	Waupaca	PLANNING PHASE	0.198	Municipal	LIKELY
ERCO Worldwide (USA) INC - Port Edwards	0003565	Wood	PLANNING PHASE	0.112	Other	LIKELY
Exceptional Living Centers - Bethel	0031313	Wood	PLANNING PHASE	0.365	Municipal	LIKELY
Fairwater Wastewater Treatment Facility	0021440	Fond Du Lac	PLANNING PHASE	0.247	Municipal	LIKELY
Freedom Sanitary District No 1	0020842	Outagamie	PLANNING PHASE	0.600	Municipal	LIKELY
Fremont Orihula Wolf River Joint S C	0026158	Waupaca	PLANNING PHASE	0.369	Municipal	LIKELY
Friesland Wastewater Treatment Facility	0031780	Columbia	PLANNING PHASE	0.313	Municipal	LIKELY
GLK Foods, LLC	0050407	Outagamie	PLANNING PHASE	0.130	NCCW	LIKELY
Grande Cheese Company, Cst. Ingredient Div.	0050547	Adams	PLANNING PHASE	0.076	Cheese	LIKELY
Hewitt Sanitary District WWTP	0031275	Wood	PLANNING PHASE	0.184	Municipal	LIKELY
Hortonville Wastewater Treatment Facility	0022896	Outagamie	PLANNING PHASE	0.356	Municipal	LIKELY
Iron River National Fish Hatchery	0044334	Bayfield	PLANNING PHASE	0.110	Fish	LIKELY
Kiel Wastewater Treatment Facility	0020141	Manitowoc	PLANNING PHASE	1.901	Municipal	NO
Kingston Wastewater Treatment Facility	0036421	Green Lake	PLANNING PHASE	0.165	Municipal	LIKELY
Kohler Company	0000795	Sheboygan	PLANNING PHASE	1.061	Other	NO
La Valle Wastewater Treatment Facility	0028878	Sauk	PLANNING PHASE	0.369	Municipal	LIKELY
Lake Tomahawk Township Sanitary District 1	0036374	Oneida	PLANNING PHASE	0.367	Municipal	LIKELY
Lakeland University	0029335	Sheboygan	PLANNING PHASE	0.208	Municipal	LIKELY
Leach Farms Inc	0052809	Waushara	PLANNING PHASE	0.098	NCCW	LIKELY
Lemberger Landfill Superfund Site	0049573	Manitowoc	PLANNING PHASE	0.075	Other	LIKELY
LignoTech USA, Inc.	0003450	Marathon	PLANNING PHASE	0.096	Paper	LIKELY
Lowell Wastewater Treatment Facility	0029271	Dodge	PLANNING PHASE	1.656	Municipal	NO
Lublin Village of	0031917	Taylor	PLANNING PHASE	0.075	Municipal	LIKELY
Manawa Wastewater Treatment Facility	0020869	Waupaca	PLANNING PHASE	0.239	Municipal	LIKELY
Marion Wastewater Treatment Facility	0020770	Waupaca	PLANNING PHASE	0.306	Municipal	LIKELY
Marshfield Wastewater Treatment Facility	0021024	Wood	PLANNING PHASE	0.238	Municipal	LIKELY
Merrill City of	0020150	Lincoln	PLANNING PHASE	0.366	Municipal	LIKELY
Montello Wastewater Treatment Facility	0024813	Marquette	PLANNING PHASE	0.415	Municipal	LIKELY
Neenah, Inc. Whiting	0003611	Portage	PLANNING PHASE	0.380	Paper	LIKELY
Neshkoro Wastewater Treatment Facility	0060666	Marquette	PLANNING PHASE	0.277	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
New London Wastewater Treatment Facility	0024929	Waupaca	PLANNING PHASE	0.324	Municipal	LIKELY
New Organic Digestion LLC	0044938	Sheboygan	PLANNING PHASE	0.118	NCCW	LIKELY
Nichols Wastewater Treatment Facility	0020508	Outagamie	PLANNING PHASE	0.438	Municipal	LIKELY
North Shore Helathcare WWTF	0029718	Shawano	PLANNING PHASE	0.486	Municipal	NO
Oakfield Wastewater Treatment Facility	0024988	Fond du Lac	PLANNING PHASE	0.422	Municipal	LIKELY
Omro Wastewater Treatment Facility	0025011	Winnebago	PLANNING PHASE	0.228	Municipal	LIKELY
Oostburg Wastewater Treatment Facility	0022233	Sheboygan	PLANNING PHASE	0.192	Municipal	LIKELY
Oxford Wastewater Treatment Facility	0032077	Marquette	PLANNING PHASE	0.135	Municipal	LIKELY
Packaging Corporation of America	0002810	Lincoln	PLANNING PHASE	0.220	Paper	LIKELY
Packwaukee Sanitary District No 1	0060933	Marquette	PLANNING PHASE	0.148	Municipal	LIKELY
Pepin Wastewater Treatment Facility	0022811	Pepin	PLANNING PHASE	0.100	Municipal	LIKELY
Plastics Engineering Company	0066681	Sheboygan	PLANNING PHASE	0.299	Other	LIKELY
Plover Wastewater Treatment Facility	0027995	Portage	PLANNING PHASE	0.205	Municipal	LIKELY
Portage Wastewater Treatment Facility	0020427	Columbia	PLANNING PHASE	0.366	Municipal	LIKELY
Poy Sippi SD Wastewater Treatment Facility	0031691	Waushara	PLANNING PHASE	0.316	Municipal	LIKELY
Princeton Wastewater Treatment Facility	0022055	Green Lake	PLANNING PHASE	0.303	Municipal	LIKELY
Redgranite Wastewater Treatment Facility	0020729	Waushara	PLANNING PHASE	0.459	Municipal	LIKELY
Rib Mountain Metro Sewage District WWTF	0035581	Marathon	PLANNING PHASE	0.366	Municipal	LIKELY
Rio Wastewater Treatment Facility	0020117	Columbia	PLANNING PHASE	0.196	Municipal	LIKELY
Rock Springs Wastewater Treatment Facility	0029041	Sauk	PLANNING PHASE	0.367	Municipal	LIKELY
Rosendale Wastewater Treatment Facility	0028428	Fond Du Lac	PLANNING PHASE	0.359	Municipal	LIKELY
Russell Sanitary District #1 Town of	0029319	Lincoln	PLANNING PHASE	0.369	Municipal	LIKELY
Saputo Cheese USA Inc Reedsburg	0059404	Sauk	PLANNING PHASE	0.064	NCCW	LIKELY
Sartori Company	0032794	Langlade	PLANNING PHASE	0.100	NCCW	LIKELY
Seneca Foods Corporation	0002160	Dodge	PLANNING PHASE	0.075	NCCW	LIKELY
Seymour Wastewater Treatment Facility	0021768	Outagamie	PLANNING PHASE	0.199	Municipal	LIKELY
Shiocton Wastewater Treatment Facility	0028100	Outagamie	PLANNING PHASE	0.279	Municipal	LIKELY
Silver Moon Springs LLC	0064548	Langlade	PLANNING PHASE	0.064	Fish	LIKELY
St Nazianz Wastewater Treatment Facility	0022195	Manitowoc	PLANNING PHASE	0.804	Municipal	NO
Stephensville Sanitary District No 1	0032531	Outagamie	PLANNING PHASE	0.355	Municipal	LIKELY

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Stevens Point Wastewater Treatment Facility	0029572	Portage	MINOR FACILITY UPGRADE	0.366	Municipal	LIKELY
Sullivan Twn Sanitary District #1 WWTF	0031844	Jefferson	PLANNING PHASE	0.667	Municipal	NO
Three Lakes Sanitary District #1	0022853	Oneida	PLANNING PHASE	0.367	Municipal	LIKELY
Tigerton Wastewater Treatment Facility	0022349	Shawano	PLANNING PHASE	0.393	Municipal	LIKELY
Verso Minnesota Wisconsin - Water Renewal Center	0003468	Portage	PLANNING PHASE	0.294	Paper	LIKELY
Waldo Wastewater Utility	0022471	Sheboygan	PLANNING PHASE	0.204	Municipal	LIKELY
Waupaca Wastewater Treatment Facility	0030490	Waupaca	PLANNING PHASE	0.308	Municipal	LIKELY
Wausau Water Works WW Treatment Facility	0025739	Marathon	PLANNING PHASE	0.366	Municipal	LIKELY
Weyauwega Wastewater Treatment Facility	0020923	Waupaca	PLANNING PHASE	0.276	Municipal	LIKELY
Whiting Wastewater Treatment Facility	0021636	Portage	PLANNING PHASE	0.366	Municipal	LIKELY
WI DNR Wild Rose Fish Hatchery	0022756	Waushara	PLANNING PHASE	0.035	Fish	LIKELY
WI DOC Lincoln Hills School	0026701	Lincoln	PLANNING PHASE	0.368	Municipal	LIKELY
Wild Rose Wastewater Treatment Facility	0060071	Waushara	PLANNING PHASE	0.374	Municipal	LIKELY
Winneconne Wastewater Treatment Facility	0021938	Winnebago	PLANNING PHASE	0.430	Municipal	LIKELY
Wisconsin Electric Power Company Germantown	0042757	Washington	PLANNING PHASE	0.300	Power	LIKELY
Wisconsin Rapids WWTF	0025844	Wood	PLANNING PHASE	0.366	Municipal	LIKELY
Wisconsin Veneer and Plywood Inc	0047929	Shawano	PLANNING PHASE	0.070	Other	LIKELY
Wittenberg Wastewater Treatment Facility	0028444	Shawano	PLANNING PHASE	0.330	Municipal	LIKELY
Wolf Treatment Plant	0028452	Shawano	PLANNING PHASE	0.218	Municipal	LIKELY
Burnett Sanitary District #1 WWTF	0031551	Dodge	REGIONALIZE	0.498	Municipal	NO
Maple Island Inc	0003883	Taylor	REGIONALIZE	0.075	Food	NO
Orchard Manor Wastewater Treatment Facility	30503	Grant	REGIONALIZE	0.075	Municipal	NO
Salem Lakes, Village	0020851	Kenosha	REGIONALIZE	0.100	Municipal	NO
SPF North America, Inc.	0062146	Buffalo	REGIONALIZE	0.078	NCCW	NO
Sullivan Wastewater Treatment Facility	0025585	Jefferson	REGIONALIZE	0.075	Municipal	NO
Superior Refining Company- Husky Superior Refinery	0003085	Douglas	REGIONALIZE	0.075	Other	NO
Superior Village of	0030431	Douglas	OUTFALL RELOCATION	1.100	Municipal	NO
Amery City of	0020125	Polk	TBEL ONLY	1.916	Municipal	NO
Boscobel Wastewater Treatment Facility	0022110	Grant	TBEL ONLY	87.000	Municipal	NO
Boyceville Wastewater Treatment Facility	0060330	Dunn	TBEL ONLY	1.000	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Cascades Tissue Group Wisconsin Inc	0003077	Eau Claire	TBEL ONLY	1.900	Paper	NO
Chippewa Falls WWTF	0023604	Chippewa	TBEL ONLY	8.200	Municipal	NO
Christmas Mountain Sanitary District WWTF	0036064	Sauk	TBEL ONLY	1.000	Municipal	NO
Durand Wastewater Treatment Facility	0030899	Pepin	TBEL ONLY	1.000	Municipal	NO
Eastman Wastewater Treatment Facility	0036765	Crawford	TBEL ONLY	2.300	Municipal	NO
Eau Claire Wastewater Treatment Facility	0023850	Eau Claire	TBEL ONLY	1.000	Municipal	NO
Fairchild Wastewater Treatment Fac	0036200	Eau Claire	TBEL ONLY	1.000	Municipal	NO
Flambeau River Papers LLC	0003212	Price	TBEL ONLY	2.610	Paper	NO
Ladysmith City of	0021326	Rusk	TBEL ONLY	19.000	Municipal	NO
Marinette Wastewater Utility	0026182	Marinette	TBEL ONLY	15.750	Municipal	NO
Niagara Wastewater Treatment Facility	0029467	Marinette	TBEL ONLY	72.000	Municipal	NO
Oconto Falls Wastewater Treatment Facility	0022870	Oconto	TBEL ONLY	16.000	Municipal	NO
Oconto Utility Commission WWTF	0022861	Oconto	TBEL ONLY	1.000	Municipal	NO
Osceola Village of	0025020	Polk	TBEL ONLY	1.481	Municipal	NO
Park Falls City of	0029033	Price	TBEL ONLY	2.700	Municipal	NO
Peshtigo Wastewater Treatment Facility	0030651	Marinette	TBEL ONLY	3.390	Municipal	NO
Somerset Wastewater Treatment Facility	0030252	St. Croix	TBEL ONLY	1.883	Municipal	NO
Spring Green Wastewater Treatment Facility	0060801	Sauk	TBEL ONLY	43.600	Municipal	NO
St Croix Falls City of	0020796	Polk	TBEL ONLY	1.131	Municipal	NO
ST Paper LLC	0000531	Oconto	TBEL ONLY	7.350	Paper	NO
Tyco Fire Products LP	0001040	Marinette	TBEL ONLY	1.000	Other	NO
WE Pleasant Prairie Power Plant	0043583	Kenosha	TBEL ONLY	1.000	Power	NO
Westby Coop Creamery	0070645	Vernon	TBEL ONLY	1.000	Cheese	NO
Westby Wastewater Treatment Facility	0021792	Vernon	TBEL ONLY	1.000	Municipal	NO
WI DNR St Croix Falls Hatchery	0004201	Polk	TBEL ONLY	1.000	Fish	NO
Wisconsin Electric Power Company Valley Power	0000931	Milwaukee	TBEL ONLY	1.000	Power	NO
Albany Wastewater Treatment Facility	0021199	Green	WATER QUALITY TRADING	0.000	Municipal	NO
Arcadia Wastewater Treatment Facility	0023230	Trempealeau	WATER QUALITY TRADING	0.100	Municipal	NO
Baker Cheese Factory Inc	0050521	Fond du Lac	WATER QUALITY TRADING	0.573	Cheese	NO
Bangor Wastewater Treatment Facility	0031224	La Crosse	WATER QUALITY TRADING	0.100	Municipal	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
BelGioioso Cheese Inc	0027201	Calumet	WATER QUALITY TRADING	0.323	Cheese	NO
BelGioioso Cheese Inc Chase Plant	0065579	Oconto	WATER QUALITY TRADING	0.075	Cheese	NO
BelGioioso Cheese Inc Freedom Plant	0066176	Outagamie	WATER QUALITY TRADING	0.000	Cheese	NO
Belleville Wastewater Treatment Facility	0023361	Dane	WATER QUALITY TRADING	0.075	Municipal	NO
Belmont Wastewater Treatment Facility	0020419	Lafayette	WATER QUALITY TRADING	0.075	Municipal	NO
Beloit Town Wastewater Treatment Facility	0026930	Rock	WATER QUALITY TRADING	0.201	Municipal	NO
Beloit Wastewater Treatment Facility	0023370	Rock	WATER QUALITY TRADING	0.201	Municipal	NO
Bemis Manufacturing Company Plant D	0027456	Sheboygan	WATER QUALITY TRADING	0.059	NCCW	NO
Bloomington Wastewater Treatment Facility	0023400	Grant	WATER QUALITY TRADING	0.075	Municipal	NO
Brodhead Wastewater Treatment Facility	0021903	Green	WATER QUALITY TRADING	0.100	Municipal	NO
Brooklyn Wastewater Treatment Facility	0023485	Green	WATER QUALITY TRADING	0.075	Municipal	NO
Cassville Wastewater Treatment Facility	0021423	Grant	WATER QUALITY TRADING	0.100	Municipal	NO
Columbus Wastewater Treatment Facility	0021008	Dodge	WATER QUALITY TRADING	0.075	Municipal	NO
Conrath Village of	0032522	Rusk	WATER QUALITY TRADING	1.400	Municipal	NO
Cross Plains Wastewater Treatment Facility	0020788	Dane	WATER QUALITY TRADING	0.310	Municipal	NO
Darlington Wastewater Treatment Facility	0021016	Lafayette	WATER QUALITY TRADING	0.000	Municipal	NO
Eleva Strum Joint Sewerage Commission WWTF	0064998	Trempealeau	WATER QUALITY TRADING	0.100	Municipal	NO
Fontana Walworth WPCC	0036021	Walworth	WATER QUALITY TRADING	0.075	Municipal	NO
Great Lakes Investors LLC WWTF	0060607	Jefferson	WATER QUALITY TRADING	0.075	Municipal	NO
Greenwood Wastewater Treatment Facility	0020249	Clark	WATER QUALITY TRADING	0.075	Municipal	NO
Hawkins Village of	0024201	Rusk	WATER QUALITY TRADING	0.119	Municipal	NO
Janesville Wastewater Utility	0030350	Rock	WATER QUALITY TRADING	0.108	Municipal	NO
Kieler Sanitary District No 1 WWTF	0029289	Grant	WATER QUALITY TRADING	0.075	Municipal	NO
LaGranders Hillside Dairy Inc	0054364	Clark	WATER QUALITY TRADING	0.060	NCCW	NO
Loganville Wastewater Treatment Facility	0029114	Sauk	WATER QUALITY TRADING	0.737	Municipal	NO
Mineral Point Wastewater Treatment Facility	0024791	Iowa	WATER QUALITY TRADING	0.075	Municipal	NO
Monroe Wastewater Treatment Facility	0020362	Green	WATER QUALITY TRADING	0.092	Municipal	NO
Montfort Wastewater Treatment Facility	0024821	Grant	WATER QUALITY TRADING	0.540	Municipal	NO
Monticello Wastewater Treatment Facility	0024830	Green	WATER QUALITY TRADING	0.075	Municipal	NO
Nasco Education LLC	0058220	Jefferson	WATER QUALITY TRADING	0.471	Fish	NO

