# Guidance for Implementing Wisconsin's Multi-Discharger Variance for Phosphorus

***Wisconsin Department of Natural Resources***

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# Summary

Section 283.16, Wis. Stat. became effective in 2013 through the enactment of Act 378- https://docs.legis.wisconsin.gov/statutes/statutes/283/III/16. As a result of this legislation, the Department of Administration (DOA) and Department of Natural Resources (DNR) investigated the impacts of costs associated with wastewater treatment to remove phosphorus on Wisconsin's economy and determined that these costs cause a substantial and widespread economic impact to the state. This determination was made with the assistance of Sycamore Advisors, ARCADIS, and University of Massachusetts Donahue Institute. DOA's and DNR's final economic determination and relevant supporting information including the consultant's analyses are available at: http://dnr.wi.gov/topic/surfacewater/phosphorus/statewidevariance.html.

The economic impact analysis was a statewide analysis, and clearly demonstrates that there will be substantial and widespread impacts due to compliance with the phosphorus standards. The purpose of this document is to provide guidance to point source dischargers, County Land and Water Conservation Departments (LWCDs), DNR staff, and other entities about how to successfully implement the phosphorus MDV option. For ease of navigation, this document is broken up into five main chapters, one for each target audience:

- Chapter 1: Background
- Chapter 2: WPDES Permit Holders
- Chapter 3: County Land and Water Conservation Departments
- Chapter 4: Other Watershed Projects
- Chapter 5: DNR Staff

This document is solely intended as guidance to help clarify the implementation procedures established in s. 283.16, Wis. Stat. As such, this document may be updated, as necessary and appropriate, to reflect new information or lessons learned.

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## Abbreviations and Acronyms

This list contains the most common abbreviations used in this document.

| | |
|---|---|
| **AM** | Adaptive Management |
| **CAFO** | Concentrated Animal Feeding Operation |
| **CPI** | Consumer price index |
| **DMR** | Discharge monitoring report |
| **DNR** | Wisconsin Department of Natural Resources |
| **DOA** | Wisconsin Department of Administration |
| **EPA** | United States Environmental Protection Agency |
| **HUC** | Hydrologic unit code; Hydrologic Unit Code is a standardized watershed classification system developed by USGS used to identify individual watersheds. |
| **LWCD** | Land and Water Conservation Department |
| **MDV** | Multi-discharger variance |
| **MGD** | Million gallons per day |
| **mg/L** | Milligrams per liter. Common metric measurement used in measuring amount of phosphorus in liquid, 1000 mg/L equals 1 gram/L or 1000 parts per million (ppm) |
| **MHI** | Median Household Income |
| **MS4** | Municipal separate storm sewer system |
| **NOD** | Notice of Discharge |
| **NRCS** | Natural Resources Conservation Service |
| **$P_{99}$** | $99^{th}$ percentile of the dataset; $P_{99}$= Mean + (2.327 X standard deviation) |
| **POTW** | Publicly Owned Treatment Works |
| **PS** | Point source |
| **Qe** | Effluent flow |
| **SWAMP** | System for Wastewater Applications, Monitoring and Permits |
| **TBL** | Technology-based limit |
| **TMDL** | Total Maximum Daily Load |
| **TRM** | Targeted Runoff Management |
| **TP** | Total Phosphorus |
| **µg/L** | Microgram per liter. Common metric measurement used in measuring amount of phosphorus in liquid, 1000µg/L equals 1 mg/L |
| **WPDES** | Wisconsin Pollutant Discharge Elimination System |
| **WQBEL** | Water quality-based effluent limit |
| **WQC** | Water quality criteria |
| **WQT** | Water quality trading |
| **WWTF** | Wastewater treatment facility |

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# Chapter 1- Phosphorus MDV Background

Chapter 1 provides the reader with a basic overview of the history and requirements for the MDV, as described in s. 283.16, Wis. Stat. The specific regulation is available for download at https://docs.legis.wisconsin.gov/statutes/statutes/283/III/16.

Additional resources are also available online, including the final economic impact analysis (EIA) determination, proposed variance package for EPA to review and approve, and a MDV factsheet, among other things: http://dnr.wi.gov/topic/surfacewater/phosphorus/statewidevariance.html.

Staff, permittees, consultants, and others interested in the implementation of phosphorus water quality standards in Wisconsin and the MDV option are encouraged to submit questions or comments to the following e-mail box:

DNRPhosphorus@wisconsin.gov

Questions may also be sent directly to your local adaptive management/water quality trading (AM/WQT) coordinator.

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# Chapter 1

## Section 1.01: Background of the Phosphorus Regulations and MDV

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*Last Revised: July 23, 2015*

Wisconsin has a long history of protecting Wisconsin's surface waters from excess phosphorus pollution. Formal regulations began in 1992 for wastewater point source discharges requiring many WPDES permit holders to comply with technology-based effluent limits (TBLs), typically set equal to 1.0 mg/L (NR 217 Subchapter II, Wis. Code). Additionally, Wisconsin has implemented priority watershed projects throughout the state to help reduce nonpoint source pollution to meet water quality goals. A full description about these and other historic phosphorus efforts is available at http://dnr.wi.gov/news/mediakits/mk_phosphorus.asp.

To further protect human health and welfare from excess phosphorus pollution, revisions to Wisconsin's Phosphorus Water Quality Standards for surface waters were adopted on December 1, 2010. These revisions:

1. Established the maximum allowable phosphorus concentration in Wisconsin's waters, also known as phosphorus criteria (see s. NR 102.06, Wis. Adm. Code and Table 1);
2. Created phosphorus standard implementation procedures for Wisconsin Pollutant Discharge Elimination System (WPDES) permits (see ch. NR 217, Subchapter III, Wis. Adm. Code); and,
3. Strengthened agricultural performance standards to help curb nonpoint source phosphorus pollution (see ch. NR 151, Wis. Adm. Code)[1].

Since December 2010, DNR has been evaluating the need for phosphorus Water Quality Based Effluent Limits (WQBELs) in WPDES permits to comply with these standards. Wisconsin's Phosphorus Implementation Guidance provides a detailed discussion of the phosphorus standards and implementation procedures in WPDES permits, and is available for download at http://dnr.wi.gov/topic/surfacewater/phosphorus.html.

Many point sources face restrictive phosphorus limitations as a result of these standards. Almost 80% of wastewater permittees face more restrictive total phosphorus (TP) limits than previously applicable TP limits (mainly, the TBL of 1.0 mg/L). Of these, 60% of these phosphorus WQBELs are set equal to the phosphorus criteria[2], shown in Table 1.

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

[2] Data gathered from Final EIA Determination.

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Table 1. Applicable statewide P criteria pursuant to s. NR 102.06, Wis. Adm. Code.

| Waterbody Type | Applicable Criteria (µg/L) |
|---|---|
| **Rivers** | 100 |
| **Streams** | 75 |
| **Reservoirs:** | |
| • **Stratified** | 30 |
| • **Not stratified** | 40 |
| **Lakes:** | |
| • **Stratified, two-story fishery** | 15 |
| • **Stratified, seepage** | 20 |
| • **Stratified, drainage** | 30 |
| • **Non-stratified, drainage** | 40 |
| • **Non-stratified, seepage** | 40 |
| **Great Lakes:** | |
| • **Lake Michigan** | 7 |
| • **Lake Superior** | 5 |
| **Impoundments** | Varies by inflowing waterbody type |
| **Ephemeral streams, lakes and reservoirs of less than 5 acres in surface area, wetlands (including bogs), and limited aquatic life waters**[3] | None |

Compliance with these restrictive WQBELs frequently requires substantial capital investments, yet only targets 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. Figure 1 highlights this trend for HUC 8 watersheds within the Mississippi River Basin.

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

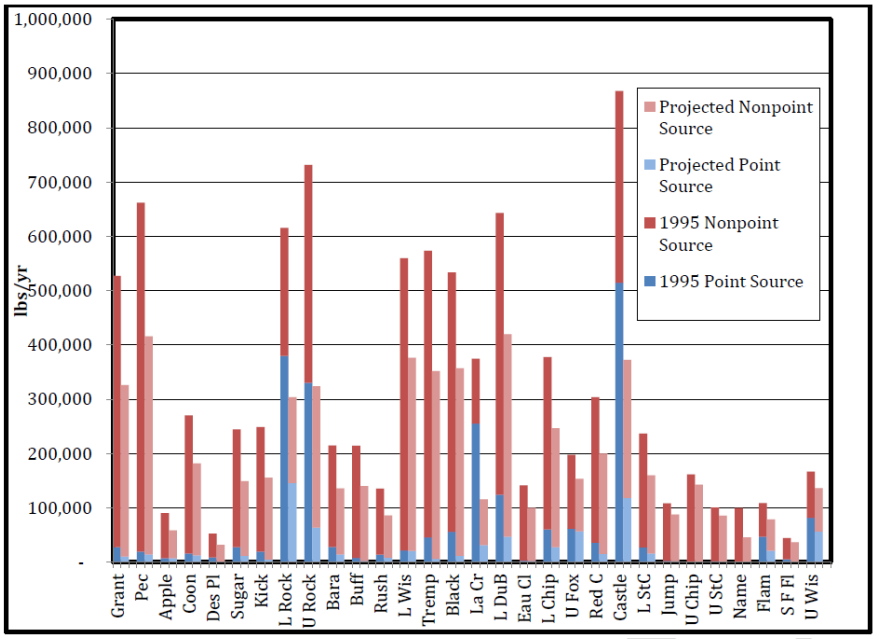


**Figure 1. Estimated 1995 Baseline and Projected Future Phosphorus Loadings for Mississippi River Basin by HUC 8. Source: Wisconsin's Nutrient Reduction Strategy- http://dnr.wi.gov/topic/surfacewater/nutrientstrategy.html.**

This trend has been a well-known challenge for some time. To help address this, DNR in collaboration with its 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 discharges could invest a smaller amount of money towards nonpoint source pollution control projects, and potentially have a greater water quality benefit[4]. These programs have seen some successes and continue to be explored as point sources work towards phosphorus compliance: http://dnr.wi.gov/topic/SurfaceWater/AmWqtMap.html. Many facilities have found, however, that barriers exist that precludes participation in these programs; insufficient political support, unwilling partnerships, eligibility constraints, economic limitations, and compliance risks are some reasons cited that make trading and adaptive management infeasible for many point sources.

The concept of a MDV was enacted in section 283.16, Wis. Stat. to address these challenges and potentially provide point sources with another avenue for minimizing the economic hardship associated with restrictive phosphorus limits. The MDV approach is different from WQT or AM. Water quality trading and adaptive management are compliance options that focus on achieving compliance with phosphorus water quality standards or limits. The MDV provides a time extension for point sources to comply with their final phosphorus limits while they contribute funds towards nonpoint pollution control projects or implement specific projects in the watershed to reduce phosphorus.

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

Note: s. 283.16, Wis. Stat., refers to a “statewide phosphorus variance”, meaning a variance that would apply to multiple point source dischargers around the state. EPA’s terminology for this type of variance is a “multi-discharger variance” or MDV. The term “statewide phosphorus variance” may also be misinterpreted to mean that all point sources in the state would qualify for this variance, which is not the case. To avoid confusion in terminology, DNR refers to the s. 283.16 variance as a multi-discharger variance or MDV.

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# Chapter 1

## Section 1.02: What is a MDV?

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*Last Revised: August 3, 2015*

According to 40 CFR 131.14(a) and EPA's guidance[5] for MDVs, a 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." When a variance is approved, point source dischargers can gain temporary relief from applicable permit requirements for the pollutant(s) in question. However, during this period, the permittee is responsible for making improvements that work towards compliance with these standards and limitations via a "pollution minimization plan".

DNR has extensive experience working with EPA to grant individual variances in accordance with s. 283.15, Wis. Stat. Compared to this approach, the MDV is a streamlined approach for requesting and granting variances as it applies to a number of WPDES permit holders. This allows the application and review process for granting coverage under the MDV to be simplified. Specifically, there is a formal EPA review and approval step for all individual variance requests before they can become effective; however, for MDVs EPA approves a variance determination covering multiple point source categories, so EPA's review of individual requests is discretionary once DNR makes a site-specific determination on MDV applications. Additionally, the pollution minimization efforts for the MDV are made clear upfront and combined across a large area, rather than being site-specific.

In the case of the phosphorus MDV, interim limits and watershed projects are used to help reduce and offset point source phosphorus loadings during the variance term. As stated in Section 1.01, p. 6, nonpoint source phosphorus contributions tend to be the predominant source of phosphorus to many surface waters in Wisconsin. By aggregating available funds from a number of WPDES permit holders, and investing those funds strategically in nonpoint source pollution control projects, significant water quality gains may be realized. See Chapters 3 and 4 for more information about watershed projects (pp. 22 and 41, respectively).

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[5] United States Environmental Protection Agency. "Discharger-Specific Variances on a Broader Scale". EPA-820-F-13-012. March 2013.

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## Section 1.03: General MDV Requirements

*Author: Amanda Minks*

*Last Revised: July 23, 2015*

Implementation procedures for MDV are specified in s. 283.16, Wis. Stat. and are briefly described in the subsections below. Additional details for each implementation procedure are provided in the subsequent chapters of this guidance.

- Facility-specific requirements (Chapter 2, p. 14)
- Watershed project requirements (Chapter 3 and 4, pp. 22 and 41)
- Reconsidering the need for the MDV (Chapter 5, p. 45)

**Facility-Specific Requirements of the MDV**

Not all point sources will qualify for the MDV. WPDES permit holders will be responsible for submitting sufficient information and providing certification statements to the DNR to ensure that they meet the eligibility requirements of the MDV. A municipal and industrial MDV application has been developed to streamline these requests (Forms XXXX-XXX and XXXX-XXX). As with all variances, only existing sources may apply for the MDV (s. 283.16(4)(a)(1), Wis. Stat.). Additionally, the point source must certify that a major facility upgrade would be needed to comply with their applicable phosphorus WQBELs thereby creating a financial burden for the point source discharger and community (283.16(4)(a)(1), Wis. Stat.). The point source must also agree to comply with interim phosphorus effluent limits and an implementation requirement (s. 283.16(4)(a)(3), Wis. Stat.). Interim limitations are numeric limitations expressed as a monthly average designed to make incremental progress towards compliance with the final WQBEL and to prohibit backsliding during the permit term. A compliance schedule may be included in the WPDES permit if time is needed to comply with the interim limitation. However, this compliance schedule is not to exceed the permit term (5 years). The default interim limitations are provided in Table 2; however, categorical interim limitations may be calculated and included on a case-by-case basis.

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Table 2. Default interim limitations by permit term specified in s. 283.16, Wis. Stat.

| | |
|---|---|
| Permit Term 1 | •0.8 mg/L |
| Permit Term 2 | •0.6 mg/L |
| Permit Term 3 | •0.5 mg/L |
| Permit Term 4 | •MDV concludes<br>•TP WQBEL included in WPDES permit |

**Watershed Project Requirements**

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

- Make payments to counties in the same HUC 8 basin[6] of $50 per pound times the amount equal to the difference between what they discharge and a target value. Payments are capped for any one point source at $640,000 per year.

  *Note: the $50/lb multiplier is adjusted annually to account for inflation pursuant to s. 283.16(8)(a)(2), Wis. Stat.*
- Enter into an agreement with DNR to implement a plan or project designed to result in an annual reduction of phosphorus from other sources in the HUC 8 basin in an amount equal to the difference between what they discharge and a target value.
- Enter into an agreement with a third party and approved by DNR to implement a plan or project designed to result in an annual reduction of phosphorus from other sources in the HUC 8 basin in an amount equal to the difference between what they discharge and a target value.

For each of the three MDV watershed options, the target value will be either the wasteload allocation in an EPA-approved TMDL area or a 0.2 mg/L target value, depending on the type of limitation from which the point source discharger is seeking the variance. All watershed options require annual reports be submitted to DNR, and other state agencies to verify that the watershed plan was implemented correctly, and the minimum MDV requirements were met. The permittee implementing the watershed plan is responsible for submitting these annual reports.

See Chapter 3 and Chapter 4 for additional information about these watershed project requirements.

[6] Guidance is available for identifying HUC 8 watershed boundaries in Appendix D of the Water Quality Trading How-To Manual using the DNR's Surface Water Data Viewer.

**Reconsidering the Need for the MDV**

As part of the triennial standards review, DNR is responsible for evaluating any new information to determine if a review of the final economic impact determination is necessary and appropriate. The triennial standards review is a comprehensive evaluation of Wisconsin's water quality standards or related guidance for development or revision during the upcoming three years. If it is appropriate to re-evaluate the final EIA, DOA and DNR must review the determination in light of a number of factors including the availability and cost-effectiveness of new technology. Pursuant to s. 283.16(3)(a), Wis. Stat., a review of the determination must be made by 2024 and a report issued as to whether the determination remains accurate. See section 5.04 (p. 58) for more information about this process.

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# Chapter 2- Instructions for Point Source Dischargers

Several documents should be completed by the point source discharger to demonstrate the need for the MDV and to successfully implement the MDV requirements. These documents include:

- Form XXXX-XXX: Municipal MDV Application (Section 2.02)
- Form XXXX-XXX: Industrial MDV Application (Section 2.02)
- Form XXXX-XXX: MDV Payment Verification Form (Section 2.03)

The purpose of this chapter is to provide instructions for successfully completing these forms and to provide point sources with guidance about comparing the MDV option to other permitting compliance options (Section 2.01).

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# Chapter 2

## Section 2.01: Comparing the MDV to Other Permitting Options

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*Last Revised: August 12, 2015*

The MDV is an option for point source dischargers to receive temporary relief from complying with restrictive phosphorus limits. It is not a permanent compliance solution. Permanent compliance options include optimization of existing on-site treatment practices, upgrading existing on-site treatment to comply with phosphorus WQBELs, Wisconsin's adaptive management option, and water quality trading. Comparing the MDV to these compliance options is similar to deciding whether to rent an apartment or buy a house; a point source discharge needs to evaluate the cost of the MDV to the cost of the other compliance options to ensure that the MDV is a cost-savings and economically viable alternative. This is also an important exercise to verify that a major facility upgrade is needed to comply with the phosphorus limits, which is an important eligibility factor for the MDV.

To make this comparison, point sources should investigate the types of treatment that may need to be added to their facility, and if these technologies can consistently provide compliance with applicable phosphorus WQBELs. It is noted that in some cases treatment technology may not be readily available to offer consistent compliance with the phosphorus WQBELs. This may be especially true for facilities that have high concentrations of soluble non-reactive phosphorus in their effluent stream and ultra-low phosphorus limits less than 0.075 mg/L. This information should be readily available for facilities that have already gone through facility planning. If a facility has not gone through facility planning, they may wish to complete this planning effort or perform a preliminary analysis to estimate project compliance costs. Facilities may also consider the projected compliance costs developed by ARCADIS using a cost curve analysis (see Section 2 of the "Economic Impact Analysis" http://dnr.wi.gov/topic/surfaceWater/documents/phosphorus/PhosphorusEEIAreport.pdf).

Next, the point source should determine if they qualify for the MDV. Some questions to consider:

1. Is the facility located in a potentially eligible MDV area? (see Appendix H, p. 81, for details)
2. Is a major facility upgraded needed to comply with the final phosphorus limits?
3. Does the county the facility is located in have a secondary score of at least two (See Appendix A-F for details)?
4. *Municipal WWTFs only*- Does the compliance costs push sewerage rates above 1% median household income?
5. *Industries only*- Are the compliance costs for the facility within the top 75% of dischargers incurring costs within the applicable industrial category, or is the point source located in a county that is within the top 75% of counties incurring costs within the applicable industrial category (See Appendix G, p. 78)?