Facility Name	Permit Number	County	Phosphorus Planning Outcome	Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent)	MDV Category	Major Facility Upgrade Required?
Norway Tn Sanitary District 1 Wwtf	0031470	Racine	WATER QUALITY TRADING	0.075	Municipal	NO
Phillips Plating Corporation	0041149	Price	WATER QUALITY TRADING	0.040	Other	NO
Prairie du Chien Wastewater Treatment Fac.	0020257	Crawford	WATER QUALITY TRADING	0.015	Municipal	NO
Seneca Foods Corporation Mayville	0050822	Dodge	WATER QUALITY TRADING	0.015	Food	NO
Sextonville Sanitary District #1 WWTF	0060038	Richland	WATER QUALITY TRADING	0.075	Municipal	NO
Slinger Wastewater Treatment Facility	0020290	Washington	WATER QUALITY TRADING	0.075	Municipal	NO
Spencer Wastewater Treatment Facility	0021521	Marathon	WATER QUALITY TRADING	0.177	Municipal	NO
Springfield Clean Water LLC	0065889	Dane	WATER QUALITY TRADING	0.000	Other	NO
Stratford Wastewater Treatment Facility	0025569	Marathon	WATER QUALITY TRADING	0.162	Municipal	NO
Superior Fresh, LLC	0065200	Jackson	WATER QUALITY TRADING	0.000	Food	NO
Viroqua Wastewater Treatment Facility	0021920	Vernon	WATER QUALITY TRADING	0.180	Municipal	NO
VPP Group, LLC	0052931	Monroe	WATER QUALITY TRADING	0.075	Food	NO
Wauzeka Wastewater Treatment Facility	0022276	Crawford	WATER QUALITY TRADING	0.100	Municipal	NO
Watertown Wastewater Treatment Facility	0028541	Jefferson	WATER QUALITY TRADING	0.282	Municipal	NO
West Salem Wastewater Treatment Facility	0020389	La Crosse	WATER QUALITY TRADING	0.100	Municipal	NO
Weyerhaeuser Village of	0020761	Rusk	WATER QUALITY TRADING	0.075	Municipal	NO
WI DNR Bong Recreation Area	0031887	Kenosha	WATER QUALITY TRADING	0.075	Municipal	NO
WI DNR Devils Lake State Park	0060241	Sauk	WATER QUALITY TRADING	0.100	Other	NO
Wisconsin Electric Power Co -Tn of Paris	0049131	Kenosha	WATER QUALITY TRADING	0.075	Power	NO
Wisconsin Whey Protein LLC	0066371	Lafayette	WATER QUALITY TRADING	0.075	Cheese	NO
WPL - Riverside Energy Center	0061921	Rock	WATER QUALITY TRADING	0.000	Power	NO

Appendix B. Secondary Indicator Scores for Municipal POTWs

Last Revised: August 2023

The following table provides the secondary indicator score for municipal POTWs as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

	Personal Current Transfer Receipts Share of Total Income 2021 [1]	Jobs per Square Mile [2]	Population Change 2011 - 2021 [3]	Net Earnings Change 2011-2021 [4] **(2points)**	Job Growth 2011-2021 [5]	Secondary Indicator Score
Adams	38.2%	6	0.19%	28.7%	- 0.3%	6
Ashland	36.3%	8	-0.78%	25.7%	- 5.6%	6
Barron	27.5%	25	2.16%	30.0%	1.5%	6
Bayfield	30.8%	3	7.59%	32.5%	4.1%	5
Brown	19.2%	294	9.14%	37.8%	7.5%	2
Buffalo	27.5%	6	-2.55%	26.9%	- 9.6%	6
Burnett	36.4%	6	7.30%	32.7%	2.2%	5
Calumet	17.0%	50	11.86%	39.2%	28.3%	3
Chippewa	24.9%	25	6.86%	38.5%	13.5%	4
Clark	26.1%	9	0.27%	47.5%	7.5%	5
Columbia	20.6%	29	3.15%	39.3%	7.2%	4
Crawford	32.0%	12	-3.06%	28.6%	- 7.6%	6
Dane	14.0%	291	18.43%	62.7%	14.4%	0
Dodge	23.9%	41	0.15%	26.7%	4.6%	6
Door	24.1%	31	8.83%	41.7%	5.8%	5
Douglas	31.5%	13	0.81%	32.6%	2.7%	6
Dunn	25.9%	21	3.65%	30.9%	5.4%	5
Eau Claire	22.0%	91	8.82%	33.2%	3.0%	4
Florence	26.4%	2	4.98%	44.3%	2.2%	5
Fond du Lac	23.2%	65	2.16%	38.8%	4.6%	5
Forest	37.8%	3	-0.08%	29.8%	- 5.1%	6
Grant	24.4%	15	-0.52%	40.4%	1.6%	6
Green	20.9%	26	1.58%	32.3%	2.6%	5
Green Lake	29.0%	17	-0.08%	12.9%	- 10.5%	6
Iowa	21.1%	14	0.89%	36.3%	0.2%	5
Iron	35.5%	2	4.83%	29.5%	- 1.8%	5
Jackson	28.0%	8	2.90%	17.6%	- 7.0%	6
Jefferson	23.0%	62	3.24%	35.1%	3.7%	5

	Personal Current Transfer Receipts Share of Total Income 2021 [1]	Jobs per Square Mile [2]	Population Change 2011 - 2021 [3]	Net Earnings Change 2011-2021 [4] **(2points)**	Job Growth 2011-2021 [5]	Secondary Indicator Score
Juneau	32.5%	12	-0.11%	25.6%	0.3%	6
Kenosha	21.9%	263	2.07%	48.0%	29.1%	4
Kewaunee	23.4%	19	-0.08%	25.2%	- 9.3%	6
La Crosse	21.4%	152	5.67%	42.8%	4.7%	3
Lafayette	23.7%	7	-1.46%	22.5%	7.9%	5
Langlade	34.6%	8	-2.13%	26.7%	- 2.4%	6
Lincoln	30.1%	12	-1.47%	31.8%	- 3.7%	6
Manitowoc	26.6%	56	0.01%	14.8%	- 2.2%	5
Marathon	21.0%	46	3.48%	40.5%	5.3%	4
Marinette	33.4%	13	0.47%	31.1%	- 4.0%	6
Marquette	32.7%	9	1.55%	33.9%	1.5%	6
Menominee	39.7%	5	1.23%	63.5%	- 5.9%	4
Milwaukee	27.5%	1924	-0.93%	28.7%	1.6%	5
Monroe	27.4%	23	3.64%	36.4%	4.1%	5
Oconto	25.8%	9	3.91%	37.4%	3.0%	5
Oneida	31.1%	15	5.21%	28.7%	- 1.0%	5
Outagamie	18.7%	168	8.30%	41.1%	5.9%	3
Ozaukee	12.5%	174	6.91%	31.7%	6.4%	3
Pepin	27.7%	10	-1.46%	35.1%	1.0%	6
Pierce	20.0%	19	3.16%	39.5%	- 0.1%	5
Polk	27.9%	18	2.50%	38.2%	5.0%	6
Portage	23.7%	42	0.50%	37.4%	5.6%	6
Price	36.0%	4	-0.21%	13.0%	- 8.4%	6
Racine	24.1%	222	1.41%	27.4%	1.3%	5
Richland	30.2%	10	-4.22%	29.5%	- 3.7%	6
Rock	25.3%	93	3.02%	42.3%	9.8%	4
Rusk	33.4%	5	-3.61%	49.2%	- 1.7%	6
St. Croix	15.8%	43	13.45%	56.5%	16.8%	1
Sauk	21.0%	29	7.26%	67.3%	- 3.5%	2
Sawyer	34.6%	8	8.61%	31.7%	- 1.9%	5
Shawano	29.0%	24	-1.74%	32.0%	- 1.6%	6
Sheboygan	21.4%	83	2.79%	35.1%	4.9%	4
Taylor	27.1%	8	-3.48%	33.4%	0.6%	6
Trempealeau	27.4%	17	6.55%	28.3%	- 6.4%	5
Vernon	28.0%	11	3.68%	33.9%	1.1%	5
Vilas	32.1%	10	7.70%	45.6%	8.2%	4
Walworth	20.6%	78	3.51%	48.2%	9.8%	2

	Personal Current Transfer Receipts Share of Total Income 2021 [1]	Jobs per Square Mile [2]	Population Change 2011 - 2021 [3]	Net Earnings Change 2011-2021 [4] **(2points)**	Job Growth 2011-2021 [5]	Secondary Indicator Score
Washburn	35.6%	7	4.70%	34.0%	0.2%	5
Washington	17.7%	133	4.34%	35.1%	11.0%	2
Waukesha	14.2%	446	5.08%	38.9%	8.3%	2
Waupaca	29.3%	25	-0.14%	24.7%	- 6.7%	6
Waushara	31.9%	10	-0.06%	24.0%	3.4%	6
Winnebago	21.5%	214	2.89%	34.7%	3.0%	4
Wood	28.2%	46	-0.52%	23.8%	- 3.3%	6
Threshold	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%	

[1] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[2] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.