If all of the applicable questions above are answered "yes", the facility may be eligible for the MDV and wish to evaluate the potential costs of the MDV. Determining costs for the MDV will be site-specific. Costs will be incurred from complying with more restrictive interim phosphorus limits, and from

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implementing a watershed project. To come up with a cursory estimate of costs for the MDV, it may be beneficial to calculate the costs under the "county payment option", recognizing that these will not be the full costs of the MDV but a reasonable basis to compare against other compliance options. To calculate the annual payments under the county payment option:

1. Calculate the total annual load (Total Monthly Flow × Monthly Avg TP concentration in effluent × 8.34).
2. Subtract this value from the TMDL-derived limit(s) to calculated the potential payment for TMDL-derived limits.
3. If the variance is requested for a phosphorus limit calculated using s. 217.13, Wis. Code, subtract this value from the target mass load: Total Annual Flow x 0.2 mg/L x 8.34).
4. Annual payments under the MDV can be estimated by multiplying the result by $50/lb[7].

Example: A facility with a total monthly flow of 0.5 MGD has a 30-day P99 phosphorus concentration of 0.8mg/L. This facility is subject to a restrictive phosphorus limit calculated under s. 217.13, Wis. Code, and set equal to 0.075 mg/L. This means that the annual payments for this facility would be $45,600 per year.

(0.8mg/L-0.2mg/L)*0.5 MGD*8.34= 2.5 lbs/day*365= 913 lbs/yr*$50/lb=$45,600/year

This means that this facility would spend $456,000 over a ten-year period to comply with the watershed requirements for the MDV. Again, these costs do not include costs to comply with interim phosphorus limits, and other MDV expenses.

Adaptive management and water quality trading are other compliance options that should also be considered when evaluated the feasibility of the MDV. If the facility has not already evaluated adaptive management/water quality trading, the first step is to determine the facility's eligibility for these programs. Typically, point sources whose receiving waters are dominated by point source phosphorus loads are not good candidates for these programs. DNR has already calculate the point to nonpoint source phosphorus loadings for many permitted municipal and industrial facilities using a GIS-based model called "Pollutant load Ratio EStimation TOol (PRESTO)". To look up the point to nonpoint source ratio at a facility, or to find more information about the PRESTO model, visit http://dnr.wi.gov/topic/surfacewater/presto.html. To be eligible for adaptive management and water quality trading, a permittee should be in a nonpoint source dominated watershed, in a watershed with an approved TMDL, or in a watershed where nonpoint sources must be controlled to meet water quality goals. Next, the facility may wish to estimate the phosphorus offsets that would need to be generated to comply with these options. Guidance for making these calculations is provided in Section 5 of the Adaptive Management Technical Handbook and Section 4 of the Trading How-To Manual (http://dnr.wi.gov/, keywords "adaptive management" and "water quality trading"). There are also several other factors when determining if water quality trading and adaptive management are viable compliance options. These can include political viability of these options, ease of finding offsets/reductions, availability of willing partners and stakeholders, existing staff resources, risk and

[7] The $50/lb multiplier is adjusted annually to account for inflation. See Section 5.02 for details.

uncertainty associated with trading/adaptive management reductions, and other factors. If the permittee believes that these options are viable, costs should be estimated. Trading and adaptive management costs will be site-specific and depend on the practices to be installed, the amount of administrative overhead, practice operation and maintenance costs, etc. County Land and Water Conservation Departments may have valuable insights into approximating costs for practices at the local level. Additionally, cost estimates may be available through a variety of publications such as the Iowa Nutrient Reduction Strategy, which developed general cost benchmarks for various practices- http://dnr.wi.gov/topic/surfacewater/documents/IowaReport.pdf.

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# Chapter 2

## Section 2.02: Instructions for Completing MDV Applications

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*Last Revised: October 16, 2015*

Once the MDV has been selected, a facility can apply for the MDV by submitting the corresponding application form (municipal or industrial) and supporting documentation. Both applications are similar; however, there are specifics that uniquely pertain to municipal or industrial facilities. Applicable sections are described in the following section. Public comments will be solicited on MDV applications as part of the permit reissuance process prior to the MDV taking effect in a WPDES permit.

**Variance Request Deadlines**

According to s. 283.16(4)(b), Wis. Stat., a facility may apply for the MDV at any of the following times:

1. As part of the application for reissuance of the permit
2. Within 60 days after the Department reissues a permit containing a WQBEL for phosphorus
3. During the permit term if the permit was reissued containing a WQBEL for phosphorus prior to April 25, 2014. Note: Permit modification notification also required in this case.

Municipal facilities shall apply for the MDV by filling out form XXXX-XXX, and industrial facilities shall fill out form XXXX-XXX. Completed forms should be submitted to DNR regional AM/WQT coordinators, or to the Bureau of Water Quality PO Box 7921 Madison WI 53707.

Although this guidance document is only focusing on the first five years of implementing the MDV, it should be noted that permittees that apply for continued coverage in subsequent permits will need to apply for the MDV at the term of permit reissuance in accordance with s. 283.16(4)(am)(1), Wis. Stat.

**Variance Requirements**

As part of the application, a facility needs to clarify which WQBEL the variance is being requested for, since the MDV can apply to a concentration based limit pursuant to s. NR 217.13, Wis. Adm. Code, or to TMDL mass limits pursuant to s. NR 217.16, Wis. Adm. Code. If neither limit can be achieved, the more stringent of the two limits should be selected. For TMDL mass limits, a MDV can be requested only for those months when limits cannot be met through optimization. For example, if a facility is unable to meet limits in June through August, only those months may be selected for the MDV instead of the entire year.

A facility must also certify that pursuant to s. 283.16(2)(a), Wis. Stat., a major facility upgrade is needed to achieve compliance with the selected phosphorus WQBEL(s). A “major facility upgrade” is defined as installing new equipment and a new process such as filtration or equivalent technology. This is consistent with the assumptions made within the Economic Impact Analysis.

To assist in the determination of interim limits, a facility should submit current effluent quality based on the last three years’ worth of data. A 30-day P99 calculation is considered the most representative

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value that a facility can consistently meet and therefore a facility should calculate a P99 value of their effluent data. For the first permit term, the default interim limit is 0.8 mg/L; however, in certain circumstances, a permittee may have already achieved compliance with a more restrictive limit in their current permit. In that case, justification for the increase in accordance with antidegradation requirements in ch. NR 207, Wis. Adm. Code, must be included as part of the application.

For those plants with current phosphorus treatment (Bio-P or Chemical Addition) that have optimized their system OR have current narrative limits in their permits, alternative interim limits may apply. For these categories of dischargers, more restrictive effluent limitations may apply pursuant to s. 283.16(7), Wis. Stat. It is important to consider effluent variability when considering the appropriateness of more restrictive effluent limitations. Setting effluent limitations equal to the current effluent quality is inappropriate in many cases given the variability of effluent phosphorus concentration over time, and the fact that treatment facilities need to operate below their effluent limitations to ensure that they maintain compliance with these limits. Therefore, it is recommended that the statistical approach specified on pages 100-106 of EPA's "Technical Support Document for Water Quality-based Toxic Controls" (EPA/505/2-90-001, March 1991) be considered when establishing these limitations.

This approach can be used to determine an appropriate effluent limitation given effluent variability over time where the average monthly limits is equal to the long-term average times a multiplication factor:

$$AML = LTA * Multiplication\ Factor\ (Table\ 3)$$

Where:

AML= average monthly limit

LTA= long-term average= $Effluent\ TP\ concentration * Wasteload\ allocation\ multiplier\ (Table\ 4)$

CV= Coefficient of variation

n= Number of samples

**Table 3. Multiplication factor.**

| CV | Wasteload allocation multiplier | | | |
|---|---|---|---|---|
| | n=1 | n=2 | n=4 | n=30 |
| 0.1 | 1.25 | 1.18 | 1.12 | 1.04 |
| 0.2 | 1.55 | 1.37 | 1.25 | 1.09 |
| 0.3 | 1.90 | 1.59 | 1.40 | 1.13 |
| 0.4 | 2.27 | 1.83 | 1.55 | 1.18 |
| 0.5 | 2.68 | 2.09 | 1.72 | 1.23 |
| 0.6 | 3.11 | 2.37 | 1.90 | 1.28 |
| 0.7 | 3.56 | 2.66 | 2.08 | 1.33 |
| 0.8 | 4.01 | 2.96 | 2.27 | 1.39 |
| 0.9 | 4.6 | 3.28 | 2.48 | 1.44 |
| 1.0 | 4.90 | 3.59 | 2.68 | 1.50 |

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Table 4. Wasteload allocation multipliers.

| CV | Wasteload allocation multiplier |
|---|---|
| 0.1 | 0.891 |
| 0.2 | 0.797 |
| 0.3 | 0.715 |
| 0.4 | 0.643 |
| 0.5 | 0.581 |
| 0.6 | 0.527 |
| 0.7 | 0.481 |
| 0.8 | 0.440 |
| 0.9 | 0.404 |
| 1.0 | 0.373 |

For those plants with current phosphorus treatment (Bio-P or Chemical Addition) that have optimized their system OR have current narrative limits in their permits, alternative phosphorus limitations may apply using the approach specified above. As a general rule of thumb, this approach will result in the following interim limitations for point sources in this category based on their 30-day P99 after optimization:

- If Effluent TP > 0.6 mg/L than interim limit = 0.8 mg/L
- If 0.6 mg/L ≥ Effluent TP > 0.5 mg/L than interim limit = 0.6 mg/L
- If 0.5 mg/L ≥ Effluent TP > 0.3 mg/L than interim limit = 0.5 mg/L

Conversely, s. 283.16(6)(am), Wis. Stat. allows for an increased interim limit up to 1.0 mg/L if the default interim limits established cannot be met without a major facility upgrade. If this is the case, additional information which shows this to be true should be submitted with the application that documents that the major facility upgrade is necessary to comply with the interim limit.

**Facility Information**

General facility information is required as part of the application for both municipal and industrial facilities. This information includes current treatment processes and operations (both liquid and solids treatment trains), water supply source, and optimization actions. A flow diagram should be submitted along with the application with all chemical feed points and internal waste streams identified. A monthly average influent phosphorus result should be submitted in addition to the most recent three years of phosphorus biosolids testing.

A summary of optimization actions, for those facilities that have performed optimization, should be attached. Facilities that have completed year 1 or year 2 phosphorus compliance schedule reports may submit the more recent of the two reports. If any additional planning or phosphorus evaluation studies have occurred recently or are otherwise applicable to the existing facility, these reports should be referenced or attached.

Municipal WWTFs need to identify all municipalities served and any non-domestic customers. For each municipality served, include all counties in which it is located, population served, number of households and the median household income. This information can be found at the US Census Bureau website. Non-domestic contributors should be described if they are considered a significant pollutant contributor or significantly affect the capabilities of the treatment plant.

**Projected Compliance Costs**

It is anticipated that facilities who are submitting a MDV application during their phosphorus compliance schedule, or with a permit application for their second permit with phosphorus WQBELs, will have site-specific costs that were developed as part of the Year 3 Preliminary Compliance Alternatives Plan. If this is the case, the facility should submit the cost estimates of that plan; otherwise, a facility needs to certify that the assumptions of the Economic Impact Analysis are applicable to the facility. These assumptions were:

- Tertiary filtration is the preferred technology
- Design and actual flows as stated in the Analysis are correct
- Monthly average effluent TP >0.6 mg/L

For municipal facilities, the projected household user charge, expressed as a percent of median household income (MHI), along with supporting information needs to be included. Supporting documentation should describe current user charges and the estimated increase due to phosphorus compliance. If the Year 3 phosphorus report has described the costs, then this report should be submitted. For industrial facilities, clarification on what impacts phosphorus compliance will have on the facility should be identified. Both municipal and industrial facilities need to provide the secondary indicator score for the county. These scores can be found in Appendices A-F, depending on sector.

The final piece of the MDV application is the selection of a watershed project. As mentioned in Section 1.03, one requirement of the MDV is to participate in a watershed project. Chapters 3 and 4 describe the projects in more detail. As part of the application, a facility shall select a watershed project and include the corresponding form. If the permittee chooses to implement a watershed project directly, or in collaboration with a third party, the watershed plan must also be submitted with the application form. See Chapter 4 for details.

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# Chapter 2
## Section 2.03: Overall Permit Conditions

*Author: Amanda Minks*
*Last Revised: August 13, 2015*

A WPDES permit must be reissued, modified, or revoked/reissued prior to MDV requirements taking effect. WPDES permits with MDV requirements much include the following in accordance with s. 283.16, Wis. Stat., and the final determination:

- Interim MDV limitations;
- Phosphorus monitoring and reporting requirements;
- Optimization; and
- Watershed project provisions.

These requirements are described in more detail below.

Interim Limitations:

The Department will use the information provided on the MDV application, discharge monitoring report (DMR) data, and other sources of information to determine the appropriate interim limit for the specific MDV application. In many cases, the interim limitations will be set equal to the values provided in Table 5. However, more restrictive or less stringent interim limitations may be included in a WPDES permit on a case-by-case basis. Section 2.02 describes the protocols DNR staff will use when making these determinations.

**Table 5. Typical interim MDV limitations pursuant to s. 283.16(6), Wis. Stat.**

| | |
|---|---|
| Permit Term 1 | • 0.8 mg/L , expressed as a monthly average |
| Permit Term 2 | • 0.6 mg/L , expressed as a monthly average |
| Permit Term 3 | • 0.5 mg/L , expressed as a monthly average |
| Permit Term 4 | • MDV concludes<br>• TP WQBEL included in WPDES permit |

If a WPDES permit holder is not currently in compliance with the proposed interim limitation, a compliance schedule may be granted to provide time for the point source to achieve compliance. The length of the compliance schedule will vary depending on the current effluent quality compared to the proposed interim limitation, and the options available to achieve compliance with these limitations. The

compliance schedule will lead to compliance with the interim limitations as soon as possible, as determined by the permit drafter or other applicable DNR staff, but in no case may the compliance schedule for an interim limitation exceed 5 years.

Phosphorus Monitoring and Reporting:

In many cases, the frequency of phosphorus effluent monitoring will not change from existing requirements in the WPDES permit. This is especially true for MDV applicants that are requesting coverage under the MDV as part of the second permit reissuance with phosphorus WQBELs.

Note: SWAMP already calculates annual phosphorus loads for the purposes of calculating NR 101 fees, so additional reporting requirements are not necessary beyond those required to demonstrate compliance with the selected watershed project option. This calculation is as follows: ∑ [(Total Monthly Flow × Avg TP Concentration × 8.34)*Number of days per month]. Site-specific adjustments are sometimes needed to the equation above for point sources that only discharge a few days out of the month.

Optimization

Pursuant to s. 283.16(6)(a)(intro), Wis. Stat., the WPDES permit will include a requirement that the permittee optimize the performance of the point source in controlling phosphorus discharges. If a facility has already optimized for phosphorus, the WPDES permit will require that they continue to implement their optimization plan. It is noted that all WPDES permits that contain a phosphorus compliance schedule already require the permittee to develop and implement a phosphorus discharge optimization plan. Optimization guidelines provided in Section 4.03 of Wisconsin's Guidance for Implementing Phosphorus Water Quality Standards for Point Source Discharges will continue to be used to review optimization plan submittals for phosphorus.

Watershed Project Provisions:

Point sources are required to implement a watershed project to help minimize phosphorus pollution to the receiving water during the term of the MDV. Point sources must notify the Department of their preferred watershed project option with the MDV application (see Sections 2.01, p. 15, and 2.02, p. 18, for details). If the point source chooses to enter into a binding written agreement with the Department, or work with a partner to develop a watershed plan, the plan must also be submitted with the MDV application for the Department's review and approval. It is also encouraged that the watershed plan checklist (Form XXXX-XXX) be completed to ensure watershed plans are complete and approvable. In the "county payment option", County Land and Water Conservation Departments are responsible to develop the watershed plans and implement projects. Therefore, the permit conditions will be different between these options, as discussed in subsequent subsections.

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*County Payment Option:*

In order to comply with the county payment option, the point source discharger will be responsible for providing financial resources to participating counties no later than March 1st of every year. DNR will strive to notify point sources of necessary payments at least two week before payments are due to the county. While the DNR will maintain a website that will provide a list of participating counties for that calendar year, the WDPES permit holder must ensure that adequate financial resources went to the correct county no later than March 1st. Therefore, the schedule section of the WPDES permit will require that financial resources be sent to participating counties no later than March 1st of every year. Additionally, the WPDES permit will require that form XXXX-XXX be completed and submitted to DNR no later than March 1st of that year. The purpose of this form is to verify that correct payments were made.

*The method for calculating payments for non-TMDL derived limitations is as follows:*

(Previous Annual Phosphorus Loading – Target Annual Load) *$50/lb[8]

Where:

Previous Annual Phosphorus Load= ∑ [(Total Monthly Flow × Avg. Monthly TP Concentration × 8.34)*Number of days per month];

Avg. TP Concentration= Mean of phosphorus data from previous year;

8.34= Conversion Factor;

Target Annual Load=0.2 mg/L*Total Annual Flow*8.34;

0.2 mg/L= Target value specified in 283.16(1)(h), Wis. Stat.

*The method for calculating payments for TMDL derived limitations is as follows:*

∑ (Previous Monthly Phosphorus Loading– Monthly TMDL Derived Limit *$50/lb)

Previous Monthly Phosphorus Loading= Total Monthly Flow × Avg. Monthly TP Concentration × 8.34

Note: Only those months relevant to the variance should be used in this calculation. If point sources are in compliance with TMDL-derived limits for some months out of the year, these months should be excluded from the calculation.

*Other Watershed Project Options:*

For the other two watershed project options, the WPDES permit holder will be responsible for generating an annual offset of their phosphorus load in an amount equal to the difference between the annual amount of phosphorus discharged and the target value (as calculated using the methods above).

[8] This value is adjusted to account for inflation. See Section 5.02 for details.

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These WPDES permits will include the method for calculating the total annual offset needed in the footnote section of the limit table. In the schedule section of the WPDES permit, annual reports will be required to be submitted to the DNR no later than May 1st of every year. These annual reports will require annual tracking of projects, practice verifications, etc. See Section 3.05, p. 39, for details. In addition to these requirements, the WPDES permit will also include the following:

- A watershed plan number that will be used to generate these offsets;
- A statement that the point source must comply with the MDV interim limits regardless of the offset generated;
- A requirement that offsets must be generated under the approved watershed plan;
- A requirement that the permittee notify the Department when the necessary offsets will not be generated; and
- Other terms determined to be appropriate by the Department on a case-by-case basis.

*Blending Watershed Options:*

The expectation is that point source discharges will select one watershed project option. However, in some unique situations point sources may blend watershed project options. DNR staff should be contacted during development of a blended watershed approach. If a combination of multiple watershed options is preferable, the WPDES permit will reflect the requirements of both watershed approaches.

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# Chapter 3- Instructions for County MDV Projects

The purpose of this chapter is to help counties evaluate their interest in participating in the MDV program, and program expectations under the "county payment option". County participation in the MDV is completely voluntary. If counties participate, they agree to comply with the requirements of this program to the best of their ability. In order to participate in the MDV, counties must submit the County Participation Form (XXXX-XXX) to their DNR regional trading/adaptive management coordinator no later than January 1st of the year the County wishes to receive MDV funds. See Section 3.02 for details. Once they have submitted this form to DNR, they are also responsible to submit a watershed plan and annual report to the DNR in accordance with s. 283.16(8), Wis. Stat. See Sections 3.04 and 3.05 for details. A description of the timing of these requirements is provided in Section 3.01.

By participating in the MDV, counties will have access to additional financial resources for nonpoint source pollution control activities, including funds to supplement staff costs. Additional information about MDV funding and restrictions is provided in Section 3.03.