[3] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.

[4] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

Appendix C. Secondary Indicator Scores for Cheese Manufacturers

Last Revised: August 2023

The following table provides the secondary score for cheese manufacturers as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

Note: This information will be updated as new information becomes available.

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Adams	$ 51,878.00	38.2%	6	0.19%	28.7%	- 0.3%		7
Ashland	$ 55,070.00	36.3%	8	-0.78%	25.7%	- 5.6%		7
Barron	$ 55,256.00	27.5%	25	2.16%	30.0%	1.5%		7
Bayfield	$ 62,859.00	30.8%	3	7.59%	32.5%	4.1%		6
Brown	$ 68,799.00	19.2%	294	9.14%	37.8%	7.5%		3
Buffalo	$ 61,167.00	27.5%	6	-2.55%	26.9%	- 9.6%		7
Burnett	$ 55,890.00	36.4%	6	7.30%	32.7%	2.2%		6
Calumet	$ 78,453.00	17.0%	50	11.86%	39.2%	28.3%	3.55%	5
Chippewa	$ 63,172.00	24.9%	25	6.86%	38.5%	13.5%		5
Clark	$ 57,547.00	26.1%	9	0.27%	47.5%	7.5%	3.75%	8
Columbia	$ 73,786.00	20.6%	29	3.15%	39.3%	7.2%		4
Crawford	$ 54,526.00	32.0%	12	-3.06%	28.6%	- 7.6%		7
Dane	$ 78,452.00	14.0%	291	18.43%	62.7%	14.4%		0
Dodge	$ 66,403.00	23.9%	41	0.15%	26.7%	4.6%	2.95%	9
Door	$ 63,856.00	24.1%	31	8.83%	41.7%	5.8%		6
Douglas	$ 59,688.00	31.5%	13	0.81%	32.6%	2.7%		7
Dunn	$ 64,420.00	25.9%	21	3.65%	30.9%	5.4%		6
Eau Claire	$ 64,777.00	22.0%	91	8.82%	33.2%	3.0%		5
Florence	$ 52,143.00	26.4%	2	4.98%	44.3%	2.2%		6
Fond du Lac	$ 66,390.00	23.2%	65	2.16%	38.8%	4.6%		6
Forest	$ 51,959.00	37.8%	3	-0.08%	29.8%	- 5.1%		7
Grant	$ 58,289.00	24.4%	15	-0.52%	40.4%	1.6%	18.94%	9
Green	$ 70,267.00	20.9%	26	1.58%	32.3%	2.6%	2.09%	7
Green Lake	$ 60,597.00	29.0%	17	-0.08%	12.9%	-10.5%		7
Iowa	$ 73,716.00	21.1%	14	0.89%	36.3%	0.2%		5
Iron	$ 48,908.00	35.5%	2	4.83%	29.5%	- 1.8%		6
Jackson	$ 59,422.00	28.0%	8	2.90%	17.6%	- 7.0%		7
Jefferson	$ 71,735.00	23.0%	62	3.24%	35.1%	3.7%		5

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Juneau	$ 58,561.00	32.5%	12	-0.11%	25.6%	0.3%		7
Kenosha	$ 70,073.00	21.9%	263	2.07%	48.0%	29.1%		4
Kewaunee	$ 72,328.00	23.4%	19	-0.08%	25.2%	- 9.3%		6
La Crosse	$ 62,817.00	21.4%	152	5.67%	42.8%	4.7%		4
Lafayette	$ 65,009.00	23.7%	7	-1.46%	22.5%	7.9%		6
Langlade	$ 53,313.00	34.6%	8	-2.13%	26.7%	- 2.4%		7
Lincoln	$ 61,363.00	30.1%	12	-1.47%	31.8%	- 3.7%		7
Manitowoc	$ 61,454.00	26.6%	56	0.01%	14.8%	- 2.2%		6
Marathon	$ 67,940.00	21.0%	46	3.48%	40.5%	5.3%		5
Marinette	$ 55,694.00	33.4%	13	0.47%	31.1%	- 4.0%		7
Marquette	$ 55,386.00	32.7%	9	1.55%	33.9%	1.5%		7
Menominee	$ 54,940.00	39.7%	5	1.23%	63.5%	- 5.9%		5
Milwaukee	$ 54,793.00	27.5%	1924	-0.93%	28.7%	1.6%		6
Monroe	$ 63,061.00	27.4%	23	3.64%	36.4%	4.1%		6
Oconto	$ 68,426.00	25.8%	9	3.91%	37.4%	3.0%		6
Oneida	$ 62,660.00	31.1%	15	5.21%	28.7%	- 1.0%		6
Outagamie	$ 72,695.00	18.7%	168	8.30%	41.1%	5.9%		3
Ozaukee	$ 86,915.00	12.5%	174	6.91%	31.7%	6.4%		3
Pepin	$ 63,015.00	27.7%	10	-1.46%	35.1%	1.0%		7
Pierce	$ 78,341.00	20.0%	19	3.16%	39.5%	- 0.1%		5
Polk	$ 67,878.00	27.9%	18	2.50%	38.2%	5.0%		7
Portage	$ 65,550.00	23.7%	42	0.50%	37.4%	5.6%		7
Price	$ 52,052.00	36.0%	4	-0.21%	13.0%	- 8.4%		7
Racine	$ 67,224.00	24.1%	222	1.41%	27.4%	1.3%		6
Richland	$ 56,089.00	30.2%	10	-4.22%	29.5%	- 3.7%		7
Rock	$ 65,518.00	25.3%	93	3.02%	42.3%	9.8%		5
Rusk	$ 51,978.00	33.4%	5	-3.61%	49.2%	- 1.7%		7
St. Croix	$ 91,320.00	15.8%	43	13.45%	56.5%	16.8%		1
Sauk	$ 67,702.00	21.0%	29	7.26%	67.3%	- 3.5%	30.16%	5
Sawyer	$ 53,011.00	34.6%	8	8.61%	31.7%	- 1.9%		6
Shawano	$ 59,767.00	29.0%	24	-1.74%	32.0%	- 1.6%		7
Sheboygan	$ 65,352.00	21.4%	83	2.79%	35.1%	4.9%	0.94%	5
Taylor	$ 56,350.00	27.1%	8	-3.48%	33.4%	0.6%		7
Trempealeau	$ 64,336.00	27.4%	17	6.55%	28.3%	- 6.4%		6
Vernon	$ 57,933.00	28.0%	11	3.68%	33.9%	1.1%		6
Vilas	$ 56,837.00	32.1%	10	7.70%	45.6%	8.2%		5
Walworth	$ 69,382.00	20.6%	78	3.51%	48.2%	9.8%		2
Washburn	$ 54,550.00	35.6%	7	4.70%	34.0%	0.2%		6

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Washington	$ 85,574.00	17.7%	133	4.34%	35.1%	11.0%		2
Waukesha	$ 94,310.00	14.2%	446	5.08%	38.9%	8.3%		2
Waupaca	$ 65,070.00	29.3%	25	-0.14%	24.7%	- 6.7%		7
Waushara	$ 57,224.00	31.9%	10	-0.06%	24.0%	3.4%		7
Winnebago	$ 63,938.00	21.5%	214	2.89%	34.7%	3.0%		5
Wood	$ 57,996.00	28.2%	46	-0.52%	23.8%	- 3.3%		7
Threshold	US= $69,021	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%		

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

Appendix D. Secondary Indicator Scores for Food Processors

Last Revised: August 2023

The following table provides the secondary indicator score for food processors as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

Note: This information will be updated as new information becomes available.

Table 9. Food Processors' Secondary Indicators

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Adams	$ 51,878.00	38.2%	6	0.19%	28.7%	- 0.3%		7
Ashland	$ 55,070.00	36.3%	8	-0.78%	25.7%	- 5.6%		7
Barron	$ 55,256.00	27.5%	25	2.16%	30.0%	1.5%	4.83%	9
Bayfield	$ 62,859.00	30.8%	3	7.59%	32.5%	4.1%		6
Brown	$ 68,799.00	19.2%	294	9.14%	37.8%	7.5%		3
Buffalo	$ 61,167.00	27.5%	6	-2.55%	26.9%	- 9.6%		7
Burnett	$ 55,890.00	36.4%	6	7.30%	32.7%	2.2%		6
Calumet	$ 78,453.00	17.0%	50	11.86%	39.2%	28.3%		3
Chippewa	$ 63,172.00	24.9%	25	6.86%	38.5%	13.5%		5
Clark	$ 57,547.00	26.1%	9	0.27%	47.5%	7.5%		6
Columbia	$ 73,786.00	20.6%	29	3.15%	39.3%	7.2%		4
Crawford	$ 54,526.00	32.0%	12	-3.06%	28.6%	- 7.6%		7
Dane	$ 78,452.00	14.0%	291	18.43%	62.7%	14.4%		0
Dodge	$ 66,403.00	23.9%	41	0.15%	26.7%	4.6%		7
Door	$ 63,856.00	24.1%	31	8.83%	41.7%	5.8%		6
Douglas	$ 59,688.00	31.5%	13	0.81%	32.6%	2.7%		7
Dunn	$ 64,420.00	25.9%	21	3.65%	30.9%	5.4%		6
Eau Claire	$ 64,777.00	22.0%	91	8.82%	33.2%	3.0%		5
Florence	$ 52,143.00	26.4%	2	4.98%	44.3%	2.2%		6
Fond du Lac	$ 66,390.00	23.2%	65	2.16%	38.8%	4.6%		6
Forest	$ 51,959.00	37.8%	3	-0.08%	29.8%	- 5.1%		7
Grant	$ 58,289.00	24.4%	15	-0.52%	40.4%	1.6%		7
Green	$ 70,267.00	20.9%	26	1.58%	32.3%	2.6%		5
Green Lake	$ 60,597.00	29.0%	17	-0.08%	12.9%	-10.5%		7
Iowa	$ 73,716.00	21.1%	14	0.89%	36.3%	0.2%		5
Iron	$ 48,908.00	35.5%	2	4.83%	29.5%	- 1.8%		6
Jackson	$ 59,422.00	28.0%	8	2.90%	17.6%	- 7.0%		7

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Jefferson	$ 71,735.00	23.0%	62	3.24%	35.1%	3.7%		5
Juneau	$ 58,561.00	32.5%	12	-0.11%	25.6%	0.3%		7
Kenosha	$ 70,073.00	21.9%	263	2.07%	48.0%	29.1%		4
Kewaunee	$ 72,328.00	23.4%	19	-0.08%	25.2%	- 9.3%		6
La Crosse	$ 62,817.00	21.4%	152	5.67%	42.8%	4.7%		4
Lafayette	$ 65,009.00	23.7%	7	-1.46%	22.5%	7.9%		6
Langlade	$ 53,313.00	34.6%	8	-2.13%	26.7%	- 2.4%		7
Lincoln	$ 61,363.00	30.1%	12	-1.47%	31.8%	- 3.7%		7
Manitowoc	$ 61,454.00	26.6%	56	0.01%	14.8%	- 2.2%		6
Marathon	$ 67,940.00	21.0%	46	3.48%	40.5%	5.3%		5
Marinette	$ 55,694.00	33.4%	13	0.47%	31.1%	- 4.0%		7
Marquette	$ 55,386.00	32.7%	9	1.55%	33.9%	1.5%		7
Menominee	$ 54,940.00	39.7%	5	1.23%	63.5%	- 5.9%		5
Milwaukee	$ 54,793.00	27.5%	1924	-0.93%	28.7%	1.6%		6
Monroe	$ 63,061.00	27.4%	23	3.64%	36.4%	4.1%		6
Oconto	$ 68,426.00	25.8%	9	3.91%	37.4%	3.0%		6
Oneida	$ 62,660.00	31.1%	15	5.21%	28.7%	- 1.0%		6
Outagamie	$ 72,695.00	18.7%	168	8.30%	41.1%	5.9%	1.04%	5
Ozaukee	$ 86,915.00	12.5%	174	6.91%	31.7%	6.4%	11.31%	5
Pepin	$ 63,015.00	27.7%	10	-1.46%	35.1%	1.0%		7
Pierce	$ 78,341.00	20.0%	19	3.16%	39.5%	- 0.1%		5
Polk	$ 67,878.00	27.9%	18	2.50%	38.2%	5.0%		7
Portage	$ 65,550.00	23.7%	42	0.50%	37.4%	5.6%		7
Price	$ 52,052.00	36.0%	4	-0.21%	13.0%	- 8.4%		7
Racine	$ 67,224.00	24.1%	222	1.41%	27.4%	1.3%		6
Richland	$ 56,089.00	30.2%	10	-4.22%	29.5%	- 3.7%		7
Rock	$ 65,518.00	25.3%	93	3.02%	42.3%	9.8%		5
Rusk	$ 51,978.00	33.4%	5	-3.61%	49.2%	- 1.7%		7
St. Croix	$ 91,320.00	15.8%	43	13.45%	56.5%	16.8%		1
Sauk	$ 67,702.00	21.0%	29	7.26%	67.3%	- 3.5%	4.61%	5
Sawyer	$ 53,011.00	34.6%	8	8.61%	31.7%	- 1.9%		6
Shawano	$ 59,767.00	29.0%	24	-1.74%	32.0%	- 1.6%		7
Sheboygan	$ 65,352.00	21.4%	83	2.79%	35.1%	4.9%	0.58%	5
Taylor	$ 56,350.00	27.1%	8	-3.48%	33.4%	0.6%		7
Trempealeau	$ 64,336.00	27.4%	17	6.55%	28.3%	- 6.4%		6
Vernon	$ 57,933.00	28.0%	11	3.68%	33.9%	1.1%		6
Vilas	$ 56,837.00	32.1%	10	7.70%	45.6%	8.2%		5
Walworth	$ 69,382.00	20.6%	78	3.51%	48.2%	9.8%		2

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Washburn	$ 54,550.00	35.6%	7	4.70%	34.0%	0.2%		6
Washington	$ 85,574.00	17.7%	133	4.34%	35.1%	11.0%		2
Waukesha	$ 94,310.00	14.2%	446	5.08%	38.9%	8.3%		2
Waupaca	$ 65,070.00	29.3%	25	-0.14%	24.7%	- 6.7%		7
Waushara	$ 57,224.00	31.9%	10	-0.06%	24.0%	3.4%		7
Winnebago	$ 63,938.00	21.5%	214	2.89%	34.7%	3.0%		5
Wood	$ 57,996.00	28.2%	46	-0.52%	23.8%	- 3.3%		7
Threshold	US= $69,021	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%		

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

Appendix E. Secondary Indicator Scores for the Paper Industry

Last Revised: August 2023

The following table provides the secondary indicator score for paper industries as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

Note: This information will be updated as new information becomes available.

Table 10 Paper Industry Secondary Indicators

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Adams	$ 51,878.00	38.2%	6	0.19%	28.7%	- 0.3%		7
Ashland	$ 55,070.00	36.3%	8	-0.78%	25.7%	- 5.6%		7
Barron	$ 55,256.00	27.5%	25	2.16%	30.0%	1.5%		7
Bayfield	$ 62,859.00	30.8%	3	7.59%	32.5%	4.1%		6
Brown	$ 68,799.00	19.2%	294	9.14%	37.8%	7.5%	2.31%	5
Buffalo	$ 61,167.00	27.5%	6	-2.55%	26.9%	- 9.6%		7
Burnett	$ 55,890.00	36.4%	6	7.30%	32.7%	2.2%		6
Calumet	$ 78,453.00	17.0%	50	11.86%	39.2%	28.3%		3
Chippewa	$ 63,172.00	24.9%	25	6.86%	38.5%	13.5%		5
Clark	$ 57,547.00	26.1%	9	0.27%	47.5%	7.5%		6
Columbia	$ 73,786.00	20.6%	29	3.15%	39.3%	7.2%		4
Crawford	$ 54,526.00	32.0%	12	-3.06%	28.6%	- 7.6%		7
Dane	$ 78,452.00	14.0%	291	18.43%	62.7%	14.4%		0
Dodge	$ 66,403.00	23.9%	41	0.15%	26.7%	4.6%		7
Door	$ 63,856.00	24.1%	31	8.83%	41.7%	5.8%		6
Douglas	$ 59,688.00	31.5%	13	0.81%	32.6%	2.7%		7
Dunn	$ 64,420.00	25.9%	21	3.65%	30.9%	5.4%		6
Eau Claire	$ 64,777.00	22.0%	91	8.82%	33.2%	3.0%		5
Florence	$ 52,143.00	26.4%	2	4.98%	44.3%	2.2%		6
Fond du Lac	$ 66,390.00	23.2%	65	2.16%	38.8%	4.6%		6
Forest	$ 51,959.00	37.8%	3	-0.08%	29.8%	- 5.1%		7
Grant	$ 58,289.00	24.4%	15	-0.52%	40.4%	1.6%		7
Green	$ 70,267.00	20.9%	26	1.58%	32.3%	2.6%		5
Green Lake	$ 60,597.00	29.0%	17	-0.08%	12.9%	-10.5%		7
Iowa	$ 73,716.00	21.1%	14	0.89%	36.3%	0.2%		5
Iron	$ 48,908.00	35.5%	2	4.83%	29.5%	- 1.8%		6

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Jackson	$ 59,422.00	28.0%	8	2.90%	17.6%	- 7.0%		7
Jefferson	$ 71,735.00	23.0%	62	3.24%	35.1%	3.7%		5
Juneau	$ 58,561.00	32.5%	12	-0.11%	25.6%	0.3%		7
Kenosha	$ 70,073.00	21.9%	263	2.07%	48.0%	29.1%		4
Kewaunee	$ 72,328.00	23.4%	19	-0.08%	25.2%	- 9.3%		6
La Crosse	$ 62,817.00	21.4%	152	5.67%	42.8%	4.7%		4
Lafayette	$ 65,009.00	23.7%	7	-1.46%	22.5%	7.9%		6
Langlade	$ 53,313.00	34.6%	8	-2.13%	26.7%	- 2.4%		7
Lincoln	$ 61,363.00	30.1%	12	-1.47%	31.8%	- 3.7%		7
Manitowoc	$ 61,454.00	26.6%	56	0.01%	14.8%	- 2.2%		6
Marathon	$ 67,940.00	21.0%	46	3.48%	40.5%	5.3%	0.45%	5
Marinette	$ 55,694.00	33.4%	13	0.47%	31.1%	- 4.0%		7
Marquette	$ 55,386.00	32.7%	9	1.55%	33.9%	1.5%		7
Menominee	$ 54,940.00	39.7%	5	1.23%	63.5%	- 5.9%		5
Milwaukee	$ 54,793.00	27.5%	1924	-0.93%	28.7%	1.6%		6
Monroe	$ 63,061.00	27.4%	23	3.64%	36.4%	4.1%		6
Oconto	$ 68,426.00	25.8%	9	3.91%	37.4%	3.0%		6
Oneida	$ 62,660.00	31.1%	15	5.21%	28.7%	- 1.0%		6
Outagamie	$ 72,695.00	18.7%	168	8.30%	41.1%	5.9%	13.88%	5
Ozaukee	$ 86,915.00	12.5%	174	6.91%	31.7%	6.4%		3
Pepin	$ 63,015.00	27.7%	10	-1.46%	35.1%	1.0%		7
Pierce	$ 78,341.00	20.0%	19	3.16%	39.5%	- 0.1%		5
Polk	$ 67,878.00	27.9%	18	2.50%	38.2%	5.0%		7
Portage	$ 65,550.00	23.7%	42	0.50%	37.4%	5.6%	3.58%	9
Price	$ 52,052.00	36.0%	4	-0.21%	13.0%	- 8.4%		7
Racine	$ 67,224.00	24.1%	222	1.41%	27.4%	1.3%		6
Richland	$ 56,089.00	30.2%	10	-4.22%	29.5%	- 3.7%		7
Rock	$ 65,518.00	25.3%	93	3.02%	42.3%	9.8%		5
Rusk	$ 51,978.00	33.4%	5	-3.61%	49.2%	- 1.7%		7
St. Croix	$ 91,320.00	15.8%	43	13.45%	56.5%	16.8%		1
Sauk	$ 67,702.00	21.0%	29	7.26%	67.3%	- 3.5%		3
Sawyer	$ 53,011.00	34.6%	8	8.61%	31.7%	- 1.9%		6
Shawano	$ 59,767.00	29.0%	24	-1.74%	32.0%	- 1.6%		7
Sheboygan	$ 65,352.00	21.4%	83	2.79%	35.1%	4.9%		5
Taylor	$ 56,350.00	27.1%	8	-3.48%	33.4%	0.6%		7
Trempealeau	$ 64,336.00	27.4%	17	6.55%	28.3%	- 6.4%		6
Vernon	$ 57,933.00	28.0%	11	3.68%	33.9%	1.1%		6
Vilas	$ 56,837.00	32.1%	10	7.70%	45.6%	8.2%		5

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Walworth	$ 69,382.00	20.6%	78	3.51%	48.2%	9.8%		2
Washburn	$ 54,550.00	35.6%	7	4.70%	34.0%	0.2%		6
Washington	$ 85,574.00	17.7%	133	4.34%	35.1%	11.0%		2
Waukesha	$ 94,310.00	14.2%	446	5.08%	38.9%	8.3%		2
Waupaca	$ 65,070.00	29.3%	25	-0.14%	24.7%	- 6.7%		7
Waushara	$ 57,224.00	31.9%	10	-0.06%	24.0%	3.4%		7
Winnebago	$ 63,938.00	21.5%	214	2.89%	34.7%	3.0%		5
Wood	$ 57,996.00	28.2%	46	-0.52%	23.8%	- 3.3%	28.23%	9
Threshold	US= $69,021	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%		

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

Appendix F. Secondary Screeners for Aquaculture

Last Revised: August 2023

The following table provides the secondary indicator score for aquaculture facilities as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

Table 11. Aquaculture Secondary Indicators

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Adams	$ 51,878.00	38.2%	6	0.19%	28.7%	- 0.3%		7
Ashland	$ 55,070.00	36.3%	8	-0.78%	25.7%	- 5.6%		7
Barron	$ 55,256.00	27.5%	25	2.16%	30.0%	1.5%		7
Bayfield	$ 62,859.00	30.8%	3	7.59%	32.5%	4.1%		6
Brown	$ 68,799.00	19.2%	294	9.14%	37.8%	7.5%		3
Buffalo	$ 61,167.00	27.5%	6	-2.55%	26.9%	- 9.6%		7
Burnett	$ 55,890.00	36.4%	6	7.30%	32.7%	2.2%		6
Calumet	$ 78,453.00	17.0%	50	11.86%	39.2%	28.3%		3
Chippewa	$ 63,172.00	24.9%	25	6.86%	38.5%	13.5%		5
Clark	$ 57,547.00	26.1%	9	0.27%	47.5%	7.5%		6
Columbia	$ 73,786.00	20.6%	29	3.15%	39.3%	7.2%		4
Crawford	$ 54,526.00	32.0%	12	-3.06%	28.6%	- 7.6%		7
Dane	$ 78,452.00	14.0%	291	18.43%	62.7%	14.4%		0
Dodge	$ 66,403.00	23.9%	41	0.15%	26.7%	4.6%		7
Door	$ 63,856.00	24.1%	31	8.83%	41.7%	5.8%		6
Douglas	$ 59,688.00	31.5%	13	0.81%	32.6%	2.7%		7
Dunn	$ 64,420.00	25.9%	21	3.65%	30.9%	5.4%		6
Eau Claire	$ 64,777.00	22.0%	91	8.82%	33.2%	3.0%		5
Florence	$ 52,143.00	26.4%	2	4.98%	44.3%	2.2%		6
Fond du Lac	$ 66,390.00	23.2%	65	2.16%	38.8%	4.6%		6
Forest	$ 51,959.00	37.8%	3	-0.08%	29.8%	- 5.1%		7
Grant	$ 58,289.00	24.4%	15	-0.52%	40.4%	1.6%		7
Green	$ 70,267.00	20.9%	26	1.58%	32.3%	2.6%		5
Green Lake	$ 60,597.00	29.0%	17	-0.08%	12.9%	-10.5%		7
Iowa	$ 73,716.00	21.1%	14	0.89%	36.3%	0.2%		5
Iron	$ 48,908.00	35.5%	2	4.83%	29.5%	- 1.8%		6