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# Chapter 3

## Section 3.01: Timeline of Requirements

*Author: Amanda Minks*

*Last Revised: August 5, 2015*

From start to finish, the MDV program has a reoccurring 28-month reporting timeline as illustrated in Figure 2. As previously stated, the county participation form is due no later than January 1st of the year the County wishes to receive MDV funds (Section 3.02). By completing this form, the county will receive payments no later than March 1st. Next, a watershed plan (Sections 3.04) must be submitted to DNR no later than one year after receiving the MDV payment. An annual report must also be submitted to DNR no later than May 1st of the following year that the plan has been submitted (Section 3.05). For example, a County wishes to participate in the MDV in 2018. The County must first submit the County Participation Form no later than January 1st, 2018[9]. The County then receives MDV payments from point sources no later than March 1st, 2018. The watershed plan for this county must be submitted to DNR by March 1st, 2019, and the annual report is due to DNR no later than May 1st, 2020. This timeline continues into the future as the county continues to participate and receive MDV funds.

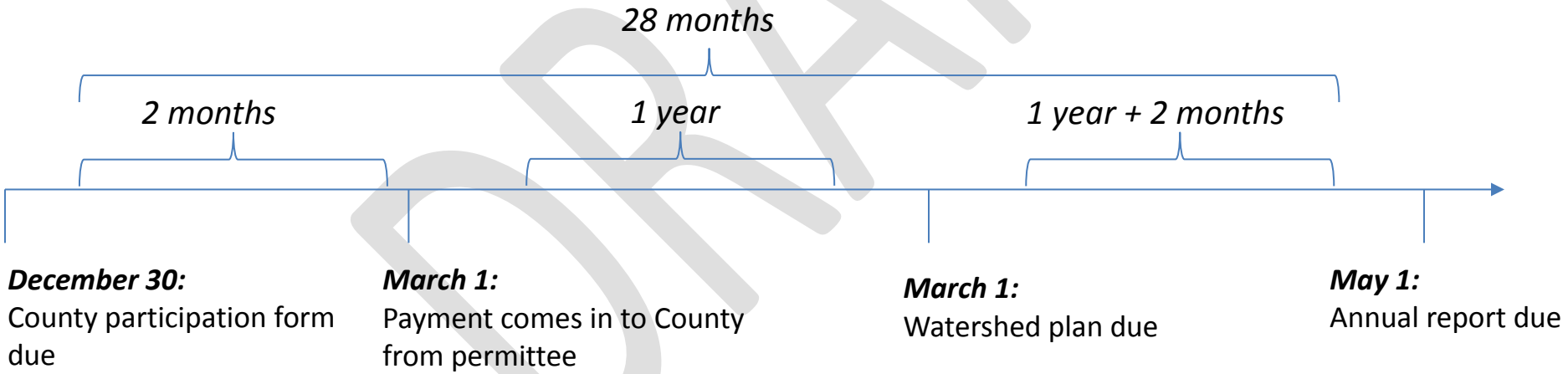


**Figure 2. Timeline of county MDV submittals.**

[9] It is recommended that these forms be submitted no later than December 30th, 2017 since January 1st is a state holiday.

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# Chapter 3

## Section 3.02 Instructions for County Participation Form

*Author: Amanda Minks*

*Last Revised: August 5, 2015*

The County Participation Form (Form XXXX-XXX) should be submitted to DNR no later than January 1st. Failure to complete this form, or submitting late forms, may terminate a county's eligibility to receive MDV funds during the upcoming year. All fields in this form should be fully completed to file this form successfully. However, there is no obligation to answer "yes" to any question on the form. It is strongly advised that counties discuss participating in the MDV program with their County Boards and/or other applicable local governmental units. Additionally, there is no requirement that counties participate in all HUC 8 watersheds present within the county. Counties have flexibility to participate in any or all of the HUC 8 watersheds that are present within their county boundary.

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# Chapter 3

## Section 3.03: Receiving MDV Funding

*Author: Amanda Minks*

*Last Revised: August 13, 2015*

Once a point source discharger selects the county payment option, and the WPDES permit is issued to incorporate this compliance option, MDV funding will become available for participating counties. WPDES permit holders are committed to providing these funds to counties by March 1st of every year throughout the permit term[10]. As stated in Section 2.03 (p. 22), annual payments will fluctuate slightly depending on the phosphorus loading from the point source discharger over the previous year. Payments will also fluctuate depending on the number of participating counties in the HUC 8 watershed; point sources distribute payments proportionately amongst the participating counties based on their total land area in the HUC 8 watershed (s. 283.16(8)(a)1, Wis. Stat.)[11]. The DNR will work to provide counties with revenue estimates in the fall of every year to help county staff make participation determinations. These estimates will be based on the total annual load to-date.

Once a County has opted to participate in this program, the county will receive payments directly from the point source(s). Thus, counties may receive checks from multiple sources at one time. Counties may wish to work directly with the WPDES permit holders to determine the best option for making this financial exchange. It is up to the point source discharger to verify that the correct payment was made to the county, and submit documentation to DNR of this exchange (as described in 2.03, p. 22). Additionally, counties will need to indicate the total funding received from each WPDES permit holder as part of their annual report. This information will help verify WPDES permit compliance. Counties will be responsible for ensuring that money generated in the HUC 8 watershed will stay in that HUC 8 watershed. Once allocated to a county for a specific HUC 8, MDV funds may not be transferred from one HUC 8 to another. This is why separate watershed plans and annual reports must be submitted for each HUC 8 watershed the county chooses to participate in (Sections 3.04 and 3.05). Additional information about funding expectations is also found in Sections 3.04.

[10] WPDES permits are reissued on a 5-year cycle. Therefore, Counties should expect to see payments from the point source every year for the 5-year period. DNR reserves the right to modify or revoke/reissue the WPDES permit, however, if the point source has substantial compliance violations or can achieve compliance with the final TP limits such that a variance is no longer appropriate. DNR will notify the counties as these situations arise.

[11] The total cost available for distribution will not change significantly, beyond the annual variability of the effluent phosphorus load from the WPDES permit holder.

# Chapter 3

## Section 3.04: Instructions to Develop the MDV Watershed Plan

*Author: Andrew Craig*

*Last Revised: September 24, 2015*

The purpose of this section is to help county staff complete the MDV plan. This section is structured to provides general instructions for submitting the plan to DNR staff, and then provides descriptions and guidance for completing Form XXXX-XXX. This section also provides contact information if county staff need additional technical support or input.

**Postmark Deadline for Plan Submittals: March 1st**

***General Instructions:*** Provide all applicable information required by this plan (Form XXXX-XXX). Pursuant to s. 283.16(8)(b)(4), Wis. Stat., DNR may consider submittals that are incomplete as a failure to effectively meet MDV requirements, which may result in the redistribution of MDV funds. This includes applications missing required information. *Unless otherwise noted, all citations refer to Wisconsin Administrative Code.*

***Completing the Form:*** Save the form onto your hard drive. ("Save as" your chosen file name.) When filling in the form electronically, use the TAB key to exit a field so that it will automatically update. Otherwise, "Enter" to update a field. Information will appear in the "Applicant Certification" section after saving the file or doing print preview. Saving and reopening it will also cause the fields to update.

***Plan submittals:***

- To be considered for funding, all MDV participation form submittals must be postmarked by January 1 of the calendar year;
- Complete the MDV watershed plan form (DNR Form XXXX-XXX) by March 1st;
- Follow the submittal directions located at the end of the form;
- Applicants must provide the following for each plan submittal:
    - One copy of the completed form (DNR Form 8700-XXX) with ***original signature or electronic signature*** and all attachments;
    - One electronic copy of the completed application form on CD or emailed if size allowed;
- All pages in the plan submittal, ***including maps***, should be 8.5 x 11 inches in size;
- All application pages containing text should be printed double-sided; maps and photos should be printed single-sided;
- Each page should be ***numbered*** and contain an identifying project name that matches the name listed in the required "Project Name" field on the first page of the application;
- If you attach narrative responses on a separate sheet(s), each page should be numbered, include the plan name, be labeled with the respective question description and number and the question's page number.

**General Information**

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Multi-Discharger Variance (MDV) Plans have certain limitations and opportunities that you should consider. These include:

- ✓ MDV funds received should be spent within 24 months of receipt, with a possible extension for 12 months if warranted (e.g., weather, soil conditions, contractor availability or other unforeseen factors).

- ✓ At least 65% of MDV funds received must be used for cost sharing practices to reduce phosphorus from entering waters of the state from agricultural nonpoint sources. Practices selected must meet NR 151 state performance standards and prohibitions. Within approved TMDL areas, MDV funds may be used towards practices that exceed NR 151 performance standards in order to comply with TMDL goals. Funds can also be used for engineering services such as design and construction inspection (s. 283.16(8)(b)2, Wis. Stat.).

- ✓ Up to 35% of MDV funds received can be used for staffing, monitoring or other actions that support or help lead to practice implementation.

- ✓ The plan area where funds are used must have the greatest potential to reduce the amount of phosphorus per acre entering waters of the state compared to other HUC 12(s) in the County (s. 283.16(8)(b)2m.a., Wis. Stat.). The funds should be generated and used in the same HUC 8 (s. 283.16(8)(b)1. Wis. Stat.).

- ✓ Analyses of land use and land management practices used to determine how the plan area has the greatest potential to reduce the amount of phosphorus per acre entering waters of the state are required and must be included with the plan. Analyses must be consistent with the County Land and Water Resource Management (LWRM) plan pursuant to s. 283.16(8)(b)2m, Wis. Stat. Analyses may also consist of, but is not limited to, approved TMDL or 9 Key Element Plan, recent water quality monitoring data, SNAP-Plus and/or Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) tools, transect surveys, consultation with DNR water quality biologists, nonpoint source coordinators, TMDL project managers, or consultants (ss. 283.16(8)(b)2m and 283.16(8)(b)2m.a., Wis. Stat.).

- ✓ Counties must apply separately for any DNR permits (*e. g.*, Chapter 30 or 31) that may be required to implement practices. DNR approvals issued for this plan do not automatically meet the approval requirements of other DNR programs, such as chs. 30 or 31, Wis. Stats. Permit(s).

- ✓ MDV funding cannot be used to fund activities and practices required to comply with a CAFO WPDES permit (s. 283.16(8)(b)1, Wis. Stat.).

- ✓ MDV funding cannot be used to fund urban practices (s. 283.16(8)(b)1, Wis. Stat.).

- ✓ Counties receiving MDV funds will be required to submit Annual Reports summarizing the results of the project, including quantifying, in pounds, the associated phosphorus reductions achieved thru cost sharing of practices using accepted modeling technology and must identify staff funded with MDV payments received (s. 283.16(8)(b)3, Wis. Stat.).

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- ✓ Consider coordinating with the following DNR staff to provide assistance in developing your plan:

**DNR Statewide Nonpoint Source Planning Coordinator**
Andrew Craig

**DNR Nonpoint Source Coordinators**
http://dnr.wi.gov/topic/nonpoint/NPScontacts.html

**DNR Water Quality Biologists**
http://dnr.wi.gov/staffdir/_newsearch/contactsearchext.aspx?exptype=exact&exp=Water+Quality+Biologist

**DNR Lake Biologists**
http://dnr.wi.gov/staffdir/_newsearch/contactsearchext.aspx?exptype=exact&exp=Lake+Information+and+Management

**DNR WQ modeling and TMDLs**
http://dnr.wi.gov/staffdir/_newsearch/contactsearchext.aspx?exptype=exact&exp=Water+Quality+Modeling

**DNR AM/WQT Coordinators**

**DNR TMDL Project Managers**
Riedel, Mark
Hirekatur, Ann
Marquardt, Keith

**The following information is provided to help county staff submit complete plans that reflect MDV statutory requirements and/or are consistent with existing DNR programs, procedures, goals and objectives to address nonpoint sources of phosphorus pollution.**

**Section 1 - Applicant Information**

The applicant must be a county government. "County Government" means any county within the state of Wisconsin, per s. 59 Wis. Stat.

**Section 2 – Project Information**

***"Small-scale plans"*** means a county that collectively receives less than $200,000 per year from point source(s) who participate in the MDV.

***"Large-scale plans"*** means a county that collectively receives $200,000 or more per year from point source(s) who participate in the MDV.

**Large-scale plans** should complete the monitoring portion of section 6 and section 7 of this form.

Completing these two sections is appropriate and reasonable for the following reasons:

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- 9 Key Element plans - http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html - provide a clear framework for prioritizing watershed areas for implementation of practices to reduce phosphorus loads to phosphorus impaired waters, provide public education and outreach, and for monitoring progress and evaluating the plan over time. These plans typically cover a 10-year timeframe and focus primarily upon HUC 12 sized areas (approximately 8-39 square miles).
- 9 Key Element plans are a central focus of EPA and DNR's nonpoint source and TMDL implementation programs and will be an important factor used to target DNR's future water quality monitoring efforts.
- Several areas within Wisconsin already have a DNR-approved 9 key element plan – click on maps tab http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html.
- Counties without a 9 Key Element plan may wish to use a portion of available MDV funds to develop a 9 key element plan, especially in areas where MDV funds exceed $200,000. Once developed, the county can reference/rely upon the plan to reduce the staff time/effort for annual planning of MDV funds and submittal of this form **and focus more time/funding on implementation of practices**.
- The 9 Key Elements are consistent with the requirements of County Land and Water Resource Management Plans - http://dnr.wi.gov/water/egadsearch.aspx (type in County Land in search box). 9 Element plans can also be referenced within County LWRM plan updates.
- DNR staff have and will continue to assist counties with plan development and, when requested, review plans for consistency with the 9 Key Elements - http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html.
- Having an approved 9 Key Element plan may provide additional opportunities for nonpoint source improvement projects.

Note: DNR and EPA are responsible for making the determination that plans are consistent with the 9 Key Elements.

***Collaborating Counties:*** MDV funds may be used within the boundaries of one or more counties provided the project area is within a common watershed that covers multiple counties. Counties that apply for receiving MDV funds should have a common plan or separate plans that describe/reflect a common project area within multiple county boundaries.

**DNR's Surface Water Data Viewer (SWDV) tool**

Use DNR's SWDV tool - http://dnrmaps.wi.gov/sl/?Viewer=SWDV to identify the 8-digit and 12-digit Hydrologic Unit Codes (HUCs) the project area resides within. This information is required to verify which areas MDV funds were used (i.e., within the HUC 8 or HUC 12).

12-digit Hydrologic Unit Codes within the project area are required to confirm more specific location(s) of practices implemented with MDV funds. HUC 12 watersheds (8-39 square miles) are often selected in

9 Key Element watershed plans as areas to target resources and practices and for evaluating progress, via a monitoring strategy, for reducing phosphorus loading to impaired water streams, rivers or lakes.

Use DNR's SWDV tool - http://dnrmaps.wi.gov/sl/?Viewer=SWDV – to determine project area water body names, Water Body Identification Codes (WBIC), and whether any waterbody in the project area is impaired for phosphorus or is identified within an EPA approved Total Maximum Daily Load (TMDL) for Total Phosphorus (TP). Such information is important to track how and where MDV funded practices are used to address TP impairments and implement TP based TMDL's.

8.5" X 11" maps (using a topographic map and aerial photos) can show the project area boundaries, the perimeter of the project drainage area and the hydrologic unit. Be sure to label the map with the plan name and please include and show major roads, including road names, in the plan area.

**Identifying area(s) with greatest potential to reduce the amount of phosphorus per acre entering waters of the state**

MDV statutory requirements require counties who apply for receiving MDV funds identify how the area has greatest potential to reduce the amount of phosphorus per acre entering waters of the state based on an assessment of the land and land use practices in the county s. 283.16(8)(b)2m.a., Wis. Stat. DNR recommends using HUC 12 or smaller sized watersheds for completing this analysis, as larger areas may be more difficult to accurately assess land and land use practices with accuracy and precision. Please be advised that failure to complete this analysis and provide supporting documentation may result in the department finding that the plan does not meet MDV requirements pursuant to s. 283.16, Wis. Stat.

To help counties quickly or efficiently prioritize plan areas for using MDV funds and provide supporting documentation for selection of plan area(s), DNR recommends using the following sources of information or tools:

- EPA approved TMDL's or DNR approved 9 Key Element plans for Phosphorus and Sediment pollutants
- EVAAL tool - http://dnr.wi.gov/topic/Nonpoint/EVAAL.html
- EPA's STEPL tool employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices (BMPs) - http://dnr.wi.gov/topic/nonpoint/stepl.html
- Recent water quality sampling, aquatic habitat and/or TMDL modeling analysis used for DNR TMDL development or updating DNR's 303(d) list of impaired waters.
- SNAP-plus software – watershed based analysis - SNAP-plus can be used to estimate edge of field phosphorus and sediment loads from agricultural cropland and pasture lands using representative soils, soil P concentrations, crop rotation(s), tillage and nutrient management practices - http://snapplus.wisc.edu/

Counties may also use their Land and Water Resource Management (LWRM) plans, including annual work plans and amendments, surveys of cropland and/or animal feeding operations, edge of field

monitoring results, farmer response surveys or other methods to select areas with the greatest potential to reduce the amount of phosphorus per acre entering waters of the state. Using or citing existing plans, or sections of existing plans, can help reduce effort when selecting areas with the greatest potential to reduce the amount of phosphorus per acre entering waters of the state. With this said, care should be taken when selecting existing plans to ensure the existing plan information (and land use practices the plan was written to reflect) remain accurate and are not out of date. Some existing plans will need to be revised with current information or additional analysis to confirm areas selected. Such amendments can be submitted as a companion document to an existing plan.

**The General Project Summary** can be used to describe or reference existing plans, updates or additional analysis to existing plans (as described above) or to submit related information.

**Letters of support from affected landowners/land operators or survey results of landowners within the plan area** are recommended, but are not a plan requirement. Such documentation helps demonstrate support for implementation of practices to reduce phosphorus loads from cropland or other sources within plan area(s). Some existing plans may contain letters or survey information and, if still applicable, can be referenced or included with the plan.

## Section 3 - Agricultural Nonpoint Source Projects

### Agricultural performance standards & prohibitions

Select the agricultural performance standards & prohibitions to be addressed in the plan area.

If the project area falls within an approved TMDL area, MDV funds may be used to implement practices that exceed statewide performance standards (e.g., NR 151, NR 243). Please contact DNR for details on this area-specific option.

### Agricultural best management practices (BMPs) and P reductions

Specify the agricultural BMPs that may be selected and implemented within the project area that reduce phosphorus loading to waters of the state. For each practice selected, please describe what method(s) will be used to quantify the amount of phosphorus reduction expected from the practice (e.g. SNAP+, STEPL, etc.). Refer to your Land and Water Resource Management plan and/or annual work plan update to help select specific agricultural practices to reduce P loads.

Phosphorus reduction is typically expressed in terms of total mass of P reduced (lbs. P) or a mass per acre basis (lbs. P per acre). Sediment loss calculations can also be used to express P reductions, provided calculations are provided on the concentration of P within the sediment source(s) reduced. There are many tools and methods that can be used to quantify P reductions from specific practices. Some examples are described below. When describing P reduction method(s) it may be necessary to attach additional documentation to this plan explaining the methodology or calculations used.

Examples for quantifying P reductions from practices:

- Water Quality Models – SWAT, HSPF http://dnr.wi.gov/topic/surfacewater/models.html

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- EPA's STEPL tool employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices (BMPs) - http://dnr.wi.gov/topic/nonpoint/stepl.html
- SNAP-Plus software –P trade Report and/or Wisconsin P Index calculations for specific fields - http://snapplus.wisc.edu/
- DNR-Approved 9 Element Watershed Plans or TMDL Implementation Plans http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html
- Existing Wisconsin or upper Midwest research findings related to P reductions performance of a practice or practice
    - http://dnr.wi.gov/files/pdf/pubs/ss/rs738.pdf
    - http://www.jswconline.org/content/60/1/1.abstract
- BARNY
    - http://wi.water.usgs.gov/pubs/FS-168-98/ and http://wi.water.usgs.gov/pubs/FS-051-98/
    - http://datcp.wi.gov/uploads/Environment/xls/BARNY.xls
- Best Professional Judgment (BPJ) – requires providing reasons and/or factors used to make BPJ and account for:
    - natural variability and the difficulty in precisely predicting practice performance over time (i.e., how long a practice remains implemented; how long a practice is maintained and continues to function as intended or designed)

**Section 4. Financial Budget**

The BMPs, monitoring, staff and other categories, as well as the annual cost for current and following calendar years are ESTIMATES and will help counties to meet MDV requirements (e.g., 65% MDV funds spent on agricultural practices and 35% spent on staff or other costs). DNR recognizes there will be differences between the practices, actions and costs that counties plan to do and what is actually implemented over time. This can be due to factors such as, but not limited to:

- landowner interest and participation,
- weather factors and schedules,
- funding, or
- time availability of partners who may be involved in selecting or implementing practices (e.g., state agencies, consultants, contractors, etc.).