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Jackson	$ 59,422.00	28.0%	8	2.90%	17.6%	- 7.0%		7
Jefferson	$ 71,735.00	23.0%	62	3.24%	35.1%	3.7%		5
Juneau	$ 58,561.00	32.5%	12	-0.11%	25.6%	0.3%		7
Kenosha	$ 70,073.00	21.9%	263	2.07%	48.0%	29.1%		4
Kewaunee	$ 72,328.00	23.4%	19	-0.08%	25.2%	- 9.3%		6
La Crosse	$ 62,817.00	21.4%	152	5.67%	42.8%	4.7%		4
Lafayette	$ 65,009.00	23.7%	7	-1.46%	22.5%	7.9%		6
Langlade	$ 53,313.00	34.6%	8	-2.13%	26.7%	- 2.4%		7
Lincoln	$ 61,363.00	30.1%	12	-1.47%	31.8%	- 3.7%		7
Manitowoc	$ 61,454.00	26.6%	56	0.01%	14.8%	- 2.2%		6
Marathon	$ 67,940.00	21.0%	46	3.48%	40.5%	5.3%		5
Marinette	$ 55,694.00	33.4%	13	0.47%	31.1%	- 4.0%		7
Marquette	$ 55,386.00	32.7%	9	1.55%	33.9%	1.5%		7
Menominee	$ 54,940.00	39.7%	5	1.23%	63.5%	- 5.9%		5
Milwaukee	$ 54,793.00	27.5%	1924	-0.93%	28.7%	1.6%		6
Monroe	$ 63,061.00	27.4%	23	3.64%	36.4%	4.1%		6
Oconto	$ 68,426.00	25.8%	9	3.91%	37.4%	3.0%		6
Oneida	$ 62,660.00	31.1%	15	5.21%	28.7%	- 1.0%		6
Outagamie	$ 72,695.00	18.7%	168	8.30%	41.1%	5.9%		3
Ozaukee	$ 86,915.00	12.5%	174	6.91%	31.7%	6.4%		3
Pepin	$ 63,015.00	27.7%	10	-1.46%	35.1%	1.0%		7
Pierce	$ 78,341.00	20.0%	19	3.16%	39.5%	- 0.1%		5
Polk	$ 67,878.00	27.9%	18	2.50%	38.2%	5.0%		7
Portage	$ 65,550.00	23.7%	42	0.50%	37.4%	5.6%		7
Price	$ 52,052.00	36.0%	4	-0.21%	13.0%	- 8.4%		7
Racine	$ 67,224.00	24.1%	222	1.41%	27.4%	1.3%		6
Richland	$ 56,089.00	30.2%	10	-4.22%	29.5%	- 3.7%		7
Rock	$ 65,518.00	25.3%	93	3.02%	42.3%	9.8%		5
Rusk	$ 51,978.00	33.4%	5	-3.61%	49.2%	- 1.7%		7
St. Croix	$ 91,320.00	15.8%	43	13.45%	56.5%	16.8%		1
Sauk	$ 67,702.00	21.0%	29	7.26%	67.3%	- 3.5%		3
Sawyer	$ 53,011.00	34.6%	8	8.61%	31.7%	- 1.9%		6
Shawano	$ 59,767.00	29.0%	24	-1.74%	32.0%	- 1.6%		7
Sheboygan	$ 65,352.00	21.4%	83	2.79%	35.1%	4.9%		5
Taylor	$ 56,350.00	27.1%	8	-3.48%	33.4%	0.6%		7
Trempealeau	$ 64,336.00	27.4%	17	6.55%	28.3%	- 6.4%		6
Vernon	$ 57,933.00	28.0%	11	3.68%	33.9%	1.1%		6
Vilas	$ 56,837.00	32.1%	10	7.70%	45.6%	8.2%		5

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Capital Costs as a % of Payroll [7] **(2 points)**	Secondary Indicator Score
Walworth	$ 69,382.00	20.6%	78	3.51%	48.2%	9.8%		2
Washburn	$ 54,550.00	35.6%	7	4.70%	34.0%	0.2%		6
Washington	$ 85,574.00	17.7%	133	4.34%	35.1%	11.0%		2
Waukesha	$ 94,310.00	14.2%	446	5.08%	38.9%	8.3%		2
Waupaca	$ 65,070.00	29.3%	25	-0.14%	24.7%	- 6.7%		7
Waushara	$ 57,224.00	31.9%	10	-0.06%	24.0%	3.4%		7
Winnebago	$ 63,938.00	21.5%	214	2.89%	34.7%	3.0%		5
Wood	$ 57,996.00	28.2%	46	-0.52%	23.8%	- 3.3%		7
Threshold	US= $69,021	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%		

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

Appendix G. Secondary Indicator Scores for NCCW and Industrial Discharges in the "Other" Category

Last Revised: August 2023

The following table provides the secondary indicator score for facilities considered to be NCCW or "other" as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

Table 12. Secondary Indicators for NCCW and Industrial Discharges in the "Other" Category

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Secondary Indicator Score
Adams	$ 51,878.00	38.2%	6	0.19%	28.7%	- 0.3%	7
Ashland	$ 55,070.00	36.3%	8	-0.78%	25.7%	- 5.6%	7
Barron	$ 55,256.00	27.5%	25	2.16%	30.0%	1.5%	7
Bayfield	$ 62,859.00	30.8%	3	7.59%	32.5%	4.1%	6
Brown	$ 68,799.00	19.2%	294	9.14%	37.8%	7.5%	3
Buffalo	$ 61,167.00	27.5%	6	-2.55%	26.9%	- 9.6%	7
Burnett	$ 55,890.00	36.4%	6	7.30%	32.7%	2.2%	6
Calumet	$ 78,453.00	17.0%	50	11.86%	39.2%	28.3%	3
Chippewa	$ 63,172.00	24.9%	25	6.86%	38.5%	13.5%	5
Clark	$ 57,547.00	26.1%	9	0.27%	47.5%	7.5%	6
Columbia	$ 73,786.00	20.6%	29	3.15%	39.3%	7.2%	4
Crawford	$ 54,526.00	32.0%	12	-3.06%	28.6%	- 7.6%	7
Dane	$ 78,452.00	14.0%	291	18.43%	62.7%	14.4%	0
Dodge	$ 66,403.00	23.9%	41	0.15%	26.7%	4.6%	7
Door	$ 63,856.00	24.1%	31	8.83%	41.7%	5.8%	6
Douglas	$ 59,688.00	31.5%	13	0.81%	32.6%	2.7%	7
Dunn	$ 64,420.00	25.9%	21	3.65%	30.9%	5.4%	6
Eau Claire	$ 64,777.00	22.0%	91	8.82%	33.2%	3.0%	5
Florence	$ 52,143.00	26.4%	2	4.98%	44.3%	2.2%	6
Fond du Lac	$ 66,390.00	23.2%	65	2.16%	38.8%	4.6%	6
Forest	$ 51,959.00	37.8%	3	-0.08%	29.8%	- 5.1%	7
Grant	$ 58,289.00	24.4%	15	-0.52%	40.4%	1.6%	7
Green	$ 70,267.00	20.9%	26	1.58%	32.3%	2.6%	5
Green Lake	$ 60,597.00	29.0%	17	-0.08%	12.9%	-10.5%	7
Iowa	$ 73,716.00	21.1%	14	0.89%	36.3%	0.2%	5

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Secondary Indicator Score
Iron	$ 48,908.00	35.5%	2	4.83%	29.5%	- 1.8%	6
Jackson	$ 59,422.00	28.0%	8	2.90%	17.6%	- 7.0%	7
Jefferson	$ 71,735.00	23.0%	62	3.24%	35.1%	3.7%	5
Juneau	$ 58,561.00	32.5%	12	-0.11%	25.6%	0.3%	7
Kenosha	$ 70,073.00	21.9%	263	2.07%	48.0%	29.1%	4
Kewaunee	$ 72,328.00	23.4%	19	-0.08%	25.2%	- 9.3%	6
La Crosse	$ 62,817.00	21.4%	152	5.67%	42.8%	4.7%	4
Lafayette	$ 65,009.00	23.7%	7	-1.46%	22.5%	7.9%	6
Langlade	$ 53,313.00	34.6%	8	-2.13%	26.7%	- 2.4%	7
Lincoln	$ 61,363.00	30.1%	12	-1.47%	31.8%	- 3.7%	7
Manitowoc	$ 61,454.00	26.6%	56	0.01%	14.8%	- 2.2%	6
Marathon	$ 67,940.00	21.0%	46	3.48%	40.5%	5.3%	5
Marinette	$ 55,694.00	33.4%	13	0.47%	31.1%	- 4.0%	7
Marquette	$ 55,386.00	32.7%	9	1.55%	33.9%	1.5%	7
Menominee	$ 54,940.00	39.7%	5	1.23%	63.5%	- 5.9%	5
Milwaukee	$ 54,793.00	27.5%	1924	-0.93%	28.7%	1.6%	6
Monroe	$ 63,061.00	27.4%	23	3.64%	36.4%	4.1%	6
Oconto	$ 68,426.00	25.8%	9	3.91%	37.4%	3.0%	6
Oneida	$ 62,660.00	31.1%	15	5.21%	28.7%	- 1.0%	6
Outagamie	$ 72,695.00	18.7%	168	8.30%	41.1%	5.9%	3
Ozaukee	$ 86,915.00	12.5%	174	6.91%	31.7%	6.4%	3
Pepin	$ 63,015.00	27.7%	10	-1.46%	35.1%	1.0%	7
Pierce	$ 78,341.00	20.0%	19	3.16%	39.5%	- 0.1%	5
Polk	$ 67,878.00	27.9%	18	2.50%	38.2%	5.0%	7
Portage	$ 65,550.00	23.7%	42	0.50%	37.4%	5.6%	7
Price	$ 52,052.00	36.0%	4	-0.21%	13.0%	- 8.4%	7
Racine	$ 67,224.00	24.1%	222	1.41%	27.4%	1.3%	6
Richland	$ 56,089.00	30.2%	10	-4.22%	29.5%	- 3.7%	7
Rock	$ 65,518.00	25.3%	93	3.02%	42.3%	9.8%	5
Rusk	$ 51,978.00	33.4%	5	-3.61%	49.2%	- 1.7%	7
St. Croix	$ 91,320.00	15.8%	43	13.45%	56.5%	16.8%	1
Sauk	$ 67,702.00	21.0%	29	7.26%	67.3%	- 3.5%	3
Sawyer	$ 53,011.00	34.6%	8	8.61%	31.7%	- 1.9%	6
Shawano	$ 59,767.00	29.0%	24	-1.74%	32.0%	- 1.6%	7
Sheboygan	$ 65,352.00	21.4%	83	2.79%	35.1%	4.9%	5
Taylor	$ 56,350.00	27.1%	8	-3.48%	33.4%	0.6%	7
Trempealeau	$ 64,336.00	27.4%	17	6.55%	28.3%	- 6.4%	6
Vernon	$ 57,933.00	28.0%	11	3.68%	33.9%	1.1%	6

	Median Household Income [1]	Personal Current Transfer Receipts Share of Total Income 2021 [2]	Jobs per Square Mile [3]	Population Change 2011 - 2021 [4]	Net Earnings Change 2011-2021 [5] **(2points)**	Job Growth 2011-2021 [6]	Secondary Indicator Score
Vilas	$ 56,837.00	32.1%	10	7.70%	45.6%	8.2%	5
Walworth	$ 69,382.00	20.6%	78	3.51%	48.2%	9.8%	2
Washburn	$ 54,550.00	35.6%	7	4.70%	34.0%	0.2%	6
Washington	$ 85,574.00	17.7%	133	4.34%	35.1%	11.0%	2
Waukesha	$ 94,310.00	14.2%	446	5.08%	38.9%	8.3%	2
Waupaca	$ 65,070.00	29.3%	25	-0.14%	24.7%	- 6.7%	7
Waushara	$ 57,224.00	31.9%	10	-0.06%	24.0%	3.4%	7
Winnebago	$ 63,938.00	21.5%	214	2.89%	34.7%	3.0%	5
Wood	$ 57,996.00	28.2%	46	-0.52%	23.8%	- 3.3%	7
Threshold	US= $69,021	U.S. = 21.7%	WI =51.7	1/2 U.S = 3.2%	U.S = 49.4%	1/2 U.S = 7.1%	

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

Appendix H. Primary Screener Thresholds for Industrial Dischargers

Last Revised: December, 2023

Table 13 below provides the thresholds for determining if a specific industry is in the top 75% of dischargers incurring costs within their category. This is one of two primary screeners that can be used to justify the substantial impacts of individual industries to qualify for the MDV. The other primary screening metric for industries is based on the geographic distribution of compliance costs within each category. Specifically, an industry must be located in a county that is within the top 75% of counties incurring costs for that category in order to meet this primary screener. The counties that meet this threshold for each category are provided in Table 14.

These values may be re-evaluated to determine if updates are needed based on new information gathered during the triennial standards review process.

Table 13: Industrial primary screener thresholds based on 75th percentile of dischargers incurring costs within each category.

Industrial Category	75% Threshold for Dischargers
Cheese Manufacturing	$ 2,193,000
Food Processing	$ 2,635,000
Paper	$ 8,028,000
Aquaculture	$ 9,970,000
NCCW	$ 2,119,000
Other Industrial Discharges	$ 1,139,000

Table 14: Industrial primary screener thresholds based on 75th percentile of counties incurring costs within each category.