The annual reports and annual plan submittals by counties will help to more accurately describe what actions were implemented versus planned over time. Planned quantities/units should be provided for cost estimates related to the installation of practices. This will provide useful information to assess how the costs in the other columns were derived. This information may also be appropriate for some

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monitoring components, such as the installation of stream monitoring gauges. The "planned quantities/units" is not applicable for the other categories in this section.

Describing all other funds that will compliment MDV funds is important and recognizes selected plan areas may have devoted funding from local, state, private or federal sources as part of an existing plan or program.

## Section 5. Other Plan Components

### Verification

The DNR is required to evaluate how MDV funds are spent on practices that reduce P loads to waters of the state. Verification of practices funded with MDV funds are implemented or remain implemented/maintained over time will be a critical step in DNR's evaluation for approving future payments of MDV funds to counties. Verification is also a crucial step of many existing state and federal programs related to reducing P loads via various practices (e.g., 9 Key Element and TMDL implementation plans, Targeted Runoff Management (TRM) grant programs, Farmland Preservation Program (FPP), and Land and Water Resource Management Plans, County Ordinances, Environmental Quality Incentives Program (EQIP), and other NRCS programs). All MDV plans need to have practice verification as a stand-alone milestone included within the schedule.

### Monitoring

Since monitoring is a requirement of 9 Key Element plans, all large-scale plans that are developed consistent with a 9 Key Element plan need a monitoring strategy to assess water quality conditions within state waters. It is recommended that other large-scale plans also include a monitoring strategy to help demonstrate water quality improvements over time. Please see Appendix I, p. 84 for additional guidance when developing a monitoring strategy as part of a county MDV plan. MDV monitoring strategies should be structured in a manner with clear milestones and a schedule for evaluating progress and revising the strategy over time to reflect staff, funding and other factors.

## Section 6. Extended Plans

It is recommended that all large-scale plans develop a compliant 9 Key Element plan or already have a DNR-approved 9 Key Element plan. The reasons/rationale for this recommendation is provided in section 2 (above).

## Section 7. Certifications

The purpose of this section is to clearly articulate MDV funding restrictions and have counties certify by checking all of the boxes that MDV funds will be used appropriately.

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MDV funds may not be used to implement or maintain practices that are required by a WPDES permit (e.g., CAFO, MS4, etc.) or were previously funded via another local, state, or federal program, such as the Targeted Runoff Management Grant Program.

Since MDV funds are to be used for cost sharing for agricultural practices pursuant to s. 283.16(8)(b)2, Wis. Stat., it is also not appropriate to use MDV money for practices not related to cost sharing, or for operation and maintenance activities already required by previous cost-share agreements, outside of an EPA-approved TMDL. DNR recognizes that in some cases additional reductions are needed to comply with load allocations within EPA-approved TMDL areas, so counties may use MDV funds to meet TMDL load allocations and towards compliance with TMDL performance standards pursuant to ch. NR 151.005, Wis. Adm. Code.

DNR recognizes county NR 151 compliance determination certifications will be based upon the information or resources available at the time. There may be differences between county certifications from one year to the next for specific practices implemented with MDV funds due to factors such as, but not limited to:

- information available to the county,
- landowner interest and participation in other local, state or federal programs,
- communication with DNR staff on specific practices required by WPDES, or Adaptive Management or Water Quality Trading based permits.

MDV annual reports and annual plan submittals by counties will help improve county certification accuracy over time. However, failure by a county to address a known and ongoing and/or repeated funding of practices that are required by a WPDES permit or previously funded via another local, state, or federal program practice may result in DNR action to reduce or eliminate future MDV funds to a county.

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# Chapter 3

## Section 3.05: Annual Reporting

*Author: Theresa Nelson*

*Last Revised: August 20, 2015*

Annual reports are required from counties receiving MDV funding as well as from discharges and/or third party entities implementing watershed projects under (s. 283.16(6)(b)2, Wis. Stat. or s. 283.16(6)(b)3, Wis. Stat.) by May 1st.

For each HUC 8 in which projects are being implemented, a separate annual report is required that describes the nonpoint source pollution control projects completed in the previous year, the pounds of phosphorus reduced by those projects using accepted modeling technology, and the amount of MDV money used to fund staff and/or monitoring activities.

At the time this guidance was written, a standardized reporting and tracking system was not yet developed, but is being evaluated. The information described below may be required via a reporting form or web-based data system. DNR intends to develop a streamlined template for annual report submittals once this database system is developed.

Outline of annual report:

A. Plan Implementer Information
B. Project Information
    a. HUC 8
        i. Project Name
            1. New BMPs installed
                a. Location
                b. Description
                    i. Ag performance standards & prohibitions addressed
                c. Photos & maps
                d. Pollutants (TP,TN, TSS) reduced
                    i. Method used to calculate reduction
                e. Amount spent
                    i. Breakdown MDV vs. non-MDV
            2. Existing BMPs inspected
                a. Which ones
                b. Photos

                *Note: it is recommended that 20% of BMPs are inspected annually. These practices should reflect the range of practices implemented to-date in the plan.*

            3. Statement of overall progress towards plan goals

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C. Staff funded
    a. Description of staff tasks accomplished
        i. Developed 9 key element plan?
    b. MDV dollars spent
D. Monitoring completed
    a. Description of where, what, etc.
    b. MDV dollars spent
E. Overall $$ breakdown (by HUC8)
    a. Amount from each point source
    b. Total on BMPs
    c. Total on staff
    d. Total on monitoring
    e. Total used of Year XX funding
    f. Percentage breakdown

Once an annual report is submitted to DNR, DNR will review for completeness and post online. An email notification will be sent to DOA, DATCP, and applicable point source discharges of its availability pursuant to s. 283.16(8)(b)3, Wis. Stat. Additional information about DNR's review process is provided in Section 5.02, p. 51.

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# Chapter 4- Other Watershed Plans

The purpose of this chapter is to provide instructions for point source dischargers and their partners to help them successfully complete a watershed plan for the phosphorus MDV pursuant to ss. 283.16(6)(b)(2) or (3), Wis. Stats. As previously discussed, point sources have the option to either enter into the "county payment option" or implement a watershed plan either directly or in collaboration with a third party[12]. If a point source chooses this watershed approach, the watershed plan must, at a minimum, offset the point source load calculated in Section 2.03, p. 22, on an annual basis.

There is no one-size-fits-all approach to these watershed plans. Plans will be unique depending on phosphorus nonpoint source pollution control needs in the watershed, as well as local interest and opportunities and the needs of the point source and applicable partners. Guidance provided in the Adaptive Management Handbook (http://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html) and Water Quality Trading How-To Manual (http://dnr.wi.gov/topic/surfacewater/waterqualitytrading.html) may be helpful as point sources and partners develop these watershed plans. Specifically, these guidance documents provide information regarding how to target critical source areas, how to identify appropriate management practices, and potential methods/models for calculating offsets. These sections, in particular, have applicable information for the MDV.

Point sources must submit watershed plans with their MDV application for DNR review and approval. Point sources should also complete the MDV watershed project checklist (Form XXXX-XXX) to ensure that plans are complete, and to streamline DNR's review and approval for these plans. Instructions for completing the checklist are provided in Section 4.02. Pursuant to ss. 283.16(6)(b)(2) and (3), Wis. Stats., point sources must also enter into a binding written agreement with either the DNR or the partner that will be implementing the plan. Section 4.01 discusses binding written agreements in more detail.

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[12] In some unique circumstances, point sources may consider blending watershed project options. This option is briefly discussed in Section 2.03, p. 22. DNR staff should be contacted whenever mixing watershed options is being considered.

# Chapter 4

## Section 4.01: Binding Written Agreements

*Author: Amanda Minks*

*Last Revised: August 19, 2015*

A binding, written agreement is required for watershed projects that are implemented by WPDES permit holders, or their partners, pursuant to ss. 283.16(6)(b)2 and 283.16(b)3, Wis. Stats. These binding, written agreements must be approved by DNR prior to, or in conjunction with, the MDV approval.

Binding, written agreements for MDVs should reflect key content within the MDV watershed plan, but does not need to be duplicative. Additionally, the binding, written agreement does not supersede requirements in the WPDES permit. For these reasons, most MDV binding, written agreements will likely be brief and site-specific, depending on the content and timetable of the MDV plan.

Suggested content for these agreements include:

- The MDV plan number[13];
- The minimum amount of phosphorus reduction that will occur annually;
- The start date and, if applicable, the end date of the availability of these offsets;
- The parties responsible for verification as well as the types and frequency of verification;
- Liability conditions of the offset;
- Reporting requirements for the WPDES permit holder/partner of any anticipated circumstances when the phosphorus reduction would not be available; and
- Signature and date by authorized representative(s).

If a point source chooses to work with a partner pursuant to s. 283.16(b)3, Wis. Stat., the WPDES permit holder and partner should work directly with one another to develop the binding, written agreement. Once the parties agree to the content of the agreement, it should be submitted to DNR for review. If some content of the agreement is sensitive, such as the financial exchange between parties, this information may be blocked out or not included in the submittal to DNR. Note that information in the agreements is subject to Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.).

[13] DNR staff will provide an MDV plan number to permittees as part of its tracking system.

# Chapter 4

## Section 4.02: Instructions for Other Watershed Projects

*Author: Amanda Minks*

*Last Revised: August 20, 2015*

The permittee must submit a MDV watershed plan under ss. 283.16(6)(b)2 or 283.16(6)(b)3, Wis. Stats., to DNR as part of the MDV application form. A completed MDV watershed plan checklist (Form XXXX-XXX) should accompany this submittal. The MDV watershed plan checklist provides an outline of the information that should be included in the watershed plan. The information in the checklist and plan will serve as the basis for permitting decisions. In order to obtain approval from DNR, the MDV watershed plan must contain sufficient detail to allow DNR to conclude that the requirements of the MDV program are satisfied. These requirements are inherent in the checklist, so completion of the checklist will help ensure that the watershed plan is approvable. Additional instructions are provided below to help permit holders and partners successfully complete the MDV checklist.

**Section 2.** Section 2 requests information and visuals regarding the geographic extent of the project(s) area. It is preferred that projects occur on the same receiving water as the discharge is located. However, the project(s) may be located anywhere within the HUC 8 watershed pursuant to ss. 283.16(6)(b)2 or 283.16(6)(b)3, Wis. Stats.

**Sections 3 and 4**. The purpose of Sections 3 and 4 is to summarize the type of work that will be completed during the permit term. The watershed plan should provide justification for the estimated offsets provided in these tables. Point sources are not limited to the agricultural and urban practices identified in Sections 3 and 4. Any practice may be considered if it results in a quantifiable reduction of phosphorus to a surface water of the state. Additionally, point sources and their partners have discretion to select appropriate methods to quantify phosphorus reductions. A list of preferred models and their capabilities is provided at http://dnr.wi.gov/topic/SurfaceWater/documents/ModelingSection.pdf. Point sources and partners may also wish to contact the DNR water quality modeling group (dnrwaterqualitymodeling@wisconsin.gov) for input or assistance.

**Section 5.** To calculate the anticipated annual offset needed, multiply the current annual phosphorus load target calculated in Section 2.03, p. 22, by five. This will provide a reasonable estimate for how much phosphorus will be discharged annually throughout the permit term. The watershed plan should provide the specific method used for making this calculation. Pursuant to ss. 283.16(6)(b)2 or 283.16(6)(b)(3), Wis. Stats., the watershed plan should, at a minimum, offset this value. If insufficient offsets are projected, the plan may not be approved by the DNR.

Other funds may be used to help complement point source funding to achieve the necessary MDV offsets. However, point sources should consider any restrictions specific to other funding programs prior to use in MDV areas. The watershed plan should also include additional background and implementation information beyond the information gleaned from Sections 1-4 of the checklist. Specifically, the plan should ensure that all tracking requirements are met pursuant to Section 3.05, p. 39. The plan should

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also ensure that at least 20% of implemented practices be verified annually. Practices selected should be a representative sample of the practices implemented to-date.

**Section 6.** Completing the certification statements in Section 6 is an important step for ensuring that MDV funding is being used appropriately and that only eligible practices are being counted towards the annual offset needed. Additionally, it is not appropriate to count offsets used toward another point source discharger's permit compliance or offsets generated by restoring a landowner's compliance with the agricultural performance standards, per ch. NR 151, Wis. Adm. Code.

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# Chapter 5- DNR Staff Roles and Responsibilities

The intent of this chapter is to provide DNR staff with guidance on how to review and approve MDV submittals. Several staff may be involved with making these determinations, depending on the expertise of the staff, and the type of watershed plan selected. Therefore, this chapter will also generally discuss roles and responsibilities for these reviews. It is important for staff and supervisors to work cooperatively to ensure that appropriate work objectives and time is built into staff performance measures.

Whenever staff are making review and approval determinations on MDV applications, Form XXXX-XXX should be completed. This form is designed to help staff review applications and ensures statewide consistency of MDV approval/disapproval determinations. Questions regarding this form should be sent to the Statewide Phosphorus Coordinator.

Additional information including training materials and tracking tools are available to DNR staff at \\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV.

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# Chapter 5

## Section 5.01: WPDES Permit Requirements

*Author: Paul Luebke*

*Last Revised: September 24, 2015*

In order to issue a WPDES permit with MDV requirements included, the permit drafter will need to enter the coding in SWAMP to generate phosphorus mass columns in the DMR, enter permit limits, add table notes to identify the interim phosphorus limit, and add a schedule for payments to participating counties.

**1. Coding for Phosphorus Mass**

In addition to the mg/L concentration for "Phosphorus, Total", monitoring for mass must be coded into SWAMP so a column is generated on the DMR for the monthly and annual mass as described below.

(a) Duplicate the "Phosphorus, Total" parameter and select the units lbs/month. Add a table note that says: "Include the sum of the total monthly discharge mass". This monthly total mass information will be used to calculate the total annual mass. It's also necessary for those permittees subject to a TMDL limit that varies by the month.

(b) Duplicate the "Phosphorus, Total" parameter again and select the units lbs/year. Add a table note that says: "Include the sum of all the monthly discharge mass totals on the December DMR under the lbs/year column". So the annual reporting for mass only appears on the December DMR, when coding the phosphorus lbs/year keep the monitoring frequency as monthly (don't change it to annual), and for the start and end dates make 5 separate entries - one for each year of the permit for the time period December 1 to December 31. The annual mass reported on the December DMR must be submitted to the Department by January 21st.

**2. Coding for Interim Phosphorus Limits**

The applicable interim phosphorus concentration limit must be coded for the "Phosphorus, Total" parameter in mg/L with a limit type of monthly average. In the first permit term when the Department approves the MDV for the facility, the interim limit is typically 0.8 mg/L. There are two scenarios for coding the first permit term depending on whether the current permit has a phosphorus limit:

(a) If there's no current limit the permit reissuance would include the 1.0 mg/L technology based phosphorus limit from ch. NR 217, Wis. Adm. Code, or an interim limitation based on the 30-day P99 of the existing effluent quality if sufficient monitoring data is available; a minimum of 11 results that are also representative year around. To qualify for the MDV, the first interim limit may not exceed 1.0 mg/L. The applicable interim limit becomes effective at the end of the compliance schedule and is listed in the table note.

(b) If the current permit has a limit, that limit, or a more restrictive interim limit, could be included in the permit reissuance. The limit could be more stringent than 0.8 mg/L under s. 283.16 (3) (cm), Wis. Stat.

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In the next 3 permits the interim limit is reduced to 0.6 mg/L, 0.5 mg/L, and finally to the water quality based effluent limit. If a permit is not reissued in a timely manner, the interim limit in the expired permit will remain in effect until the permit is reissued.

**3. Table Notes for Interim Phosphorus Limits**

For the purpose of identifying the applicable interim and final WQBEL in the permit, the following conditions must be included as a paragraph after the outfall monitoring table which includes the phosphorus limit. The paragraph will clarify the applicable interim effluent limit depending on which permit issuance it is after approval of the variance. The following conditions apply in sequence. In some cases, a more stringent interim limit may replace the typical interim limits. In the note column of the monitoring table include the paragraph number for the condition applicable to phosphorus.

**1.1.1.1 Phosphorus Interim Variance Limit and WQBEL**

1st permit: An interim limit of 0.8 mg/L is effective during this permit's term. The goal is to achieve compliance with the final water quality based effluent limit for phosphorus of ___ mg/L, calculated in accordance with subchapter III of ch. NR 217, Wis. Adm. Code.

2nd permit: An interim limit of 0.6 mg/L is effective during this permit's term. The goal is to achieve compliance with the final water quality based effluent limit for phosphorus of ___ mg/L, calculated in accordance with subchapter III of ch. NR 217, Wis. Adm. Code.

3rd permit: An interim limit of 0.5 mg/L is effective during this permit's term. In the next permit reissuance the limit will be reduced to the final water quality based effluent limit for phosphorus of ___ mg/L, calculated in accordance with subchapter III of ch. NR 217, Wis. Adm. Code.

**4. Schedules for Watershed Phosphorus Reduction Component**

In addition to the MDV approval, under s. 283.16 (6) (b), Wis. Stat., a permittee must choose one of three measures to reduce the amount of phosphorus entering the waters of the state prior to the effective date of the final water quality based effluent limit or TMDL.

(a) Making payments to the counties: The annual mass loading, as described in item 1 above, will be used to calculate payments to counties under s. 283.16 (8), Stats. The reported annual mass amount that exceeds the target value is multiplied by the $50/pound fee (the fee is subject to an annual adjustment based on the consumer price index). To assure the counties receive the payment in a timely manner, the permit will include a schedule with due dates for submittals. Below is the suggested permit schedule language.

(b) Phosphorus reduction project or plan: In accordance with a written agreement and watershed plan, approved by the Department, the permittee or another person designated by the permittee agrees to construct a project or implement a plan designed to result in an annual

reduction of phosphorus pollution from other sources in the watershed in which the point source is located. Similar to the payment to counties, the phosphorus reduction amount required would equal the difference between the annual amount of phosphorus discharged by the point source and the target value. The watershed phosphorus reduction measure is considered to have two options depending on who performs the work, the permittee or another partner. Below is the suggested permit schedule language.

### *Payment to Counties*

Permittees selecting the payment to counties option under s. 283.16 (6) (b) 1., Wis. Stat., as the additional measure to reduce the amount of phosphorus entering waters of the state shall take the following actions:

| Required Action | Due Date |
|---|---|
| **Submit Annual Phosphorus Mass Loading:** The permittee shall submit to the Department the annual total of mass discharged on the December DMR. The annual mass shall be calculated according to the following two equations:<br><br>Total Monthly Mass Discharged = monthly average P concentration (mg/L) × total flow for the month (MG/month) × 8.34 = pounds/month<br><br>Total Annual Mass Discharged = sum of total monthly mass discharged for the calendar year | January 21st annually |
| **Payment to Counties:** The permittee shall submit the annual payment to the county or counties that are approved by the Department by the due date. The amount due is calculated from the annual mass of phosphorus discharged reported on the December DMR that exceeds the target value in s. 283.16 (1) (h), Wis. Stats. The per pound payment under s. 283.16 (8) 2., Wis. Stats. is $__ per pound .<br><br>Note: The payment is limited to a maximum of $640,000. The last sentence may be replaced with the following in this situation: "*The payment under s. 283.16(8)2. is $640,000 per year.*<br><br>[Note: The per pound rate is determined upon permit issuance and is applicable for the term of the permit. The payment value is $50 per pound plus an adjustment based on the consumer price index. See "Payment Calculator" document at \\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV for this value. Any adjustment to the rate would be made in the next permit reissuance.] | March 1st annually |
| **Annual Payment Statement:** The permittee shall submit an annual statement to the Department indicating how much money was submitted to the counties on form xxx-xxxx. | March 1st annually |

*Payment Calculation:* The Statewide Phosphorus Implementation Coordinator is responsible to update the payment value each year. The payment calculator will provide the final payment value, the data and method used to calculate this value, and the date the payment value was last updated. In general,

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consumer price index (CPI) data provided by the Bureau of Labor Statistics will be used to make this calculation: http://www.bls.gov/regions/subjects/consumer-price-indexes.htm#WI[14].

> Example: Let's assume that the CPI went up by 0.6% from December 2015 to December 2016. This would translate to a $0.30 increase from the $50 per pound base price ($50/lb. x 0.6% = $0.30). So the per pound calculation for the next year would be $50.30 cents. For the subsequent year, $50.30/lb would be used as the base price in the calculation.

### *Watershed Phosphorus Reduction Measure*

Permittees selecting the watershed construction project or implementation plan option under ss. 283.16 (6) (b) 2. or 3., Wis. Stats., as the additional measure to reduce the amount of phosphorus entering waters of the state shall take the following actions.

| Required Action | Due Date |
|---|---|
| **Submit Annual Phosphorus Mass Loading:** The permittee shall submit to the Department the annual total of mass discharged on the December DMR. The annual mass shall be calculated according to the following two equations:<br>Total Monthly Mass Discharged = monthly average P concentration (mg/L) × total flow for the month (MG/month) × 8.34 = pounds/month<br>Total Annual Mass Discharged = sum of total monthly mass discharged for the calendar year | January 21st annually |
| **Watershed Offset:** The permittee shall calculate the annual amount of phosphorus reduction needed from a watershed project or plan. The watershed offset amount equals the annual mass of phosphorus discharged reported on the December DMR that exceeds the target value in s. 283.16 (1) (h), Wis. Stat. Offsets must be generated pursuant to Department approved plan number _____. | February 1st annually |
| **Annual Report:** The permittee shall submit an annual report to the Department that includes the following:<br>a. Calculation of the watershed offset.<br>b. The pounds of phosphorus reduction achieved through the project or plan using accepted modeling technology.<br>c. A summary of each of the phosphorus reduction measures that were being implemented with a reference to the watershed plan number used to generate the offset. | May 1st annually |
| **Agreement Modification:** If the project or plan is not effectively reducing the amount of phosphorus, because the watershed offset is not met in any year, the permittee shall propose a modification to the watershed phosphorus reduction agreement with the Department, or may seek alternative compliance or variance options allowed under state law.<br>Note: Failure to propose a modification to achieve compliance with the offset may result in termination of the agreement by the Department. | June 1st annually if applicable |

[14] At the time this guidance was written, the appropriate field in the CPI report is the column on the far right labeled "percent change, Dec-Dec".

In either of the preceding schedules, to include the “annually” language in the due date column, which will avoid having to repeat the same schedule five times for each year of the permit, after the schedule section is generated to a Word document in SWAMP it will need to be unlocked in order to include the text as shown.

**5. Additional permit conditions related to the interim limit**

In the surface water section of the WPDES permit where the outfall has the interim phosphorus limitation, an optimization requirement should also be included in the WPDES permit. For facilities that have already optimized for phosphorus, permits should commonly have language something to the effect: *Starting on the effective date of this permit, the permittee shall implement a phosphorus optimization plan*. This language should be revised to the following if a facility has not yet completed an optimization plan: *Starting on the effective date of this permit, the permittee shall develop and implement a phosphorus optimization plan*.

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# Chapter 5

## Section 5.02: Review of Watershed Projects and Annual Reports

*Author: Amanda Minks and Corinne Billings*

*Last Revised: August 19, 2015*

### *Chapter 3 Watershed Plans, Aka "County Payment Option"*

As mentioned in Chapter 3, watershed plans developed by the counties will be submitted annually following the year that MDV money was received. These watershed plans should be reviewed for completeness, consistency with other existing watershed plans, and confirmation that MDV funding will be spent appropriately. It is not required that DNR staff formally approve these plans prior to county implementation. However, if DNR staff determine that a county is not using MDV funds appropriately, the DNR may require the permittee to eliminate or reduce future payments to the county, pursuant to s. 283.16(8)(b)(4), Wis. Stat. DNR staff should work with the counties to revise watershed plans before considering the reduction or elimination of MDV funds. Redistribution of MDV funds is discussed in more detail on p. 52.

County MDV plans may be insufficient if:

- Plans are submitted late (after March 1st the year after MDV funds were provided, s. 283.16(8)(b)2m, Wis. Stat.);
- Form XXXX-XXX is not completed;
- Improvements are not being made to a surface water of the state;
- Plans are not consistent with the DATCP-Approved County Land and Water Resource Management Plan;
- Plans do not result in compliance with ch. NR 151, Wis. Adm. Code, (Note: plans may go above and beyond ch. NR 151 requirements in order to meet reduction goals specified in an EPA-approved TMDL);
- MDV funds are contributing towards permit compliance for other WPDES permit holders including CAFO;
- MDV funds are used towards urban practices; and/or
- Plans do not meet minimum tracking and verification expectations.

Information provided in the annual reports will be used to determine if MDV funds are being used appropriately. These reports are the primary mechanism for specifically identifying phosphorus reductions and work completed through the MDV program. In addition to the factors above, staff should also review annual reports to ensure that:

- Annual reports are submitted no later than May 1st of the second year after MDV funds were provided (s. 283.16(8)(b)2m, Wis. Stat.);
- At least 65% of MDV funds are going towards cost share compliance with agricultural performance standards and prohibitions (s. 283.16(8)(b)2, Wis. Stat.);
- Tracking requirements are met as specified in Section 3.05, p. 39;
- Practice verification expectations have been met;

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- Phosphorus reductions were calculated appropriately; and
- MDV funds provided for the annual watershed plan are used with 24-months of plan submission. (Note: a 12-month extension may be provided if extenuating circumstances arise, such as weather-related delays, temporary lack of materials or contractors, etc.)

DNR regional AM/WQT coordinators will take the lead in reviewing watershed plans and annual reports. AM/WQT coordinators should work with other staff, such as regional NPS coordinators, when reviewing these documents, especially if innovative projects or models are used. NPS staff may also provide valuable insight regarding the appropriateness of management measures selected, and verify the accuracy of phosphorus reduction calculations.

Once a watershed plan or annual report is submitted, the lead DNR reviewer should contact the Statewide Phosphorus Coordinator to receive a docket number for this document. This docket number will be used as a unique identifier for tracking and reporting purposes. Lead staff are also for tracking the status of the plan and annual report reviews using the "MDV Review Tracker" spreadsheet tool at \\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV. Watershed plans and annual reports will be posted online once the "MDV project tracker" indicates that the plan/report meets MDV programmatic requirements. The Statewide Phosphorus Coordinator is responsible for making these web updates. Web updates will occur quarterly, as necessary.

*Note: The MDV Review Tracker has separate tabs for annual reports and watershed plans. This tracking system is subject to change as database and program improvements are made.*

### Redistribution of MDV Funds (County Payment Option Only)

AM/WQT coordinators should work with the Statewide Phosphorus Coordinator whenever MDV funds need to be redistributed. MDV funds may be redistributed in the following situations:

1. If a participating county is not using MDV payments to effectively reduce the amount of phosphorus entering waters of the state from nonpoint sources, pursuant to s. 283.16(8)(b)4, Wis. Stat.
    a. In this case, MDV funds will be distributed to other participating counties in the HUC 8 based on their proportional area in the HUC 8.
2. If more MDV funds are available to participating counties than the counties have the capacity to use in an appropriate period (preferably within 2-3 years).
    a. In this case, MDV funds will be distributed to participating counties based on their capacity to use them.
    b. Any remaining, unallocated MDV funds will be distributed using the methodology in #3 below.
3. If there are no participating counties in the applicable HUC 8.
    a. The permittee shall make payments to participating counties selected by the DNR as follows for phosphorus nonpoint source pollution control projects:

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- To existing participating counties with active DNR grants in the Targeted Runoff Management (TRM), Notice of Discharge (NOD), River Management (River), and/or Lake Protection (Lake) Grant Programs. MDV funding would offset state/federal funds in these existing NPS-related grants. MDV funding would be paid to participating counties in the following geographic categories in priority order:
    1. To participating counties from the original HUC-8 where funds were awarded but for projects in those counties outside of the original HUC 8.
    2. To other participating counties upstream of the original HUC 8.
    3. To other participating counties downstream of the original HUC 8.
    4. Any participating county with an active, eligible DNR TRM, NOD, River, Lake grant.

  If more than one type of active grant exists in the geographic categories above, MDV funding will be paid to existing county projects in the following priority:
    1. TRM
    2. NOD
    3. River Management
    4. Lake Protection

- To existing participating county applicants with soon-to-be-awarded TRM, NOD, River, Lake grants. MDV funding would offset state/federal funds that could have been used in these new grant awards. MDV funding would be paid to counties in the following geographic categories in priority order:
    1. To participating counties from the original HUC 8 where funds were awarded but for projects in those counties outside of the original HUC 8.
    2. To other participating counties upstream of the original HUC 8.
    3. To other participating counties downstream of the original HUC 8.
    4. Any participating county with a new, eligible DNR TRM, NOD, River, Lake grant application.

  If more than one type of new grant award exists in the geographic categories above, MDV funding will be paid to new county projects in the following priority:
    1. TRM
    2. NOD
    3. River Management
    4. Lake Protection.
    5. To participating counties with existing DNR Dam Repair/Removal Grants, which include legacy phosphorus/sediment removal.

### *Chapter 4 Watershed Plans, Aka "Other Watershed Plans"*

As mentioned in Chapter 4, watershed plans developed pursuant to ss. 283.16(6)(b)(2) or (3), Wis. Stats., must be approved by DNR prior to issuing a WPDES permit including either of these watershed options.

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Section 4 of the MDV Evaluation Checklist (Form XXXX-XXX) is designed to help staff review and approve these watershed plans.

Situations where plans may be insufficient include:

- The project area is outside of the HUC 8 boundary;
- Form XXXX-XXX is not completed;
- Water quality improvements are not being made to a surface water of the state;
- Insufficient reductions are made to offset the difference between the point source load and target value;
- MDV offsets are also contributing towards permit compliance for other WPDES permit holders including CAFO and MS4 permits;
- Practices are not installed and maintained in accordance with applicable NRCS technical standards; and
- The plan does not meet minimum tracking and verification expectations.

Like the county payment option, annual reports are also required for Chapter 4 watershed plans. Annual report submittals will be very similar regardless of watershed approach because MDV tracking requirements are consistent across the watershed plan options (Section 3.05, p. 39). In addition to the annual report considerations in the previous section, staff may also consider the following to determine if the annual report is adequate:

- Necessary annual offsets were achieved;
- Practices were installed in accordance with NRCS technical standards;
- Post-construction inspections were completed by individuals with appropriate technical expertise;
- Practices were verified by individuals with appropriate technical expertise; and
- Phosphorus reductions were calculated appropriately.

AM/WQT coordinators will also be the lead staff to review and approve these watershed plans and annual reports. As previously mentioned, watershed plans must be reviewed and approved prior to WPDES permit reissuance. Staff should use the public comment procedures in the permit reissuance process to receive public comments on watershed plans prior to formal approval. Once approved, watershed plans will be placed on the DNR website, as described on p. 52. The process for reviewing annual reports and making annual reports publicly available is consistent with the process for annual reports required under the county payment option. See p. 52 for details.

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# Chapter 5

## Section 5.03: DNR Determinations & Public Participation Opportunities

*Author: Amanda Minks*

*Last Revised: October 13, 2015*

The process for soliciting public comment on a Department action regarding a MDV application differs slightly depending on when the MDV application is submitted to DNR and the DNR action taken. As previously stated, DNR action must be taken within 30 days of receiving the MDV application or the MDV application is approved pursuant to s. 283.16(4)(am)(3), Wis. Stat. A DNR action within the 30 day time period may be either a tentative approval, denial, or a request for additional information. If a permittee selected a watershed option other than the county payment option, the MDV application will include the watershed project/plan. See Chapter 4, p. 41, for details.

### MDV application is submitted as part of the application for reissuance:

*Note: In this case applicable phosphorus limits and compliance schedule requirements are not stayed because the WPDES permit has yet to be reissued.*

**Process if DNR's action is a "tentative approval":**

*Step 1:* Within 30 days of receiving the MDV application, DNR sends letter with tentative approval.

*Step 2:* DNR proposes a permit reissuance to incorporate the variance.

*Step 3:* Solicit public and EPA comments on the tentative approval of the MDV application when the draft reissuance permit is public noticed.

*Step 4:* After consideration of public comments, f the final determination is to grant phosphorus MDV coverage to the permittee as part of the reissued permit, a person or persons, may file for judicial review of the MDV approval. The s. 227.52, Wis. Stats, judicial review petition must be filed with 30 days of the permit reissuance or revocation and reissuance that incorporates the variance. A person may not challenge the economic finding and impact determination that was approved by EPA. A petitioner can only challenge whether the permittee actually qualifies for the statewide variance. There is no right to a contested case hearing on an approval of an MDV application – see ss. 283.63(4) and 283.16(4)(e), Wis. Stats.

**Process if DNR's action is a denial:**

*Step 1:* Notify the applicant that the application is denied. This is a final decision. Appeal rights will be provided.

*Step 2:* The permittee can challenge the denial through a judicial review petition filed pursuant to s. 227.52, Wis. Stats. within 30 days of the denial. Unlike the "tentative approval", the denial is considered a final decision. There is no right to a contested case hearing on a denial of an MDV application – see s. 283.63(4) and 283.16(4)(e), Wis. Stats. If a permittee does not appeal the denial decision, then DNR would reissuance the permit with the phosphorus WQBEL. If,

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however, the permittee challenges the denial, DNR staff may choose to refrain from reissuance until the litigation is completed.

**Process if DNR's action is to request additional information:**

*Step 1:* Within 30 days of receiving the MDV application, DNR sends letter with request for additional information.

*Step 2:* The permittee may take adequate time to provide this additional information. If, however, the permittee does not submit the information in a timely manner, the Department may choose to deny the application and proceed with permit reissuance.

*Step 3:* Within 30 days of receiving the additional information, DNR re-evaluates the MDV application and sends letter with tentative approval/denial. The procedures specified above would then be followed.

*Note: Although this guidance document is only focusing on the first five years of implementing the MDV, it should be noted that permittees that apply for continued coverage in subsequent permits will need to apply for the MDV at the term of permit reissuance in accordance with s. 283.16(4)(am)(1), Wis. Stat.*

### MDV application is submitted during the permit term:

There are three ways a permittee can ask for an MDV as part of the variance: 1.) Within 60 days after the permit is reissued to include a phosphorus WQBEL; 2.) As part of a request for a modification ( applies to permits with phosphorus WQBELs that were reissued prior to April 25, 2014); or 3.) As part of a permittee's compliance evaluation determination in accordance with their compliance schedule ( applies to permits with phosphorus WQBELs that were reissued prior to April 25, 2014). Once an MDV application is submitted, the phosphorus water quality based limit and compliance schedule is stayed.

**Process if DNR's action is a "tentative approval":**

*Step 1:* Within 30 days of receiving the MDV application, DNR sends letter with tentative approval.

*Step 2:* DNR proposes a permit modification or reissuance or revocation to incorporate the variance.

*Step 3:* Solicit public and EPA comments on the tentative approval of MDV application when the draft reissuance permit is public noticed.

*Step 4:* After consideration of public comments, if the final determination is to grant phosphorus MDV coverage to the permittee as part of the permit modification or revocation and reissuance, a person or persons, may file for judicial review of the MDV approval. The s. 227.52, Wis. Stats, judicial review petition must be filed with 30 days of the permit modification or revocation and reissuance that incorporates the variance. A person may not challenge the economic findings and impact determination that was approved by EPA. A petitioner can only challenge whether the permittee actually qualifies for the statewide variance. There is no right

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to a contested case hearing on an approval of an MDV application – see ss. 283.63(4) and283.16(4)(e), Wis. Stats.

**Process if DNR's action is a denial:**

*Step 1:* Notify the applicant that the application is denied. This is a final decision. Appeal rights will be provided.

*Step 2:* The permittee can challenge the denial through a judicial review petition filed pursuant to s. 227.52, Wis. Stats. within 30 days of the denial. Unlike the "tentative approval", the denial is considered a final decision. There is no right to a contested case hearing on a denial of an MDV application – see ss. 283.63(4) and 283.16(4)(e), Wis. Stats. If a permittee does not appeal the denial, then the limitation is no longer stayed. If a permittee does appeal the denial, the limit and remaining compliance schedule is stayed until the final disposition of the litigation.

**Process if DNR's action is to request additional information:**

*Step 1:* Within 30 days of receiving the MDV application, DNR sends letter with request for additional information.

*Step 2:* The permittee may take adequate time to provide this additional information. If, however, the permittee does not submit the information in a timely manner, the Department may choose to deny the application.

*Step 3:* Within 30 days of receiving the additional information, DNR re-evaluates the MDV application and sends letter with tentative approval/denial. The procedures provided above would then be followed.

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# Chapter 5

## Section 5.04: Triennial Standards Review Process

*Author: Kristi Minahan and Amanda Minks*
*Last Revised: October 13, 2015*

Once the phosphorus MDV is in effect, DNR is required to make a determination every three years on whether a review of the variance is needed, based on technological improvements or economic changes over the course of time (s. 283.16(2m), Wis. Stat.). This will be done through the DNR's Triennial Standards Review (TSR) process for water quality standards. This review is in addition to site-specific reviews that will be done as part of the permit reissuance process to ensure that the point source continues to be eligible for the MDV and permit conditions are included in the WPDES permit to reflect the highest attainable condition for the permittee in question.

The TSR has two distinct phases. Phase 1 is a work planning phase in which the DNR uses public, partner, and staff input to determine which water quality standards topics the DNR will review, revise, or develop during the upcoming three year period. As part of this process, the department uses an online survey tool to solicit information related to the topics under consideration. Specific information that will help the DNR consider revising the MDV include whether new technology or improvements to existing technology have become reasonably available after 2015 that is likely to result in any of the following:

- Allow point sources to comply with interim effluent limitations for phosphorus that are more stringent than those in s. 283.16(6)(a), Wis. Stat;
- Enable any category of point sources to comply with interim effluent limitations for phosphorus that are more stringent than those in sub. (6)(a); and
- Enable more cost-effective compliance with interim effluent limitations for phosphorus that are more stringent than those in sub. (6)(a).

This review will help ensure that interim limitations and optimization requirements are updated, as necessary, to reflect the highest attainable condition for categories of dischargers. Additionally, DNR will seek comments from DOA and other partners on whether new economic information is available that warrants a review of, or adjustments to, the industrial primary screener thresholds specified in Appendix G, p. 78, (Appendix I (p. 95) of the Determination), or would result in the phosphorus compliance no longer cause substantial and widespread adverse impacts to the state (p. 64 of the Final Determination).

In Phase 2, DNR implements the work plan by making the identified updates to the priority topic areas. The priority projects are begun during the three-year cycle. If changes to the implementation procedures of the MDV are warranted, such as updates to the highest attainable condition analysis, those changes will take effect immediately with no further action required.