	Cheese Manufacturing	Food Processing	Paper	Aquaculture	NCCW	Other Industrial Discharges
Adams						
Ashland						
Barron		X				
Bayfield				X		
Brown			X			
Buffalo						
Burnett						
Calumet	X					
Chippewa						
Clark						X

	Cheese Manufacturing	Food Processing	Paper	Aquaculture	NCCW	Other Industrial Discharges
Columbia						
Crawford						
Dane						
Dodge	X	X				
Door						
Douglas						
Dunn						
Eau Claire						
Florence						
Fond du Lac						
Forest						
Grant	X					
Green						
Green Lake					X	
Iowa						
Iron						
Jackson						
Jefferson						
Juneau						
Kenosha						
Kewaunee	X					
La Crosse						
Lafayette						
Langlade				X	X	
Lincoln			X			
Manitowoc						
Marathon						
Marinette						
Marquette						
Menominee						
Milwaukee						

	Cheese Manufacturing	Food Processing	Paper	Aquaculture	NCCW	Other Industrial Discharges
Monroe						
Oconto		X				
Oneida			X			
Outagamie		X	X		X	
Ozaukee		X				
Pepin						
Pierce	X					
Polk						
Portage	X					
Price						
Racine						
Richland						
Rock						
Rusk						
St. Croix						
Sauk	X				X	
Sawyer						
Shawano						
Sheboygan	X	X				
Taylor						
Trempealeau					X	
Vernon						
Vilas						
Walworth						
Washburn						
Washington						
Waukesha						
Waupaca						
Waushara				X		
Winnebago						
Wood			X		X	

Appendix I. Categorical Eligibility by County

Last Revised: January, 2016

Table 15 provides the list of categories that may be eligible for the MDV by county in accordance with the MDV justification and demonstration. If a point source is not listed to be in an eligible area, they do not qualify for the MDV, and should consider an alternative compliance option or an individual variance request. For example, municipal WWTFs, cheese manufacturing, and NCCW are the only potentially eligible point sources for the MDV in Adams County.

In addition to being in potentially eligible MDV areas, point sources must also meet the primary and secondary indicators to demonstrate substantial impacts in accordance with the Final Economic Determination and s. 283.16(2)(b)4, Wis. Stats.

Table 15: Potentially eligible MDV areas by discharge category.

	Discharge Category						
County	**Municipal**	**Cheese**	**Food**	**Fish**	**Paper**	**NCCW**	**Other**
Adams	X	X				X	
Ashland	X						
Barron	X		X			X	
Bayfield	X			X		X	
Brown	X				X	X	
Buffalo	X	X				X	
Burnett	X	X				X	
Calumet	X	X				X	X
Chippewa	X					X	X
Clark	X	X				X	X
Columbia	X		X			X	
Crawford	X					X	
Dane							
Dodge	X	X	X			X	
Door	X						
Douglas	X			X		X	X
Dunn	X					X	
Eau Claire					X		
Florence	X						
Fond du lac	X	X	X			X	
Forest						X	
Grant	X	X				X	
Green		X					
Green Lake	X		X			X	
Iowa	X					X	X
Iron	X					X	

Jackson	X						X	
Jefferson	X				X		X	X
Juneau	X						X	
Kenosha	X			X			X	
Kewaunee	X		X				X	
La Crosse	X						X	X
Lafayette	X		X					
Langlade	X						X	
Lincoln	X					X	X	
Manitowoc	X						X	
Marathon	X		X	X		X	X	
Marinette	X				X		X	X
Marquette	X						X	
Menominee								
Milwaukee	X				X		X	X
Monroe	X			X			X	
Oconto	X		X	X	X	X	X	
Oneida	X				X	X	X	
Outagamie	X			X		X	X	
Ozaukee	X			X			X	
Pepin	X							
Pierce	X		X				X	
Polk	X				X		X	
Portage	X		X	X		X	X	
Price	X						X	X
Racine	X						X	
Richland	X		X				X	
Rock	X						X	
Rusk	X					X	X	
Sauk	X		X	X			X	X
Sawyer							X	
Shawano	X					X	X	
Sheboygan	X		X	X	X		X	X
St. Croix								
Taylor	X		X				X	
Trempealeau	X						X	
Vernon	X		X					
Vilas							X	
Walworth	X						X	
Washburn							X	
Washington	X		X				X	X
Waukesha	X						X	
Waupaca	X						X	

Appendix J. Phosphorus Treatment Technology Evaluation

Assessment of Reasonably Available & Cost-Effective Phosphorus Treatment Technology

Wisconsin Department of Natural Resources

5/30/2023

This assessment is required pursuant to Section 283.16(3)(b) of the Wisconsin Statutes as part of the phosphorus multi-discharger variance reauthorization

Background

Elevated phosphorus concentrations in Wisconsin's surface waters have long been recognized as the driving force behind eutrophication, with impacts including diminished aquatic biodiversity and excessive plant or algal growth leading to impairment of a number of human uses such as drinking water or recreational use. Formal regulation of phosphorus began in Wisconsin 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 (NR 217 Subchapter II, Wis. Adm. Code).

To further protect human health and welfare from excess phosphorus pollution in surface water, revisions to Wisconsin's Phosphorus Water Quality Standards (WQS) were adopted on December 1, 2010. These revisions established a maximum allowable phosphorus numerical concentration in Wisconsin's waters, which are codified in s. NR 102.06, Wis. Adm. Code. The rule also created phosphorus standard implementation procedures for WPDES permits contained in Ch. NR 217, Wis. Adm. Code. Since December 2010, the Department of Natural Resources (DNR) has been evaluating the need for phosphorus Water Quality-Based Effluent Limits (WQBELs) in WPDES permits to comply with these standards. Many point sources face low-level phosphorus limitations as a result of these WQS. In many cases, these phosphorus WQBELs are set equal to the receiving water's applicable phosphorus criterion.

Compliance with these restrictive WQBELs frequently requires substantial capital investments, yet treatment may only target a small fraction of the total phosphorus loading entering many Wisconsin surface waters. Nonpoint source phosphorus loadings frequently contribute the majority of phosphorus to Wisconsin's surface waters.

The concept of a multi-discharger variance (MDV) for phosphorus is established in s. 283.16, Wis. Stats., to address the above challenges and provide point sources, specifically municipal and industrial wastewater treatment facilities, with another avenue for minimizing the economic hardship associated with low-level phosphorus limits while addressing nonpoint sources. The MDV was initially approved by the Environmental Protection Agency (EPA) on February 6, 2017, for a 10-year period. Accordingly, the variance is valid until February 2027. As part of requesting that EPA reapprove the variance for an additional time period beyond February 2027, DNR must evaluate reasonably available and cost-effective phosphorus treatment technology, in accordance with s. 283.16(3)(b) Wis. Stats.

Introduction

The process to establish a justification for the MDV, as provided in statute at s. 283.16(2), Wis. Stats., requires the Department of Administration (DOA) to determine "whether attaining the water quality standard for phosphorus… would cause substantial and widespread adverse social and economic impacts on a statewide basis." This initial determination was completed by DOA on October 6, 2015, and serves as the initial foundational basis for the MDV's variance justification in accordance with 40 CFR §131.10(g)(6). The initial determination is available for download using the following link:

https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/Attachment_01_-_Wisconsins_Final_Economic_Determination.pdf

Prior to requesting that EPA renew the MDV for an additional period of time, DOA and DNR must follow the procedures at s. 283.16(3), Wis. Stats. – "Review of Findings and Requirements of Variance". This process is centered around the preparation of a report that would evaluate whether the initial October 2015 determination currently remains accurate.

This document seeks to fulfill the requirements of s. 283.16(3)(b), Wis. Stats. by providing the following information for DOA's updated economic determination:

- A determination of whether technology is reasonably available for point sources to comply with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L*.
- A determination of whether technology is reasonably available for any category of point sources to comply with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L*.
- A determination of whether any technology that is reasonably available for compliance with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L* is cost effective.

**Statue refers to the interim effluent limitations applicable under s. 283.16(6)(a), Wis. Stats. which range from 0.8 mg/L to 0.5 mg/L, depending on how many permit terms a facility has received MDV coverage.*

The determinations listed above serve to inform the MDV renewal effort via evaluation of the current state of phosphorus treatment technology. Whether the initial economic determination remains accurate must be evaluated in context of readily available and cost-effective treatment technology. As new treatment technology is developed, or current treatment technology is improved, the new or improved treatment may more readily facilitate compliance with lower effluent limits than possible in the past. If such new and readily available technology was also cost effective and affordable, then attaining the water quality standard for phosphorus may no longer cause substantial and widespread adverse social and economic impacts on a statewide basis, and continuation of the MDV would not be justified.

The determination made in this document is also referenced in the language of s. 283.16(3)(cm), Wis. Stats., which authorizes DNR to apply lower interim limits on a statewide or categorical basis if they are specified in the updated economic determination report. To apply lower interim limits to all dischargers or to a category of dischargers statewide, there would need to be a finding that new treatment technology is reasonably available and cost effective that would enable compliance with lower effluent limitations. It is important to note that s. 283.16(7), Wis. Stats. authorizes DNR to apply more stringent effluent limitations on a permit-specific basis when granting MDV coverage. This means that when existing treatment technology achieves greater phosphorus treatment than the suggested 0.8 mg/L – 0.5 mg/L interim limits, that level of treatment can be recognized by assigning a lower interim limit in the permit.

In summary, the analysis contained in this document has the following objectives:

1. Evaluate currently available and cost-effective phosphorus treatment technology as a component of the updated economic determination.

2. If determined appropriated, recommend lower interim limits for phosphorus.

Information supporting the initial determination was provided in supplemental reports developed by ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute. These firms were contracted to provide key economic information to support the initial 2015 determination. The reports included a Final Economic Impact Analysis (dated 12/29/2015) and an Addendum to the Economic Impact Analysis (dated 4/24/2015). These reports will be referred to in this document as the "EIA Report". The full EIA Report is available for download using the following link:

https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/Attachment_02_-_Phosphorus_Economic_Impact_Analysis_Report_and_Addendum.pdf

Within the EIA Report, ARCADIS estimated compliance costs for all WPDES permit holders who were expected to be subject to low phosphorus WQBELs. Cost estimates relied on a set of assumptions that

defined what treatment technology would commonly be required to meet phosphorus WQBELs on a consistent basis. To structure the assessment, the 592 evaluated municipal and industrial wastewater treatment facilities were divided into three groups based on their final WQBEL for total phosphorus:

- >0.5 to 1 mg/L
- >0.1 to 0.5 mg/L
- less than or equal to 0.1 mg/L

Facilities were also grouped by basic treatment type – either lagoon or mechanical plant. This provided a set of assumptions to inform what equipment is likely to already be in place at a given facility. Table 1 and Table 2 below show which additional treatment process and associated components are needed to meet the various WQBEL ranges. Preexisting process components may vary between specific facilities.

Table 1: EIA Report Table 2-3 Summarized (Processes Required for Phosphorus Removal for Mechanical WWTPs)

Treatment Level	Treatment Process	Main Process Components at Mechanical Plants
TP >0.5 – 1 mg/L	• Multi-point chemical precipitation	• Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Sludge Storage Tank • Sludge Dewatering Facility (Paper Mills)
TP >0.1 – 0.5 mg/L	• Multi-point chemical precipitation • Sand filtration	• Filter Feed Pumps • Sand Filter • Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Filter Building • Filter Backwash Pumps • Sludge Storage Tank • Sludge Dewatering Facility (Paper Mills)
TP ≤ 0.1 mg/L	• Multi-point chemical precipitation • Dual-stage sand filtration	• Filter Feed Pumps • Dual-Stage Sand Filters • Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Filter Building • Filter Backwash Pumps • Sludge Storage Tank • Sludge Dewatering Facility (Paper Mills)

Table 2: EIA Report Table 2-4 Summarized (Processes Required for Phosphorus Removal in Lagoon Systems)

Treatment Level Target	Treatment Process	Main Process Components Added for P Removal at Lagoons
TP >0.5 – 1 mg/L	• Multi-point chemical precipitation • Clarification	• Clarification Feed Pump Station • Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Clarifier, Mechanisms, and Pumps • Sludge Dewatering Facility (Paper Mills)
TP >0.1 – 0.5 mg/L	• Multi-point chemical precipitation • Clarification • Sand filtration	• Clarification Feed Pump Station • Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Clarifier, Mechanisms, and Pumps • Filter Building • Filter Feed Pumps • Filter Backwash Pumps • Sand Filter • Sludge Dewatering Facility (Paper Mills)
TP ≤ 0.1 mg/L	• Multi-point chemical precipitation • Clarification • Dual-stage sand filtration	• Clarification Feed Pump Station • Chemical Building • Chemical Storage • Chemical Feed System • Piping, Valves, and Appurtenances • Clarifier, Mechanisms, and Pumps • Filter Building • Filter Feed Pumps • Filter Backwash Pumps • Dual-Stage Sand Filters • Sludge Dewatering Facility (Paper Mills)

To generate compliance cost estimates for each facility, the above list of treatment components were assigned costs based on multiple vendor quotes. General cost components (such as mobilization, site work, instrumentation and control work, electrical work, HVAC work, plumbing work, etc.) were estimated as percentages of the equipment cost. Cost curves were then developed for each category of discharger. Site-specific compliance cost estimates in the EIA report are based on these cost curves. For

more information on the technology evaluation and capital, operational, and maintenance cost development, see section 2 of the EIA Report.