DNR's next TSR cycle will cover 2018 to 2020. Phase 1 is likely to begin in late 2017 or early 2018. At that time, assuming the MDV is in effect, the determination of whether a review of the MDV is needed

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will be made during Phase 1. This topic will automatically be included in the list of TSR topics to be considered for review.

Using the online survey tool, DNR will solicit specific input on whether the public, partners, or staff have substantive knowledge of technological improvements that would warrant a review of the variance. If the DNR receives credible information regarding new/improved technologies and determines that a review of the variance is warranted, it will direct DOA and DNR to begin a joint review of the variance during Phase 2 of the TSR, as required by statute. The review will encompass those steps outlined in ss. 283.16(c) to (g), Wis. Stats. Likewise, if changes to the primary or secondary screeners are necessary, DOA and DNR will work in partnership to develop these revised eligibility criteria.

Visit http://dnr.wi.gov/topic/surfacewater/tsr.html for additional information about the TSR process.

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# Appendix A. Secondary Screeners for Municipal POTWs

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening total, which is the value used to determine eligibility for the MDV.

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

**Table 6. Municipal WWTFs' Secondary Indicators.**

| | Personal Current Transfer Receipts Share of Total Income 2013 [1] | Jobs per Square Mile [2] | Population Change 2004 - 2014 [3] | Net Earnings Change 2003-2013 [4] **(2points)** | Job Growth 2003-2013 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Adams | 26.9% | 7 | 0.7% | 41.5% | 9.3% | 3 |
| Ashland | 26.3% | 8 | -5.3% | 29.7% | -5.7% | 6 |
| Barron | 23.2% | 24 | -1.1% | 32.1% | -1.1% | 6 |
| Bayfield | 25.4% | 3 | -3.3% | 27.5% | -0.5% | 6 |
| Brown | 14.3% | 279 | 6.4% | 32.7% | 5.6% | 2 |
| Buffalo | 18.0% | 6 | -3.1% | 27.7% | -10.3% | 6 |
| Burnett | 27.5% | 6 | -5.7% | 26.2% | 9.1% | 5 |
| Calumet | 10.5% | 39 | 12.1% | 61.1% | 3.1% | 2 |
| Chippewa | 20.0% | 23 | 6.0% | 42.7% | 14.1% | 2 |
| Clark | 20.9% | 8 | 0.9% | 39.8% | 4.1% | 6 |
| Columbia | 15.3% | 27 | 4.0% | 37.1% | 7.5% | 4 |
| Crawford | 23.1% | 13 | -5.0% | 37.8% | 1.3% | 6 |
| Dane | 11.0% | 258 | 11.4% | 46.3% | 12.5% | 0 |
| Dodge | 17.0% | 39 | 1.0% | 38.5% | 4.1% | 5 |
| Door | 20.4% | 27 | -3.9% | 32.8% | 0.7% | 6 |
| Douglas | 26.6% | 12 | 1.1% | 20.7% | -2.8% | 6 |
| Dunn | 19.6% | 19 | 5.2% | 46.2% | 5.1% | 2 |
| Eau Claire | 17.0% | 86 | 4.4% | 42.0% | 8.4% | 1 |
| Florence | 25.6% | 2 | -14.7% | 18.2% | 18.1% | 5 |
| Fond du Lac | 17.8% | 63 | 2.8% | 27.6% | 1.5% | 5 |
| Forest | 28.7% | 3 | -9.3% | 30.2% | -1.6% | 6 |
| Grant | 19.0% | 15 | 4.1% | 51.7% | 5.4% | 3 |
| Green | 15.9% | 26 | 4.7% | 46.1% | 6.1% | 1 |
| Green Lake | 18.9% | 18 | -1.2% | 33.8% | -6.2% | 6 |

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| | Personal Current Transfer Receipts Share of Total Income 2013 [1] | Jobs per Square Mile [2] | Population Change 2004 - 2014 [3] | Net Earnings Change 2003-2013 [4] **(2points)** | Job Growth 2003-2013 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Iowa | 16.2% | 13 | 0.7% | 35.3% | -3.8% | 5 |
| Iron | 27.1% | 2 | -14.9% | 49.8% | -12.2% | 4 |
| Jackson | 19.6% | 8 | 4.8% | 42.5% | 1.9% | 3 |
| Jefferson | 17.6% | 59 | 7.2% | 27.2% | 3.2% | 4 |
| Juneau | 24.6% | 12 | 5.7% | 37.8% | 4.0% | 5 |
| Kenosha | 18.3% | 196 | 7.2% | 26.7% | 5.3% | 3 |
| Kewaunee | 17.1% | 21 | -1.0% | 37.5% | 2.5% | 5 |
| La Crosse | 16.9% | 150 | 6.5% | 39.6% | 7.9% | 2 |
| Lafayette | 16.3% | 6 | 3.7% | 75.2% | 9.8% | 2 |
| Langlade | 25.1% | 9 | -6.5% | 26.8% | 0.4% | 6 |
| Lincoln | 24.5% | 12 | -4.8% | 16.8% | -7.9% | 6 |
| Manitowoc | 19.2% | 56 | -3.5% | 30.8% | -0.5% | 5 |
| Marathon | 16.5% | 43 | 3.7% | 28.6% | 1.1% | 5 |
| Marinette | 25.3% | 14 | -5.9% | 28.8% | -0.1% | 6 |
| Marquette | 27.2% | 8 | 2.3% | 29.8% | -2.6% | 6 |
| Menominee | 33.3% | 6 | -8.2% | 43.1% | 14.9% | 3 |
| Milwaukee | 21.7% | 1,967 | 1.1% | 23.0% | -1.2% | 5 |
| Monroe | 19.3% | 22 | 6.4% | 48.6% | 9.3% | 2 |
| Oconto | 19.4% | 9 | 0.9% | 40.5% | -3.1% | 4 |
| Oneida | 24.9% | 14 | -4.4% | 14.4% | -1.2% | 6 |
| Outagamie | 14.2% | 160 | 6.6% | 29.3% | 6.9% | 2 |
| Ozaukee | 9.9% | 168 | 2.3% | 31.6% | 10.1% | 3 |
| Pepin | 23.3% | 9 | -1.6% | 35.6% | 2.6% | 6 |
| Pierce | 15.7% | 16 | 6.5% | 21.8% | 8.0% | 3 |
| Polk | 22.4% | 17 | 0.8% | 30.4% | 6.3% | 5 |
| Portage | 17.1% | 40 | 2.8% | 33.7% | 4.0% | 5 |
| Price | 27.2% | 4 | -11.3% | 11.1% | -9.6% | 6 |
| Racine | 18.7% | 218 | 1.9% | 15.9% | -1.9% | 5 |
| Richland | 22.5% | 10 | -0.6% | 44.4% | 5.7% | 3 |
| Rock | 20.1% | 86 | 2.9% | 25.3% | -4.6% | 5 |
| Rusk | 30.7% | 5 | -4.7% | 19.9% | -13.1% | 6 |
| St. Croix | 12.4% | 43 | 18.2% | 49.4% | 21.2% | 1 |
| Sauk | 17.1% | 44 | 6.0% | 35.9% | 3.1% | 4 |
| Sawyer | 28.1% | 5 | -2.1% | 28.3% | 1.3% | 6 |
| Shawano | 22.2% | 14 | -0.2% | 33.1% | 2.2% | 6 |
| Sheboygan | 14.7% | 113 | -0.1% | 35.2% | 0.2% | 4 |
| Taylor | 22.0% | 8 | 4.3% | 23.3% | -4.2% | 6 |

| | Personal Current Transfer Receipts Share of Total Income 2013 [1] | Jobs per Square Mile [2] | Population Change 2004 - 2014 [3] | Net Earnings Change 2003-2013 [4] **(2points)** | Job Growth 2003-2013 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Trempealeau | 19.9% | 19 | 5.1% | 47.9% | 11.7% | 2 |
| Vernon | 22.1% | 11 | 3.6% | 50.0% | 7.9% | 3 |
| Vilas | 28.0% | 9 | -2.0% | 16.4% | -8.9% | 6 |
| Walworth | 17.3% | 70 | 6.0% | 27.1% | 4.2% | 4 |
| Washburn | 30.3% | 7 | -4.9% | 35.9% | 1.1% | 6 |
| Washington | 15.3% | 121 | 7.7% | 38.1% | 8.4% | 2 |
| Waukesha | 10.9% | 417 | 5.2% | 37.2% | 5.4% | 2 |
| Waupaca | 22.3% | 27 | -1.3% | 32.5% | -2.8% | 6 |
| Waushara | 23.6% | 10 | -1.2% | 39.5% | 6.5% | 5 |
| Winnebago | 15.7% | 206 | 3.9% | 31.6% | 4.4% | 4 |
| Wood | 19.6% | 53 | -1.7% | 23.9% | -3.9% | 5 |
| Threshold | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | |

[1] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/.

[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; http://www.bea.gov/.
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# Appendix B. Secondary Screeners for Cheese Manufacturers

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening total, which is the value used to determine eligibility for the MDV.

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

**Table 7 Cheese Manufacturers' Secondary Indicators**

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | 44.9 | 26.9% | 7 | 0.7% | 41.5% | 9.3% | -- | 4 |
| Ashland | 38.6 | 26.3% | 8 | -5.3% | 29.7% | -5.7% | -- | 7 |
| Barron | 44.1 | 23.2% | 24 | -1.1% | 32.1% | -1.1% | -- | 7 |
| Bayfield | 44.9 | 25.4% | 3 | -3.3% | 27.5% | -0.5% | -- | 7 |
| Brown | 53.1 | 14.3% | 279 | 6.4% | 32.7% | 5.6% | -- | 2 |
| Buffalo | 47.4 | 18.0% | 6 | -3.1% | 27.7% | -10.3% | 2.56% | 9 |
| Burnett | 39.6 | 27.5% | 6 | -5.7% | 26.2% | 9.1% | 0.82% | 6 |
| Calumet | 65.1 | 10.5% | 39 | 12.1% | 61.1% | 3.1% | 0.82% | 2 |
| Chippewa | 50.6 | 20.0% | 23 | 6.0% | 42.7% | 14.1% | -- | 3 |
| Clark | 43.3 | 20.9% | 8 | 0.9% | 39.8% | 4.1% | 2.68% | 9 |
| Columbia | 57.9 | 15.3% | 27 | 4.0% | 37.1% | 7.5% | -- | 4 |
| Crawford | 42.2 | 23.1% | 13 | -5.0% | 37.8% | 1.3% | -- | 7 |
| Dane | 61.7 | 11.0% | 258 | 11.4% | 46.3% | 12.5% | -- | 0 |
| Dodge | 53.1 | 17.0% | 39 | 1.0% | 38.5% | 4.1% | 0.03% | 5 |
| Door | 50.4 | 20.4% | 27 | -3.9% | 32.8% | 0.7% | -- | 7 |
| Douglas | 45.4 | 26.6% | 12 | 1.1% | 20.7% | -2.8% | -- | 7 |
| Dunn | 48.9 | 19.6% | 19 | 5.2% | 46.2% | 5.1% | -- | 3 |
| Eau Claire | 48.1 | 17.0% | 86 | 4.4% | 42.0% | 8.4% | -- | 2 |
| Florence | 48.0 | 25.6% | 2 | -14.7% | 18.2% | 18.1% | -- | 6 |
| Fond du Lac | 53.8 | 17.8% | 63 | 2.8% | 27.6% | 1.5% | 0.01% | 5 |
| Forest | 40.0 | 28.7% | 3 | -9.3% | 30.2% | -1.6% | -- | 7 |
| Grant | 47.0 | 19.0% | 15 | 4.1% | 51.7% | 5.4% | 1.64% | 6 |
| Green | 55.6 | 15.9% | 26 | 4.7% | 46.1% | 6.1% | 2.15% | 3 |
| Green Lake | 47.0 | 18.9% | 18 | -1.2% | 33.8% | -6.2% | -- | 7 |

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| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Iowa | 55.7 | 16.2% | 13 | 0.7% | 35.3% | -3.8% | -- | 5 |
| Iron | 39.1 | 27.1% | 2 | -14.9% | 49.8% | -12.2% | -- | 5 |
| Jackson | 44.1 | 19.6% | 8 | 4.8% | 42.5% | 1.9% | -- | 4 |
| Jefferson | 53.5 | 17.6% | 59 | 7.2% | 27.2% | 3.2% | -- | 4 |
| Juneau | 45.3 | 24.6% | 12 | 5.7% | 37.8% | 4.0% | -- | 6 |
| Kenosha | 54.9 | 18.3% | 196 | 7.2% | 26.7% | 5.3% | -- | 3 |
| Kewaunee | 53.6 | 17.1% | 21 | -1.0% | 37.5% | 2.5% | 0.74% | 5 |
| La Crosse | 51.3 | 16.9% | 150 | 6.5% | 39.6% | 7.9% | -- | 3 |
| Lafayette | 49.1 | 16.3% | 6 | 3.7% | 75.2% | 9.8% | 4.45% | 5 |
| Langlade | 42.4 | 25.1% | 9 | -6.5% | 26.8% | 0.4% | -- | 7 |
| Lincoln | 49.0 | 24.5% | 12 | -4.8% | 16.8% | -7.9% | -- | 7 |
| Manitowoc | 48.9 | 19.2% | 56 | -3.5% | 30.8% | -0.5% | -- | 6 |
| Marathon | 53.4 | 16.5% | 43 | 3.7% | 28.6% | 1.1% | 0.25% | 5 |
| Marinette | 40.5 | 25.3% | 14 | -5.9% | 28.8% | -0.1% | -- | 7 |
| Marquette | 46.1 | 27.2% | 8 | 2.3% | 29.8% | -2.6% | -- | 7 |
| Menominee | 33.3 | 33.3% | 6 | -8.2% | 43.1% | 14.9% | -- | 4 |
| Milwaukee | 43.2 | 21.7% | 1,967 | 1.1% | 23.0% | -1.2% | -- | 6 |
| Monroe | 49.8 | 19.3% | 22 | 6.4% | 48.6% | 9.3% | -- | 3 |
| Oconto | 51.6 | 19.4% | 9 | 0.9% | 40.5% | -3.1% | 1.54% | 7 |
| Oneida | 45.8 | 24.9% | 14 | -4.4% | 14.4% | -1.2% | -- | 7 |
| Outagamie | 58.3 | 14.2% | 160 | 6.6% | 29.3% | 6.9% | -- | 2 |
| Ozaukee | 75.5 | 9.9% | 168 | 2.3% | 31.6% | 10.1% | -- | 3 |
| Pepin | 47.7 | 23.3% | 9 | -1.6% | 35.6% | 2.6% | -- | 7 |
| Pierce | 59.2 | 15.7% | 16 | 6.5% | 21.8% | 8.0% | 1.32% | 5 |
| Polk | 48.5 | 22.4% | 17 | 0.8% | 30.4% | 6.3% | -- | 6 |
| Portage | 51.0 | 17.1% | 40 | 2.8% | 33.7% | 4.0% | 0.04% | 6 |
| Price | 42.6 | 27.2% | 4 | -11.3% | 11.1% | -9.6% | -- | 7 |
| Racine | 54.1 | 18.7% | 218 | 1.9% | 15.9% | -1.9% | -- | 5 |
| Richland | 45.3 | 22.5% | 10 | -0.6% | 44.4% | 5.7% | 3.76% | 6 |
| Rock | 49.4 | 20.1% | 86 | 2.9% | 25.3% | -4.6% | -- | 6 |
| Rusk | 38.7 | 30.7% | 5 | -4.7% | 19.9% | -13.1% | -- | 7 |
| St. Croix | 68.4 | 12.4% | 43 | 18.2% | 49.4% | 21.2% | 0.29% | 1 |
| Sauk | 52.1 | 17.1% | 44 | 6.0% | 35.9% | 3.1% | -- | 5 |
| Sawyer | 39.9 | 28.1% | 5 | -2.1% | 28.3% | 1.3% | -- | 7 |
| Shawano | 46.6 | 22.2% | 14 | -0.2% | 33.1% | 2.2% | -- | 7 |
| Sheboygan | 52.9 | 14.7% | 113 | -0.1% | 35.2% | 0.2% | 0.34% | 5 |
| Taylor | 44.9 | 22.0% | 8 | 4.3% | 23.3% | -4.2% | 1.47% | 9 |

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Trempealeau | 49.1 | 19.9% | 19 | 5.1% | 47.9% | 11.7% | -- | 3 |
| Vernon | 45.5 | 22.1% | 11 | 3.6% | 50.0% | 7.9% | -- | 4 |
| Vilas | 40.8 | 28.0% | 9 | -2.0% | 16.4% | -8.9% | -- | 7 |
| Walworth | 54.0 | 17.3% | 70 | 6.0% | 27.1% | 4.2% | -- | 4 |
| Washburn | 41.9 | 30.3% | 7 | -4.9% | 35.9% | 1.1% | -- | 7 |
| Washington | 66.2 | 15.3% | 121 | 7.7% | 38.1% | 8.4% | 0.19% | 2 |
| Waukesha | 75.9 | 10.9% | 417 | 5.2% | 37.2% | 5.4% | -- | 2 |
| Waupaca | 50.8 | 22.3% | 27 | -1.3% | 32.5% | -2.8% | -- | 7 |
| Waushara | 43.1 | 23.6% | 10 | -1.2% | 39.5% | 6.5% | -- | 6 |
| Winnebago | 51.0 | 15.7% | 206 | 3.9% | 31.6% | 4.4% | -- | 5 |
| Wood | 47.7 | 19.6% | 53 | -1.7% | 23.9% | -3.9% | 0.20% | 6 |
| Threshold | U.S. = $53.0 | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | 1.00% | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2009-2013; Table B19013 Inflation-Adjusted Median Household Income.

[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/.
This secondary indicator is given a weight of 2 in accordance with **Error! Reference source not found.**. **Error! Reference source not found.**. **Error! Reference source not found.**.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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.

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# Appendix C. Secondary Screeners for Food Processors

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening total, which is the value used to determine eligibility for the MDV.

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

**Table 8. Food Processors' Secondary Indicators**

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | 44.9 | 26.9% | 7 | 0.7% | 41.5% | 9.3% | -- | 4 |
| Ashland | 38.6 | 26.3% | 8 | -5.3% | 29.7% | -5.7% | -- | 7 |
| Barron | 44.1 | 23.2% | 24 | -1.1% | 32.1% | -1.1% | 1.57% | 9 |
| Bayfield | 44.9 | 25.4% | 3 | -3.3% | 27.5% | -0.5% | -- | 7 |
| Brown | 53.1 | 14.3% | 279 | 6.4% | 32.7% | 5.6% | -- | 2 |
| Buffalo | 47.4 | 18.0% | 6 | -3.1% | 27.7% | -10.3% | -- | 7 |
| Burnett | 39.6 | 27.5% | 6 | -5.7% | 26.2% | 9.1% | -- | 6 |
| Calumet | 65.1 | 10.5% | 39 | 12.1% | 61.1% | 3.1% | -- | 2 |
| Chippewa | 50.6 | 20.0% | 23 | 6.0% | 42.7% | 14.1% | -- | 3 |
| Clark | 43.3 | 20.9% | 8 | 0.9% | 39.8% | 4.1% | -- | 7 |
| Columbia | 57.9 | 15.3% | 27 | 4.0% | 37.1% | 7.5% | 0.90% | 4 |
| Crawford | 42.2 | 23.1% | 13 | -5.0% | 37.8% | 1.3% | -- | 7 |
| Dane | 61.7 | 11.0% | 258 | 11.4% | 46.3% | 12.5% | -- | 0 |
| Dodge | 53.1 | 17.0% | 39 | 1.0% | 38.5% | 4.1% | -- | 5 |
| Door | 50.4 | 20.4% | 27 | -3.9% | 32.8% | 0.7% | -- | 7 |
| Douglas | 45.4 | 26.6% | 12 | 1.1% | 20.7% | -2.8% | -- | 7 |
| Dunn | 48.9 | 19.6% | 19 | 5.2% | 46.2% | 5.1% | -- | 3 |
| Eau Claire | 48.1 | 17.0% | 86 | 4.4% | 42.0% | 8.4% | -- | 2 |
| Florence | 48.0 | 25.6% | 2 | -14.7% | 18.2% | 18.1% | -- | 6 |
| Fond du Lac | 53.8 | 17.8% | 63 | 2.8% | 27.6% | 1.5% | 0.32% | 5 |
| Forest | 40.0 | 28.7% | 3 | -9.3% | 30.2% | -1.6% | -- | 7 |
| Grant | 47.0 | 19.0% | 15 | 4.1% | 51.7% | 5.4% | -- | 4 |
| Green | 55.6 | 15.9% | 26 | 4.7% | 46.1% | 6.1% | -- | 1 |
| Green Lake | 47.0 | 18.9% | 18 | -1.2% | 33.8% | -6.2% | 2.36% | 9 |

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| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Iowa | 55.7 | 16.2% | 13 | 0.7% | 35.3% | -3.8% | -- | 5 |
| Iron | 39.1 | 27.1% | 2 | -14.9% | 49.8% | -12.2% | -- | 5 |
| Jackson | 44.1 | 19.6% | 8 | 4.8% | 42.5% | 1.9% | -- | 4 |
| Jefferson | 53.5 | 17.6% | 59 | 7.2% | 27.2% | 3.2% | -- | 4 |
| Juneau | 45.3 | 24.6% | 12 | 5.7% | 37.8% | 4.0% | -- | 6 |
| Kenosha | 54.9 | 18.3% | 196 | 7.2% | 26.7% | 5.3% | 0.14% | 3 |
| Kewaunee | 53.6 | 17.1% | 21 | -1.0% | 37.5% | 2.5% | -- | 5 |
| La Crosse | 51.3 | 16.9% | 150 | 6.5% | 39.6% | 7.9% | -- | 3 |
| Lafayette | 49.1 | 16.3% | 6 | 3.7% | 75.2% | 9.8% | -- | 3 |
| Langlade | 42.4 | 25.1% | 9 | -6.5% | 26.8% | 0.4% | -- | 7 |
| Lincoln | 49.0 | 24.5% | 12 | -4.8% | 16.8% | -7.9% | -- | 7 |
| Manitowoc | 48.9 | 19.2% | 56 | -3.5% | 30.8% | -0.5% | -- | 6 |
| Marathon | 53.4 | 16.5% | 43 | 3.7% | 28.6% | 1.1% | 0.09% | 5 |
| Marinette | 40.5 | 25.3% | 14 | -5.9% | 28.8% | -0.1% | -- | 7 |
| Marquette | 46.1 | 27.2% | 8 | 2.3% | 29.8% | -2.6% | -- | 7 |
| Menominee | 33.3 | 33.3% | 6 | -8.2% | 43.1% | 14.9% | -- | 4 |
| Milwaukee | 43.2 | 21.7% | 1,967 | 1.1% | 23.0% | -1.2% | -- | 6 |
| Monroe | 49.8 | 19.3% | 22 | 6.4% | 48.6% | 9.3% | 0.71% | 3 |
| Oconto | 51.6 | 19.4% | 9 | 0.9% | 40.5% | -3.1% | -- | 5 |
| Oneida | 45.8 | 24.9% | 14 | -4.4% | 14.4% | -1.2% | -- | 7 |
| Outagamie | 58.3 | 14.2% | 160 | 6.6% | 29.3% | 6.9% | 0.14% | 2 |
| Ozaukee | 75.5 | 9.9% | 168 | 2.3% | 31.6% | 10.1% | 0.13% | 3 |
| Pepin | 47.7 | 23.3% | 9 | -1.6% | 35.6% | 2.6% | -- | 7 |
| Pierce | 59.2 | 15.7% | 16 | 6.5% | 21.8% | 8.0% | -- | 3 |
| Polk | 48.5 | 22.4% | 17 | 0.8% | 30.4% | 6.3% | -- | 6 |
| Portage | 51.0 | 17.1% | 40 | 2.8% | 33.7% | 4.0% | 0.07% | 6 |
| Price | 42.6 | 27.2% | 4 | -11.3% | 11.1% | -9.6% | -- | 7 |
| Racine | 54.1 | 18.7% | 218 | 1.9% | 15.9% | -1.9% | -- | 5 |
| Richland | 45.3 | 22.5% | 10 | -0.6% | 44.4% | 5.7% | -- | 4 |
| Rock | 49.4 | 20.1% | 86 | 2.9% | 25.3% | -4.6% | -- | 6 |
| Rusk | 38.7 | 30.7% | 5 | -4.7% | 19.9% | -13.1% | -- | 7 |
| St. Croix | 68.4 | 12.4% | 43 | 18.2% | 49.4% | 21.2% | -- | 1 |
| Sauk | 52.1 | 17.1% | 44 | 6.0% | 35.9% | 3.1% | 0.52% | 5 |
| Sawyer | 39.9 | 28.1% | 5 | -2.1% | 28.3% | 1.3% | -- | 7 |
| Shawano | 46.6 | 22.2% | 14 | -0.2% | 33.1% | 2.2% | -- | 7 |
| Sheboygan | 52.9 | 14.7% | 113 | -0.1% | 35.2% | 0.2% | 0.18% | 5 |
| Taylor | 44.9 | 22.0% | 8 | 4.3% | 23.3% | -4.2% | -- | 7 |

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Trempealeau | 49.1 | 19.9% | 19 | 5.1% | 47.9% | 11.7% | -- | 3 |
| Vernon | 45.5 | 22.1% | 11 | 3.6% | 50.0% | 7.9% | -- | 4 |
| Vilas | 40.8 | 28.0% | 9 | -2.0% | 16.4% | -8.9% | -- | 7 |
| Walworth | 54.0 | 17.3% | 70 | 6.0% | 27.1% | 4.2% | -- | 4 |
| Washburn | 41.9 | 30.3% | 7 | -4.9% | 35.9% | 1.1% | -- | 7 |
| Washington | 66.2 | 15.3% | 121 | 7.7% | 38.1% | 8.4% | -- | 2 |
| Waukesha | 75.9 | 10.9% | 417 | 5.2% | 37.2% | 5.4% | -- | 2 |
| Waupaca | 50.8 | 22.3% | 27 | -1.3% | 32.5% | -2.8% | -- | 7 |
| Waushara | 43.1 | 23.6% | 10 | -1.2% | 39.5% | 6.5% | -- | 6 |
| Winnebago | 51.0 | 15.7% | 206 | 3.9% | 31.6% | 4.4% | -- | 5 |
| Wood | 47.7 | 19.6% | 53 | -1.7% | 23.9% | -3.9% | -- | 6 |
| Threshold | U.S. = $53.0 | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | 1.00% | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2009-2013; Table B19013 Inflation-Adjusted Median Household Income.

[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/.
This secondary indicator is given a weight of 2 in accordance with **Error! Reference source not found.**. **Error! Reference source not found.**. **Error! Reference source not found.**.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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.

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# Appendix D. Secondary Screeners for the Paper Industry

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening 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 Paper Industry Secondary Indicators**

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | 44.9 | 26.9% | 7 | 0.7% | 41.5% | 9.3% | -- | 4 |
| Ashland | 38.6 | 26.3% | 8 | -5.3% | 29.7% | -5.7% | -- | 7 |
| Barron | 44.1 | 23.2% | 24 | -1.1% | 32.1% | -1.1% | -- | 7 |
| Bayfield | 44.9 | 25.4% | 3 | -3.3% | 27.5% | -0.5% | -- | 7 |
| Brown | 53.1 | 14.3% | 279 | 6.4% | 32.7% | 5.6% | 1.19% | 4 |
| Buffalo | 47.4 | 18.0% | 6 | -3.1% | 27.7% | -10.3% | -- | 7 |
| Burnett | 39.6 | 27.5% | 6 | -5.7% | 26.2% | 9.1% | -- | 6 |
| Calumet | 65.1 | 10.5% | 39 | 12.1% | 61.1% | 3.1% | -- | 2 |
| Chippewa | 50.6 | 20.0% | 23 | 6.0% | 42.7% | 14.1% | -- | 3 |
| Clark | 43.3 | 20.9% | 8 | 0.9% | 39.8% | 4.1% | -- | 7 |
| Columbia | 57.9 | 15.3% | 27 | 4.0% | 37.1% | 7.5% | -- | 4 |
| Crawford | 42.2 | 23.1% | 13 | -5.0% | 37.8% | 1.3% | -- | 7 |
| Dane | 61.7 | 11.0% | 258 | 11.4% | 46.3% | 12.5% | -- | 0 |
| Dodge | 53.1 | 17.0% | 39 | 1.0% | 38.5% | 4.1% | -- | 5 |
| Door | 50.4 | 20.4% | 27 | -3.9% | 32.8% | 0.7% | -- | 7 |
| Douglas | 45.4 | 26.6% | 12 | 1.1% | 20.7% | -2.8% | -- | 7 |
| Dunn | 48.9 | 19.6% | 19 | 5.2% | 46.2% | 5.1% | -- | 3 |
| Eau Claire | 48.1 | 17.0% | 86 | 4.4% | 42.0% | 8.4% | 0.56% | 2 |
| Florence | 48.0 | 25.6% | 2 | -14.7% | 18.2% | 18.1% | -- | 6 |
| Fond du Lac | 53.8 | 17.8% | 63 | 2.8% | 27.6% | 1.5% | -- | 5 |
| Forest | 40.0 | 28.7% | 3 | -9.3% | 30.2% | -1.6% | -- | 7 |
| Grant | 47.0 | 19.0% | 15 | 4.1% | 51.7% | 5.4% | -- | 4 |
| Green | 55.6 | 15.9% | 26 | 4.7% | 46.1% | 6.1% | -- | 1 |
| Green Lake | 47.0 | 18.9% | 18 | -1.2% | 33.8% | -6.2% | -- | 7 |

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| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Iowa | 55.7 | 16.2% | 13 | 0.7% | 35.3% | -3.8% | -- | 5 |
| Iron | 39.1 | 27.1% | 2 | -14.9% | 49.8% | -12.2% | -- | 5 |
| Jackson | 44.1 | 19.6% | 8 | 4.8% | 42.5% | 1.9% | -- | 4 |
| Jefferson | 53.5 | 17.6% | 59 | 7.2% | 27.2% | 3.2% | -- | 4 |
| Juneau | 45.3 | 24.6% | 12 | 5.7% | 37.8% | 4.0% | -- | 6 |
| Kenosha | 54.9 | 18.3% | 196 | 7.2% | 26.7% | 5.3% | -- | 3 |
| Kewaunee | 53.6 | 17.1% | 21 | -1.0% | 37.5% | 2.5% | -- | 5 |
| La Crosse | 51.3 | 16.9% | 150 | 6.5% | 39.6% | 7.9% | -- | 3 |
| Lafayette | 49.1 | 16.3% | 6 | 3.7% | 75.2% | 9.8% | -- | 3 |
| Langlade | 42.4 | 25.1% | 9 | -6.5% | 26.8% | 0.4% | -- | 7 |
| Lincoln | 49.0 | 24.5% | 12 | -4.8% | 16.8% | -7.9% | -- | 7 |
| Manitowoc | 48.9 | 19.2% | 56 | -3.5% | 30.8% | -0.5% | -- | 6 |
| Marathon | 53.4 | 16.5% | 43 | 3.7% | 28.6% | 1.1% | 1.19% | 7 |
| Marinette | 40.5 | 25.3% | 14 | -5.9% | 28.8% | -0.1% | -- | 7 |
| Marquette | 46.1 | 27.2% | 8 | 2.3% | 29.8% | -2.6% | -- | 7 |
| Menominee | 33.3 | 33.3% | 6 | -8.2% | 43.1% | 14.9% | -- | 4 |
| Milwaukee | 43.2 | 21.7% | 1,96 | 1.1% | 23.0% | -1.2% | -- | 6 |
| Monroe | 49.8 | 19.3% | 22 | 6.4% | 48.6% | 9.3% | -- | 3 |
| Oconto | 51.6 | 19.4% | 9 | 0.9% | 40.5% | -3.1% | -- | 5 |
| Oneida | 45.8 | 24.9% | 14 | -4.4% | 14.4% | -1.2% | 5.18% | 9 |
| Outagamie | 58.3 | 14.2% | 160 | 6.6% | 29.3% | 6.9% | 1.58% | 4 |
| Ozaukee | 75.5 | 9.9% | 168 | 2.3% | 31.6% | 10.1% | -- | 3 |
| Pepin | 47.7 | 23.3% | 9 | -1.6% | 35.6% | 2.6% | -- | 7 |
| Pierce | 59.2 | 15.7% | 16 | 6.5% | 21.8% | 8.0% | -- | 3 |
| Polk | 48.5 | 22.4% | 17 | 0.8% | 30.4% | 6.3% | -- | 6 |
| Portage | 51.0 | 17.1% | 40 | 2.8% | 33.7% | 4.0% | 1.76% | 8 |
| Price | 42.6 | 27.2% | 4 | -11.3% | 11.1% | -9.6% | -- | 7 |
| Racine | 54.1 | 18.7% | 218 | 1.9% | 15.9% | -1.9% | -- | 5 |
| Richland | 45.3 | 22.5% | 10 | -0.6% | 44.4% | 5.7% | -- | 4 |
| Rock | 49.4 | 20.1% | 86 | 2.9% | 25.3% | -4.6% | -- | 6 |
| Rusk | 38.7 | 30.7% | 5 | -4.7% | 19.9% | -13.1% | -- | 7 |
| St. Croix | 68.4 | 12.4% | 43 | 18.2% | 49.4% | 21.2% | -- | 1 |
| Sauk | 52.1 | 17.1% | 44 | 6.0% | 35.9% | 3.1% | -- | 5 |
| Sawyer | 39.9 | 28.1% | 5 | -2.1% | 28.3% | 1.3% | -- | 7 |
| Shawano | 46.6 | 22.2% | 14 | -0.2% | 33.1% | 2.2% | 3.72% | 9 |
| Sheboygan | 52.9 | 14.7% | 113 | -0.1% | 35.2% | 0.2% | -- | 5 |
| Taylor | 44.9 | 22.0% | 8 | 4.3% | 23.3% | -4.2% | -- | 7 |
| Trempealeau | 49.1 | 19.9% | 19 | 5.1% | 47.9% | 11.7% | -- | 3 |

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Vernon | 45.5 | 22.1% | 11 | 3.6% | 50.0% | 7.9% | -- | 4 |
| Vilas | 40.8 | 28.0% | 9 | -2.0% | 16.4% | -8.9% | -- | 7 |
| Walworth | 54.0 | 17.3% | 70 | 6.0% | 27.1% | 4.2% | -- | 4 |
| Washburn | 41.9 | 30.3% | 7 | -4.9% | 35.9% | 1.1% | -- | 7 |
| Washington | 66.2 | 15.3% | 121 | 7.7% | 38.1% | 8.4% | -- | 2 |
| Waukesha | 75.9 | 10.9% | 417 | 5.2% | 37.2% | 5.4% | -- | 2 |
| Waupaca | 50.8 | 22.3% | 27 | -1.3% | 32.5% | -2.8% | -- | 7 |
| Waushara | 43.1 | 23.6% | 10 | -1.2% | 39.5% | 6.5% | -- | 6 |
| Winnebago | 51.0 | 15.7% | 206 | 3.9% | 31.6% | 4.4% | 1.02% | 7 |
| Wood | 47.7 | 19.6% | 53 | -1.7% | 23.9% | -3.9% | 4.71% | 8 |
| Threshold | U.S. = $53.0 | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | 1.00% | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2009-2013; Table B19013 Inflation-Adjusted Median Household Income.

[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/.
This secondary indicator is given a weight of 2 in accordance with **Error! Reference source not found.**. **Error! Reference source not found.**. **Error! Reference source not found.**.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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.

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# Appendix E. Secondary Screeners for Aquaculture

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening 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. Aquaculture Secondary Indicators**

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | 44.9 | 26.9% | 7 | 0.7% | 41.5% | 9.3% | -- | 4 |
| Ashland | 38.6 | 26.3% | 8 | -5.3% | 29.7% | -5.7% | -- | 7 |
| Barron | 44.1 | 23.2% | 24 | -1.1% | 32.1% | -1.1% | -- | 7 |
| Bayfield | 44.9 | 25.4% | 3 | -3.3% | 27.5% | -0.5% | -- | 7 |
| Brown | 53.1 | 14.3% | 279 | 6.4% | 32.7% | 5.6% | -- | 2 |
| Buffalo | 47.4 | 18.0% | 6 | -3.1% | 27.7% | -10.3% | -- | 7 |
| Burnett | 39.6 | 27.5% | 6 | -5.7% | 26.2% | 9.1% | -- | 6 |
| Calumet | 65.1 | 10.5% | 39 | 12.1% | 61.1% | 3.1% | -- | 2 |
| Chippewa | 50.6 | 20.0% | 23 | 6.0% | 42.7% | 14.1% | -- | 3 |
| Clark | 43.3 | 20.9% | 8 | 0.9% | 39.8% | 4.1% | -- | 7 |
| Columbia | 57.9 | 15.3% | 27 | 4.0% | 37.1% | 7.5% | -- | 4 |
| Crawford | 42.2 | 23.1% | 13 | -5.0% | 37.8% | 1.3% | -- | 7 |
| Dane | 61.7 | 11.0% | 258 | 11.4% | 46.3% | 12.5% | 0.06% | 0 |
| Dodge | 53.1 | 17.0% | 39 | 1.0% | 38.5% | 4.1% | -- | 5 |
| Door | 50.4 | 20.4% | 27 | -3.9% | 32.8% | 0.7% | -- | 7 |
| Douglas | 45.4 | 26.6% | 12 | 1.1% | 20.7% | -2.8% | 1.62% | 9 |
| Dunn | 48.9 | 19.6% | 19 | 5.2% | 46.2% | 5.1% | -- | 3 |
| Eau Claire | 48.1 | 17.0% | 86 | 4.4% | 42.0% | 8.4% | -- | 2 |
| Florence | 48.0 | 25.6% | 2 | -14.7% | 18.2% | 18.1% | -- | 6 |
| Fond du Lac | 53.8 | 17.8% | 63 | 2.8% | 27.6% | 1.5% | -- | 5 |
| Forest | 40.0 | 28.7% | 3 | -9.3% | 30.2% | -1.6% | -- | 7 |
| Grant | 47.0 | 19.0% | 15 | 4.1% | 51.7% | 5.4% | -- | 4 |
| Green | 55.6 | 15.9% | 26 | 4.7% | 46.1% | 6.1% | -- | 1 |
| Green Lake | 47.0 | 18.9% | 18 | -1.2% | 33.8% | -6.2% | -- | 7 |