The WQBEL and facility type categories mentioned above serve as benchmarks for evaluating reasonably available and cost-effective treatment technology. For both mechanical plants and lagoons, the 0.5 mg/L – 1.0 mg/L limit category aligns with the interim effluent limitations specified at s. 283.16(6)(a), Wis. Stats., (0.5 mg/L – 0.8 mg/L). Limits in this range are generally assumed to be met with chemical addition, but may also be met with biological phosphorus removal under the right circumstances. These types of treatment are sometimes referred to as "traditional" phosphorus removal and have been proven to be readily available and cost effective in most cases. Under certain conditions, these types of treatment can reliably achieve effluent total phosphorus levels lower than 0.5 mg/L. Part of the analysis contained in this document will evaluate if these types of readily available and cost-effective technology will, on a statewide or categorical basis, achieve effluent limits lower than 0.5 mg/L.

For both mechanical plants and lagoons, the EIA report assumed that effluent limits lower than 0.5 mg/L require some form of tertiary filtration. This type of equipment is considered to be a "major facility upgrade" as most municipal plants are designed as secondary treatment plants and the associated cost was the main factor which led to the initial determination that achieving the water quality standard was not feasible due to substantial/widespread economic impacts. Tertiary filtration is a technology that is readily available, however it may not be feasible to install at facilities due to capital and operational costs. For the purposes of this analysis, it is assumed that tertiary filtration is not evaluated in the context of interim effluent limits that would apply while covered under the variance. In nearly all cases, when it is feasible for a facility to install tertiary filtration, that facility would not be eligible for MDV coverage. The updated economic determination document will assess the present-day affordability of tertiary filtration. Should tertiary filtration be found to be affordable in the updated economic determination, the initial economic determination would no longer be accurate.

An additional scenario that could impact the initial determination is the case in which new treatment technology is now currently available that is affordable and effective at achieving commonly applied phosphorus WQBELs. Any newly available technology will be explored in this document. Additionally, this document will explore any advances or refinements in currently available technology that would commonly allow lower effluent limits to be achieved without a major facility upgrade.

Traditional Phosphorus Treatment Technology

Phosphorus treatment technology that has been used over previous decades (most often to achieve phosphorus TBELs) is referred to as "traditional". Facilities meeting discharge thresholds defined in s. NR 217.04(1)(a) Wis. Adm. Code typically have some form of traditional phosphorus removal currently in place.

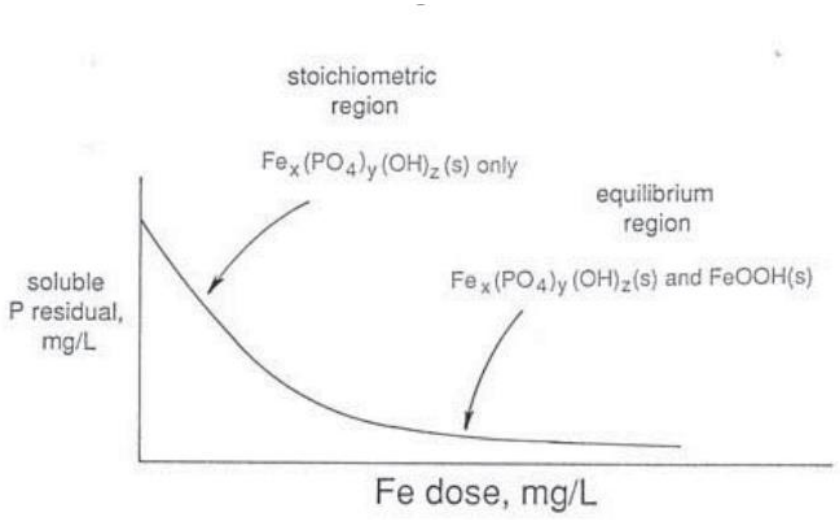
Chemical Phosphorus Removal

Chemical phosphorus removal is the process of injecting chemicals, typically metal salts, into wastewater during the treatment process. Chemicals act as precipitants or coagulants which cause dissolved and particulate phosphorus to more readily settle and be removed as waste sludge. Typical chemicals used are alum (aluminum sulfate), ferric chloride, and ferrous sulfate/chloride.

When metal ions, iron or aluminum, are added to wastewater two primary precipitates form: an insoluble metal phosphate and an insoluble metal hydroxide. For a given metal, the formation of these precipitates is governed by the wastewater alkalinity and soluble orthophosphate concentration in the wastewater, as well as their equilibrium solubility at a given pH. Each phosphorus removal chemical (metal salt) has an optimum pH range for precipitating out the phosphorus as a metal phosphate.

To achieve low effluent phosphorus limits, increasingly larger doses of metal salts are required to remove additional phosphorus. Eventually, chemical equilibrium will be reached with no further reduction in effluent phosphorus.

Figure 1: Typical Fe dose versus soluble P residual curve.



Actual chemical usage depends on the competing reactions and wastewater characteristics such as pH, alkalinity, and very fine particulate materials (colloids). Wastewater characteristics and competing chemical reactions in the wastewater between the metal salt and phosphorus will result in the need for increased metal salt addition above what was calculated.

Within the treatment train of a mechanical plant, a flocculation zone should provide sufficient detention time (15 to 20 minutes) to complete the reaction. Gentle mixing promotes flocculation. The enlarged center feed well on a flocculating clarifier provides such a flocculation zone. For the continuous dosing in a lagoon, chemicals can be added to the beginning of the last pond or lagoon where the precipitation reaction and settling can occur. The chemical should be added where good chemical mixing with the wastewater can be achieved, such as the upstream manhole prior to the last pond or just before an aerator. For batch dosing of aluminum sulfate (alum) in fill and draw systems, some operators use a small motorboat and manually apply the alum where the propellor can provide the mixing.

Excessive I/I can cause peak flow rates that reduce the detention time in the treatment plant. Reduced detention time can directly affect phosphorus removal by inhibiting flocculation and settling. Phosphorus is removed from the treatment plant with the waste activated sludge, therefore solids carryover from overloaded clarifiers will increase effluent phosphorus.

Trends in Chemical Phosphorus Removal Since 2015

Chemical removal of phosphorus has been employed at an increasing number of facilities throughout Wisconsin, driven by the need to meet interim limits for those facilities covered under the MDV, an individual phosphorus variance, or by the ability to achieve final phosphors WQBELs by adding chemical treatment. Several innovations in chemical treatment have grown from the need to employ the process at additional facilities. Many of the facilities adopting chemical feed were not initially designed to work with the process, but have achieved satisfactory results.

The EIA Report assumed that all lagoon facilities would need to install a clarifier to facilitate chemical phosphorus removal to achieve phosphorus effluent quality between 0.5 mg/L and 1.0 mg/L (Table 2). However, based on many recent chemical feed installations at lagoon facilities across the state, the need to add a clarifier is the exception rather than the norm. Most lagoon facilities are able to achieve flocculation and settling within the existing lagoon(s). While this approach results in additional sludge accumulation and more frequent sludge removal requirements for the lagoons, avoiding the capital cost of an additional clarifier has helped keep chemical addition affordable for most lagoon facilities.

New chemical compounds are gaining popularity across the state. In addition to the traditionally used aluminum sulfate and ferric chloride, there are now options including polyaluminum chloride (PAC) or cerium-based products branded with trade names such as RE-300 or Sorb-x. These compounds have shown faster flocculation and settling in some cases, and claim to produce a lower-volume, higher-density sludge. The increased efficacy of chemical phosphorus removal has allowed a limited number of facilities to achieve much lower effluent phosphorus concentrations than the EIA Report's suggested 0.5 mg/L lower limit for chemical addition.

With newly-installed chemical feed systems, coupled with MDV offset requirements that provide a financial impetus for reducing effluent phosphorus concentrations, some facilities have pushed the upper limits of acceptable chemical feed rates. From a chemical cost perspective, optimal doses are found at a breakpoint where the chemical reaction becomes less efficient, requiring much greater amount of chemical input per unit of effluent phosphorus removed. Operators will typically attempt to dose near, or somewhere below this optimum rate. An additional consideration is the point at which unreacted chemical is carried through in final effluent. When this happens, localized impacts related to toxicity of effluent may occur, as observed in recent failed whole effluent toxicity tests at facilities experimenting with dosage rates. The chemical feed rate associated with toxic effluent is currently thought to be above the economically-optimal breakpoint. Should effluent toxicity occur at below-optimal feed rates, this could limit the viability of certain types of chemicals or the use of such chemicals at certain types of facilities.

Enhanced Biological Phosphorus Removal

Enhanced biological phosphorus removal (EBPR) is a process that uses alternating anaerobic and aerobic zones to provide an environment that encourages the growth of phosphorus-accumulating organisms (PAOs). These organisms store excess polyphosphate in their cell mass, settle as sludge, and phosphorus is removed with the waste sludge.

The effectiveness of EPBR is tied, in part, to influent waste characteristics. The success of removing phosphorus biologically depends upon the amount of organic material, expressed as either biological

oxygen demand or chemical oxygen demand in the influent wastewater entering the facility. An adequate amount of organic material must be available to support PAOs. Volatile fatty acids, in particular, encourage growth and uptake of phosphorus. Inflow and infiltration (I/I) of clear water into the collection system can dilute the organic matter in the raw wastewater resulting in an insufficient supply of volatile fatty acids. Higher flow rates associated with I/I can reduce the hydraulic detention time in the EBPR process, reducing treatment efficacy. For these reasons, EBPR may not be compatible with every facility.

Trends in Enhanced Biological Phosphorus Removal Since 2015

Biological phosphorus removal has been optimized over several decades of widespread implementation. There are many types of EBPR systems. Some of the more common types are anaerobic/oxic (A/O), anaerobic/anoxic/oxic (A2/O), modified Bardenpho, University of Cape Town (UCT and modified UCT), and various oxidation ditch designs. These well-established BPR enhancements have demonstrated phosphorus removal efficacy to below 0.5 mg/L in some applications. However, recent advances in EBPR do not serve to make it as widely applicable or reliable as chemical treatment. As stated in the EIA Report: "*…the applicability of BPR is often a site specific decision due to wastewater characteristics, and was not considered as part of this evaluation*." Such limitations have not been overcome by new advances in EBPR technology.

Combination Biological – Chemical Phosphorus Removal

Some facilities have achieved a high level of phosphorus removal by employing chemical phosphorus treatment following an EBPR process. By having chemical treatment, it also reduces the fluctuating efficiencies of a EBPR system especially during wet weather events.

New and Emerging Phosphorus Treatment Technology

As low phosphorus limits are more commonly assigned to industries and publicly owned treatment works (POTWs) (both statewide and nationwide), there is an increasing need for phosphorus treatment technology that is economical, simple to operate, and sustainable from an inputs and energy efficiency perspective. Innovations may originate within academia, government agencies, or via private enterprise. Managers and operators at industries and POTWs may also drive innovation. The availability and scalability of any new technology may impact treatment expectations from a variance perspective, especially if a new improvement is found to be applicable and cost effective on a statewide basis.

There are many barriers to widespread adoption of new treatment technology including profitability/marketability, perceived or actual risk for end users, and the regulatory approval process. The diversity of Wisconsin dischargers also makes a widespread novel phosphorus treatment solution less likely. While benefits may be focused on one category of dischargers (which could be reflected in this analysis), within categories there exists a broad range of influent flow and physical/chemical wastewater characteristics, existing treatment processes, and site-specific limitations such as hydraulics or plant footprint. New technology will need to adapt in the face of these barriers if it is to see widespread adoption.

Algae-based Treatment Systems

One class emerging of technologies showing promise for nutrient removal are algae-based systems. Certain species of algae can uptake significant portions of dissolved phosphorus from a waste stream.

These may be employed in suspended or fixed-growth configurations. The Clearas process is a fixed growth system that has been shown to achieve very low effluent phosphorus concentrations and have the ability to treat soluble nonreactive phosphorus species, which pass through most other treatment systems.

Clearas relies on an extensive network of glass tubes to grow algae, and effluent from this system is passed through a tertiary filtration system to separate treated wastewater from algae and other particulates. Therefore, this type of system is typically more expensive than traditional tertiary filtration and will not be cost effective or affordable in all cases.

Absorptive Media Systems

Media coated with a reactive surface such as iron oxide facilitates sorption of dissolved phosphorus from the waste stream. Coated sand filtration (also termed reactive sand filtration) was the assumed required technology used to meet low-level phosphorus effluent limits in the initial economic demonstration. The cost estimates assumed an intensive filtration approach, which uses tanks containing filtration media. Such treatment technology constitutes a major facility upgrade and was deemed not affordable for many industries and POTWs.

The concept of absorptive media has been explored in less-intensive formats than the reactive filtration process described above. Filter beds of naturally occurring or manufactured material can remove phosphorus from effluent; however, are not practical to use at full scale for extended periods of time, due to the need to replace media once its absorptive capacity is exhausted.

Ion Exchange Treatment

Phosphorus may be removed from water via an ion exchange resin, as is currently employed in some point-of-use water conditioning systems. For wastewater applications, limited selectivity toward phosphorus due to the presence of competing anions interferes with treatment efficacy. Some initial work has been performed using selective exchange materials such as iron-based hydroxide compounds which could enhance phosphorus removal. Other barriers to using this treatment technology at full scale include fouling of media surfaces, leaching of media compounds into treated effluent, and excessive use of regeneration chemicals.

Constructed Wetlands

Constructed wetlands may be an appealing treatment option in a rural setting where additional land can be acquired to meet sizing requirements. However, treatment wetlands have not been proven to achieve consistent results below 0.5 mg/L. Wetlands may only uptake a discrete amount of phosphorus based on vegetation growth or sorption to sediments or other media. Removing vegetation from a wetland on a regular basis is commonly feasible, though may remove only a small mass of phosphorus. Larger removal may be achieved by removing and replacing the substrate or media; however, this process is costly and not practical at the scale required for wastewater treatment facilities. Wetlands may also release previously-trapped phosphorus under certain conditions, decreasing their reliability for meeting phosphorus effluent limits.

Side Stream Processes

Some facilities in the state have experience with removing phosphorus from side streams such as return activated sludge or decant. Struvite precipitation has been widely investigated in this stream and is now being applied full scale with companies such as Ostara and Multiform Harvest. Precipitation of struvite recovers most of the PO4-P and a portion of N from the side stream, with the main objective of preventing struvite formation in other process components. Another technology developed for this stream is partial nitritation and Anammox. These side stream processes are not typically installed for the sole purpose of achieving low phosphorus effluent limits.

Observed Performance of Phosphorus Treatment Technology Amongst Wisconsin Dischargers

Information regarding the availability of improved treatment technology can be obtained by conducting a review of Wisconsin facilities, treatment technology presently used, and quality of effluent achieved for each treatment type. Facilities covered under the MDV provide a particularly relevant group to review for the following reasons:

- Facilities covered under the MDV are required to have some form of phosphorus treatment technology installed to meet interim limits.
- Facilities covered under the MDV have not undergone a major upgrade to meet a low-level phosphorus limit.
- Offset requirements of the MDV create a strong impetus to remove as much phosphorus as possible from the waste stream.

The following table was created by evaluating discharge data from the 2021 calendar year and identifying those MDV-covered facilities that achieved the highest effluent quality with regards to phosphorus concentrations. Annual average phosphorus concentrations were calculated, and the maximum monthly average value for the calendar year was identified. Those shown on the list have a monthly average maximum value below 0.5 mg/L, indicating that the technology used could potentially comply with an interim limit set below this level. Recent optimization reports (required under the MDV pursuant to s. 283.16(6)(a) Wis. Stats.) were referenced for each facility to determine what optimization or treatment measures were employed to achieve highly effective phosphorus removal.

Of the 119 facilities that had MDV coverage in 2021, 23 facilities achieved effluent quality that would enable compliance with lower interim effluent limits than 0.5 mg/L. POTWs were strongly represented in the list of top performers. Only three industrial dischargers were amongst the top performers: a cheese manufacturer, aquaculture operation, and paper mill.

Facility Name	Annual Average Phosphorus Concentration (mg/L)	Maximum Monthly Average Phosphorus Concentration (mg/L)	Facility Type	Treatment Process	Treatment / Optimization Notes
The Procter & Gamble Paper Products Co.	0.03	0.04	Mechanical	Polymer Addition	Ensured process inputs had no phosphorus
Belgium Wastewater Treatment Facility	0.11	0.14	Mechanical	Chemical	Switched from ferric chloride to alternative aluminum coagulant (Hyper+Ion®)
Casco Wastewater Treatment Facility	0.09	0.16	Mechanical	Chemical	Began using chemical – the facility also has older tertiary sand filters
Viroqua Wastewater Treatment Facility	0.15	0.19	Mechanical	Biological	Minimized digester decant side stream.
Hustler Wastewater Treatment Facility	0.19	0.19	Lagoon	Chemical	Treated lagoon with granular aluminum sulfate before discharge
Abbotsford Wastewater Treatment Facility	0.17	0.23	Mechanical	Chemical	Ferric chloride feed rate optimized
Ettrick Wastewater Treatment Facility	0.16	0.25	Mechanical	Chemical	Added ferric chloride after RBC, before final clarifier
Bristol Utility District 1	0.20	0.25	Mechanical	Chemical	Two dosage points for ferrous sulfate; possibly achieving biological treatment in basins as well
Fond du Lac WTRRF	0.21	0.26	Mechanical	Biological + Chemical	Optimized biological treatment in various ways
Ridgeway Wastewater Treatment Facility	0.21	0.30	Mechanical	Chemical	Optimized flow-based ferric chloride feed rates
Village of Union Grove	0.19	0.32	Mechanical	Chemical	Switched from ferric chloride to poly aluminum chloride
Platteville Wastewater Treatment Facility	0.23	0.33	Mechanical	Chemical	Installed an orthophosphate analyzer and updated chemical feed controls
Spring Valley Wastewater Treatment Facility	0.20	0.34	Mechanical	Chemical	Dosing aluminum sulfate at proper levels
Eagle Lake Sewer Utility	0.22	0.35	Mechanical	Chemical	Using polyaluminum chloride
Watertown Wastewater Treatment Facility	0.34	0.36	Mechanical	Biological + Chemical	-Ferric chloride added after BPR
Thorp Wastewater Treatment Facility	0.34	0.40	Lagoon	Chemical	Switched from alum to ferric chloride
Cadott Wastewater Treatment Facility	0.19	0.41	Mechanical	Biological + Chemical	Alum can be added at three dosing points
Onion River Wastewater Commission	0.30	0.42	Mechanical	Chemical	Began using orthophosphate analyzer to adjust chemical feed rates
Nekoosa Wastewater Treatment Facility	0.39	0.44	Mechanical	Chemical	Minor adjustments in chemical feed equipment and moved the dosing point to final clarifiers
Fonks Home Center Inc., Harvest View	0.25	0.44	Mechanical	Chemical	Refining feed rates of polyaluminimum chloride
City of Phillips	0.30	0.47	Mechanical	Biological + Chemical	Greater focus on source reduction, I&I, and evaluation of hauled waste
Agropur Inc Luxemburg	0.30	0.47	Mechanical	Biological	Refinements in BPR (manage COD, F:M ratio, and HRT)

Discussion

The general technology review contained in this document provides insight into phosphorus treatment technology (both traditional and new/emerging) that has the potential to be employed throughout the state.

Traditional phosphorus removal has been, and will continue to be, used to meet phosphorus limits (interim and final) across the state. The long-standing nature of these technologies has created efficiencies such as widespread training and promotion (as with EBPR) or supply chains and refinements in the specific products used (as with chemical treatment). These technologies are available to and cost effective for most facilities.

Emerging/new technologies rarely have the benefit of the efficiencies cited above, making their adoption more costly and time consuming from a planning perspective. Many of the technologies reviewed are effective in small-scale tests, but have limitations that prevent scaling up to full pilot tests or longer term uses. Some of the novel technologies reviewed have been designed with the performance goal of achieving a 1.0 mg/L effluent phosphorus concentration to align with regulations that are more commonplace nationwide. To be competitive in Wisconsin (and relevant for this report), a new treatment technology would need to consistently achieve effluent phosphorus below 0.5 mg/L or be implemented at a much lower cost than traditional phosphorus treatment.

The performance review provides insight into the treatment technologies that are actually being implemented at facilities across the state. Nearly all of these facilities are employing some form of traditional phosphorus removal. For chemical phosphorus removal, factors leading to highly effective treatment include use of advanced chemicals and a treatment train that allows for substantial settling following chemical addition. Factors leading to success in biological phosphorus removal include correct influent properties, as well as having staff know-how and the ability to manipulate the treatment process to achieve phosphorus release and uptake.

Categories of Dischargers

The MDV focuses on seven major discharger categories present in Wisconsin for the economic determination. The categories are: POTWs, dairy, food processors, aquaculture, paper, noncontact cooling water and other. The feasibility of meeting phosphorus WQBELs was evaluated for each category as part of the EIA report and final determination. The EIA report did not assume that treatment equipment requirements varied greatly between categories. The main distinction made between categories focused on paper mills due to greater chemical quantity requirements at paper mills, which can substantially increase O&M costs.

As part of the 5-year HAC review for the current MDV, all facilities granted coverage under the MDV were evaluated based on assigned interim limits, actual effluent phosphorus concentrations achieved within the first year of MDV coverage and the most recent year of MDV coverage (2021) (Table 3). This evaluation indicates that affordable and feasible treatment employed at aquaculture, paper manufacturers, and food processors is capable of achieving lower effluent phosphorus concentrations than the suggested 0.5 mg/L – 1.0 mg/L. However, this dataset only encompasses results from one aquaculture facility, two paper manufacturers, and three food processors. These numbers are too

limited to make categorical, widespread determinations. For comparison purposes, the EIA report evaluated 10 aquaculture facilities, 17 paper manufacturers, and 14 food processors.

Table 4: Observed interim limits and average effluent concentrations by category

Facility Type	Average LCA Interim Limit (mg/L)	Average HAC Interim Limit (mg/L)	MDV Year-1 Average Concentration (mg/L)	MDV Most Recent Concentration (mg/L)
Municipal POTWs	3.73	0.87	1.37	0.83
Food Processors[1]	1.54	0.79	0.42	0.40
Paper Manufacturers[1]	N/A	0.40	0.27	0.26
Dairy Industry[1]	1.21	0.80	0.78	0.53
Aquaculture[1]	N/A	0.65	0.34	0.08

1- effluent data includes January – June 2021 (partial year) due to small sample size

Variability within Categories of Dischargers

The highest degree of variability observed for any one category of dischargers covered under the MDV is for POTWs. Large POTWs include Fond du Lac, Watertown, and Platteville. These provide a stark contrast to small lagoon systems such as Rewey, Stitzer Sanitary District, or Hub Rock Sanitary District. When comparing the types of treatment that may be installed to achieve lower phosphors effluent limits, these differences present a challenging scenario for making recommendations that would apply to an entire category. Industrial facilities also vary greatly within categories, as demonstrated between large dairy facilities and small artisan cheese manufacturers.

The EIA Report suggested broad classes of treatment technology that could be employed at all facilities. When evaluating further refinements to these treatment technologies to achieve higher levels of performance, it becomes evident that differences between facilities confound the evaluation. For example, roughly 22 facilities were able to achieve effluent phosphorus concentrations below 0.5 mg/L due to highly effective chemical phosphorus removal. The factors leading to this success could be cited as: a) high hydraulic retention time to achieve settling; b) influent phosphorus with high dissolved reactive constituents; c) stable flows due to a well-maintained collection system. While these factors are present at some facilities, others have low and variable hydraulic retention times due to I&I, or influent high in soluble nonreactive phosphorus that would preclude achieving effluent quality better than 0.5 mg/L. In this case, important site-specific factors preclude further cost-effective optimization.

Site-specific interim limits

As previously mentioned, the department has the ability to set interim limits based on existing performance, which can be lower than the 0.5 – 0.8 mg/L suggested in s. 283.16(6)(a) Wis. Stats. Pursuant to s. 283.16(7) Wis. Stats., a lower interim limit would be required if the interim limits specified under s. 283.16(6)(a) Wis. Stats. are not considered the highest attainable condition for a point source. This determination can be made on a categorical basis or for a specific point source at the time the point source's WPDES permit is reissued, modified, or revoked and reissued.

The flexibility to set a site-specific interim limit consistent with highest attainable condition has been exercised regularly throughout the implementation of the MDV. Of the 119 facilities covered under the MDV in 2021, 22 of them received an interim limit lower than the suggested values at s. 283.16(6)(a) Wis. Stats based on site-specific performance and wastewater characteristics. The use of lower, site-specific interim limits is expected to increase during second permit terms of MDV coverage. After completing one permit term of optimization and offset requirements, many facilities will have demonstrated greater levels of phosphorus removal than was shown prior to the first MDV permit term. In these cases, DNR proposes interim limits consistent with a facility's highest attainable condition, and may be set at 0.5, 0.4, or 0.3 mg/L as a monthly average, for example.

Determination

As required under s. 283.16(3)(b) Wis. Stats., the Department of Natural Resources provides the following determinations to the Department of Administration for the economic reevaluation of the multi-discharger variance.

1. A determination of whether technology is reasonably available for point sources to comply with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a).

There exists technology that is reasonably available which would enable compliance with effluent limits lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. Examples of this technology include enhanced biological phosphorus removal, optimized chemical phosphorus removal, or a combination of these two treatment technologies.

2. A determination of whether technology is reasonably available for any category of point sources to comply with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a).

There is no specific category of point sources for which technology is reasonably available to enable compliance with effluent limits lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. Variability between point sources is too great to make any categorical determination. However, lower interim limits can be applied on a site-specific basis, which is the most appropriate way to ensure HAC for all MDV-authorized discharges given the variability between dischargers.

3. A determination of whether any technology that is reasonably available for compliance with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a) is cost effective.

Technology that is reasonably available to meet lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. is not commonly cost effective. Under 20% of facilities covered under the MDV have been able to consistently achieve effluent phosphorus concentrations lower than 0.5 mg/L. Those that have achieved a high level of performance have been able to do so because site-specific factors made treatment to this level cost effective.

4. The results of the most recent review under sub. (3m) (a).

The Department of Natural Resources completed all aspects of the 5-year Highest Attainable Condition Review of the MDV on February 4, 2022. It is available for download at the following link:

https://dnr.wisconsin.gov/topic/Wastewater/phosphorus/implementation.html