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| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Iowa | 55.7 | 16.2% | 13 | 0.7% | 35.3% | -3.8% | -- | 5 |
| Iron | 39.1 | 27.1% | 2 | -14.9% | 49.8% | -12.2% | -- | 5 |
| Jackson | 44.1 | 19.6% | 8 | 4.8% | 42.5% | 1.9% | -- | 4 |
| Jefferson | 53.5 | 17.6% | 59 | 7.2% | 27.2% | 3.2% | 0.85% | 4 |
| Juneau | 45.3 | 24.6% | 12 | 5.7% | 37.8% | 4.0% | -- | 6 |
| Kenosha | 54.9 | 18.3% | 196 | 7.2% | 26.7% | 5.3% | -- | 3 |
| Kewaunee | 53.6 | 17.1% | 21 | -1.0% | 37.5% | 2.5% | -- | 5 |
| La Crosse | 51.3 | 16.9% | 150 | 6.5% | 39.6% | 7.9% | -- | 3 |
| Lafayette | 49.1 | 16.3% | 6 | 3.7% | 75.2% | 9.8% | -- | 3 |
| Langlade | 42.4 | 25.1% | 9 | -6.5% | 26.8% | 0.4% | -- | 7 |
| Lincoln | 49.0 | 24.5% | 12 | -4.8% | 16.8% | -7.9% | -- | 7 |
| Manitowoc | 48.9 | 19.2% | 56 | -3.5% | 30.8% | -0.5% | -- | 6 |
| Marathon | 53.4 | 16.5% | 43 | 3.7% | 28.6% | 1.1% | -- | 5 |
| Marinette | 40.5 | 25.3% | 14 | -5.9% | 28.8% | -0.1% | 1.20% | 9 |
| Marquette | 46.1 | 27.2% | 8 | 2.3% | 29.8% | -2.6% | -- | 7 |
| Menominee | 33.3 | 33.3% | 6 | -8.2% | 43.1% | 14.9% | -- | 4 |
| Milwaukee | 43.2 | 21.7% | 1,967 | 1.1% | 23.0% | -1.2% | 0.01% | 6 |
| Monroe | 49.8 | 19.3% | 22 | 6.4% | 48.6% | 9.3% | -- | 3 |
| Oconto | 51.6 | 19.4% | 9 | 0.9% | 40.5% | -3.1% | -- | 5 |
| Oneida | 45.8 | 24.9% | 14 | -4.4% | 14.4% | -1.2% | 0.61% | 7 |
| Outagamie | 58.3 | 14.2% | 160 | 6.6% | 29.3% | 6.9% | -- | 2 |
| Ozaukee | 75.5 | 9.9% | 168 | 2.3% | 31.6% | 10.1% | -- | 3 |
| Pepin | 47.7 | 23.3% | 9 | -1.6% | 35.6% | 2.6% | -- | 7 |
| Pierce | 59.2 | 15.7% | 16 | 6.5% | 21.8% | 8.0% | -- | 3 |
| Polk | 48.5 | 22.4% | 17 | 0.8% | 30.4% | 6.3% | 0.68% | 6 |
| Portage | 51.0 | 17.1% | 40 | 2.8% | 33.7% | 4.0% | -- | 6 |
| Price | 42.6 | 27.2% | 4 | -11.3% | 11.1% | -9.6% | -- | 7 |
| Racine | 54.1 | 18.7% | 218 | 1.9% | 15.9% | -1.9% | -- | 5 |
| Richland | 45.3 | 22.5% | 10 | -0.6% | 44.4% | 5.7% | -- | 4 |
| Rock | 49.4 | 20.1% | 86 | 2.9% | 25.3% | -4.6% | -- | 6 |
| Rusk | 38.7 | 30.7% | 5 | -4.7% | 19.9% | -13.1% | -- | 7 |
| St. Croix | 68.4 | 12.4% | 43 | 18.2% | 49.4% | 21.2% | -- | 1 |
| Sauk | 52.1 | 17.1% | 44 | 6.0% | 35.9% | 3.1% | -- | 5 |
| Sawyer | 39.9 | 28.1% | 5 | -2.1% | 28.3% | 1.3% | -- | 7 |
| Shawano | 46.6 | 22.2% | 14 | -0.2% | 33.1% | 2.2% | -- | 7 |
| Sheboygan | 52.9 | 14.7% | 113 | -0.1% | 35.2% | 0.2% | 0.28% | 5 |
| Taylor | 44.9 | 22.0% | 8 | 4.3% | 23.3% | -4.2% | -- | 7 |

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004-2014 [4] | Net Earnings Change 2003-2013 [5] **(2 points)** | Job Growth 2003-2013 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Second-ary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Trempealeau | 49.1 | 19.9% | 19 | 5.1% | 47.9% | 11.7% | -- | 3 |
| Vernon | 45.5 | 22.1% | 11 | 3.6% | 50.0% | 7.9% | -- | 4 |
| Vilas | 40.8 | 28.0% | 9 | -2.0% | 16.4% | -8.9% | -- | 7 |
| Walworth | 54.0 | 17.3% | 70 | 6.0% | 27.1% | 4.2% | -- | 4 |
| Washburn | 41.9 | 30.3% | 7 | -4.9% | 35.9% | 1.1% | -- | 7 |
| Washington | 66.2 | 15.3% | 121 | 7.7% | 38.1% | 8.4% | -- | 2 |
| Waukesha | 75.9 | 10.9% | 417 | 5.2% | 37.2% | 5.4% | -- | 2 |
| Waupaca | 50.8 | 22.3% | 27 | -1.3% | 32.5% | -2.8% | -- | 7 |
| Waushara | 43.1 | 23.6% | 10 | -1.2% | 39.5% | 6.5% | 6.31% | 8 |
| Winnebago | 51.0 | 15.7% | 206 | 3.9% | 31.6% | 4.4% | -- | 5 |
| Wood | 47.7 | 19.6% | 53 | -1.7% | 23.9% | -3.9% | -- | 6 |
| Threshold | U.S. = $53.0 | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | 1.00% | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2009-2013; Table B19013 Inflation-Adjusted Median Household Income.

[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/.
This secondary indicator is given a weight of 2 in accordance with **Error! Reference source not found.**. **Error! Reference source not found.**. **Error! Reference source not found.**.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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.

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# Appendix F. Secondary Screeners for NCCW and Industrial Discharges in the "Other" Category

*Last Revised: October 13, 2015*

The following table provides the secondary screening 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 screening value. The total secondary screening value in the last column of this table provides the secondary screening total, which is the value used to determine eligibility for the MDV.

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

**Table 11. Secondary Indicators for NCCW and Industrial Discharges in the "Other" Category**

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004 - 2014 [4] | Net Earnings Change 2003-2013 **(2 points)** [5] | Job Growth 2003-2013 [6] | Secondary Screener Score |
|---|---|---|---|---|---|---|---|
| Adams | 44.9 | 26.9% | 7 | 0.7% | 41.5% | 9.3% | 4 |
| Ashland | 38.6 | 26.3% | 8 | -5.3% | 29.7% | -5.7% | 7 |
| Barron | 44.1 | 23.2% | 24 | -1.1% | 32.1% | -1.1% | 7 |
| Bayfield | 44.9 | 25.4% | 3 | -3.3% | 27.5% | -0.5% | 7 |
| Brown | 53.1 | 14.3% | 279 | 6.4% | 32.7% | 5.6% | 2 |
| Buffalo | 47.4 | 18.0% | 6 | -3.1% | 27.7% | -10.3% | 7 |
| Burnett | 39.6 | 27.5% | 6 | -5.7% | 26.2% | 9.1% | 6 |
| Calumet | 65.1 | 10.5% | 39 | 12.1% | 61.1% | 3.1% | 2 |
| Chippewa | 50.6 | 20.0% | 23 | 6.0% | 42.7% | 14.1% | 3 |
| Clark | 43.3 | 20.9% | 8 | 0.9% | 39.8% | 4.1% | 7 |
| Columbia | 57.9 | 15.3% | 27 | 4.0% | 37.1% | 7.5% | 4 |
| Crawford | 42.2 | 23.1% | 13 | -5.0% | 37.8% | 1.3% | 7 |
| Dane | 61.7 | 11.0% | 258 | 11.4% | 46.3% | 12.5% | 0 |
| Dodge | 53.1 | 17.0% | 39 | 1.0% | 38.5% | 4.1% | 5 |
| Door | 50.4 | 20.4% | 27 | -3.9% | 32.8% | 0.7% | 7 |
| Douglas | 45.4 | 26.6% | 12 | 1.1% | 20.7% | -2.8% | 7 |
| Dunn | 48.9 | 19.6% | 19 | 5.2% | 46.2% | 5.1% | 3 |
| Eau Claire | 48.1 | 17.0% | 86 | 4.4% | 42.0% | 8.4% | 1 |
| Florence | 48.0 | 25.6% | 2 | -14.7% | 18.2% | 18.1% | 6 |
| Fond du Lac | 53.8 | 17.8% | 63 | 2.8% | 27.6% | 1.5% | 5 |
| Forest | 40.0 | 28.7% | 3 | -9.3% | 30.2% | -1.6% | 7 |
| Grant | 47.0 | 19.0% | 15 | 4.1% | 51.7% | 5.4% | 4 |
| Green | 55.6 | 15.9% | 26 | 4.7% | 46.1% | 6.1% | 1 |
| Green Lake | 47.0 | 18.9% | 18 | -1.2% | 33.8% | -6.2% | 7 |

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| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004 - 2014 [4] | Net Earnings Change 2003-2013 **(2 points)** [5] | Job Growth 2003-2013 [6] | Secondary Screener Score |
|---|---|---|---|---|---|---|---|
| Iowa | 55.7 | 16.2% | 13 | 0.7% | 35.3% | -3.8% | 5 |
| Iron | 39.1 | 27.1% | 2 | -14.9% | 49.8% | -12.2% | 5 |
| Jackson | 44.1 | 19.6% | 8 | 4.8% | 42.5% | 1.9% | 4 |
| Jefferson | 53.5 | 17.6% | 59 | 7.2% | 27.2% | 3.2% | 4 |
| Juneau | 45.3 | 24.6% | 12 | 5.7% | 37.8% | 4.0% | 6 |
| Kenosha | 54.9 | 18.3% | 196 | 7.2% | 26.7% | 5.3% | 3 |
| Kewaunee | 53.6 | 17.1% | 21 | -1.0% | 37.5% | 2.5% | 5 |
| La Crosse | 51.3 | 16.9% | 150 | 6.5% | 39.6% | 7.9% | 3 |
| Lafayette | 49.1 | 16.3% | 6 | 3.7% | 75.2% | 9.8% | 3 |
| Langlade | 42.4 | 25.1% | 9 | -6.5% | 26.8% | 0.4% | 7 |
| Lincoln | 49.0 | 24.5% | 12 | -4.8% | 16.8% | -7.9% | 7 |
| Manitowoc | 48.9 | 19.2% | 56 | -3.5% | 30.8% | -0.5% | 6 |
| Marathon | 53.4 | 16.5% | 43 | 3.7% | 28.6% | 1.1% | 5 |
| Marinette | 40.5 | 25.3% | 14 | -5.9% | 28.8% | -0.1% | 7 |
| Marquette | 46.1 | 27.2% | 8 | 2.3% | 29.8% | -2.6% | 7 |
| Menominee | 33.3 | 33.3% | 6 | -8.2% | 43.1% | 14.9% | 4 |
| Milwaukee | 43.2 | 21.7% | 1,967 | 1.1% | 23.0% | -1.2% | 6 |
| Monroe | 49.8 | 19.3% | 22 | 6.4% | 48.6% | 9.3% | 3 |
| Oconto | 51.6 | 19.4% | 9 | 0.9% | 40.5% | -3.1% | 5 |
| Oneida | 45.8 | 24.9% | 14 | -4.4% | 14.4% | -1.2% | 7 |
| Outagamie | 58.3 | 14.2% | 160 | 6.6% | 29.3% | 6.9% | 2 |
| Ozaukee | 75.5 | 9.9% | 168 | 2.3% | 31.6% | 10.1% | 3 |
| Pepin | 47.7 | 23.3% | 9 | -1.6% | 35.6% | 2.6% | 7 |
| Pierce | 59.2 | 15.7% | 16 | 6.5% | 21.8% | 8.0% | 3 |
| Polk | 48.5 | 22.4% | 17 | 0.8% | 30.4% | 6.3% | 6 |
| Portage | 51.0 | 17.1% | 40 | 2.8% | 33.7% | 4.0% | 6 |
| Price | 42.6 | 27.2% | 4 | -11.3% | 11.1% | -9.6% | 7 |
| Racine | 54.1 | 18.7% | 218 | 1.9% | 15.9% | -1.9% | 5 |
| Richland | 45.3 | 22.5% | 10 | -0.6% | 44.4% | 5.7% | 4 |
| Rock | 49.4 | 20.1% | 86 | 2.9% | 25.3% | -4.6% | 6 |
| Rusk | 38.7 | 30.7% | 5 | -4.7% | 19.9% | -13.1% | 7 |
| St. Croix | 68.4 | 12.4% | 43 | 18.2% | 49.4% | 21.2% | 1 |
| Sauk | 52.1 | 17.1% | 44 | 6.0% | 35.9% | 3.1% | 5 |
| Sawyer | 39.9 | 28.1% | 5 | -2.1% | 28.3% | 1.3% | 7 |
| Shawano | 46.6 | 22.2% | 14 | -0.2% | 33.1% | 2.2% | 7 |
| Sheboygan | 52.9 | 14.7% | 113 | -0.1% | 35.2% | 0.2% | 5 |
| Taylor | 44.9 | 22.0% | 8 | 4.3% | 23.3% | -4.2% | 7 |
| Trempealeau | 49.1 | 19.9% | 19 | 5.1% | 47.9% | 11.7% | 3 |

| | Median Household Income in Thousands of Dollars [1] | Personal Current Transfer Receipts Share of Total Income 2013 [2] | Jobs per Square Mile [3] | Population Change 2004 - 2014 [4] | Net Earnings Change 2003-2013 **(2 points)** [5] | Job Growth 2003-2013 [6] | Secondary Screener Score |
|---|---|---|---|---|---|---|---|
| Vernon | 45.5 | 22.1% | 11 | 3.6% | 50.0% | 7.9% | 4 |
| Vilas | 40.8 | 28.0% | 9 | -2.0% | 16.4% | -8.9% | 7 |
| Walworth | 54.0 | 17.3% | 70 | 6.0% | 27.1% | 4.2% | 4 |
| Washburn | 41.9 | 30.3% | 7 | -4.9% | 35.9% | 1.1% | 7 |
| Washington | 66.2 | 15.3% | 121 | 7.7% | 38.1% | 8.4% | 2 |
| Waukesha | 75.9 | 10.9% | 417 | 5.2% | 37.2% | 5.4% | 2 |
| Waupaca | 50.8 | 22.3% | 27 | -1.3% | 32.5% | -2.8% | 7 |
| Waushara | 43.1 | 23.6% | 10 | -1.2% | 39.5% | 6.5% | 6 |
| Winnebago | 51.0 | 15.7% | 206 | 3.9% | 31.6% | 4.4% | 5 |
| Wood | 47.7 | 19.6% | 53 | -1.7% | 23.9% | -3.9% | 6 |
| Threshold | U.S. = $53.0 | U.S. = 17.1% | WI = 50 | ~1/2 U.S = 4.4% | U.S = 39.9% | ~1/2 U.S = 4.8% | Secondary Screener Score |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2009-2013; Table B19013 Inflation-Adjusted Median Household Income.

[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; 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 CA04; http://www.bea.gov/. This secondary indicator is given a weight of 2 in accordance with **Error! Reference source not found.**. **Error! Reference source not found.**. **Error! Reference source not found.**.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CA04; http://www.bea.gov/.

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# Appendix G. Primary Screener Thresholds for Industrial Dischargers

*Last Revised: August 10, 2015*

Table 12 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 13.

These values will be re-evaluated to determine if updates are needed based on new information gathered during the triennial standards review process (see Section 5.04, p.58, for details).

**Table 12. Industrial primary screener thresholds based on 75$^{th}$ percentile of discharges incurring costs within each category.**

| Industrial Category | 75% Threshold for Discharges |
|---|---|
| **Cheese Manufacturing** | $1,510,000 |
| **Food Processing** | $1,890,000 |
| **Paper** | $11,200,000 |
| **Aquaculture** | $2,600,000 |
| **NCCW** | $1,350,000 |
| **Other Industrial Discharges** | $943,000 |

**Table 13. Industrial primary screener thresholds based on 75$^{th}$ percentile of counties incurring costs within each category.**

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

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

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

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# Appendix H. Categorical Eligibility by County

*Last Revised: August 10, 2015*

Table 14 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 in 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 and cheese manufacturing 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. Stat. See Section 2.01, p. 15, and Appendices A-G for details.

**Table 14. Potentially eligible MDV areas by discharge category.**

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

| | Municipal | Cheese | Food | Fish | Paper | NCCW | Other |
|---|---|---|---|---|---|---|---|
| Jackson | X | | | | | | |
| Jefferson | X | | | X | | X | X |
| Juneau | X | | | | | | |
| Kenosha | X | | X | | | | |
| Kewaunee | X | X | | | | | |
| La Crosse | X | | | | | X | X |
| Lafeyette | X | X | | | | | |
| Langlade | X | | | X | | X | |
| Lincoln | X | | | | X | | |
| Manitowoc | X | | | | | X | |
| Marathon | X | X | X | | X | X | |
| Marinette | X | | | X | | | X |
| Marquette | X | | | | | | |
| Menominee | | | | | | | |
| Milwaukee | X | | | X | | X | X |
| Monroe | X | | X | | | X | |
| Oconto | X | X | X | X | X | X | |
| Oneida | X | | | X | X | | |
| Outagamie | X | | | | X | X | |
| Ozaukee | X | | X | | | X | |
| Pepin | X | | | | | | |
| Pierce | X | X | | | | | |
| Polk | X | | | X | | X | |
| Portage | X | X | X | | X | | |
| Price | X | | | | | | X |
| Racine | X | | | | | | |
| Richland | X | X | | | | X | |
| Rock | X | | | | | X | |
| Rusk | X | | | | X | | |
| Sauk | X | X | X | | | X | X |
| Sawyer | | | | | | | |
| Shawano | X | | | | X | | |
| Sheboygan | X | X | X | X | | X | X |
| St. Croix | | | | | | | |
| Taylor | X | X | | | | | |
| Trempealeau | X | | | | | X | |
| Vernon | X | X | | | | | |
| Vilas | X | | | | | | |
| Walworth | X | | | | | | |
| Washburn | | | | X | | | |
| Washington | X | | | | | X | X |
| Waukesha | X | | | | | | |

| | Municipal | Cheese | Food | Fish | Paper | NCCW | Other |
|---|---|---|---|---|---|---|---|
| **Waupaca** | X | | | | | X | |
| **Waushara** | X | | | | | X | |
| **Winnebago** | X | | | | X | X | |
| **Wood** | X | X | | | X | X | X |

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# Appendix I. Monitoring Guidance for County MDV Plans

County Plans submitted to receive Multi-Discharge Variance funds may wish to include (large scale projects; > $200,000/yr.) to have an in-stream monitoring strategy. For plans that are developed consistent with 9-key element plans, this monitoring strategy is required. County plans should, at minimum, describe the location, frequency, and sampling protocols that will be used for in- stream monitoring. The following guidance is provided to help develop this monitoring strategy.

**Monitoring must determine**:

- Who will collect TP or other data
- Who will analyze these data
- When and where will samples be collected
- The quality assurance protocols that will be followed

***Why collect in-stream data:*** In-stream data is **critical** to set load reduction goals, to assess trends and improvements in water quality over time before and/or after practice implementation, to verify compliance or noncompliance with Wisconsin's phosphorus numeric criteria and, if selected, evaluate other WQ indicators (e.g., total suspended solids (TSS), temperature, or nitrogen).

***What to collect:*** In-stream phosphorus and flow measurements are recommended as the minimum monitoring parameters for Multi-Discharge Variance (MDV) plans. Typically, these measurements will be grab samples; however, composite sampling or continuous monitoring may also be advantageous. Dischargers or their partners may wish to collect additional parameters such as total suspended solids (TSS), temperature, or nitrogen for other permitting or watershed management projects.

***Where to collect samples:*** In-stream phosphorus data should be, at a minimum, collected at the furthest downstream point of the MDV plan area. Additional monitoring locations may also be selected within tributary streams or downstream of areas where significant implementation of practices has occurred. Additional locations can also include up and downstream monitoring of management areas, storm water monitoring, edge-of-field monitoring, and sampling location(s) in reference watersheds where no management activities are targeted. Phosphorus monitoring by TMDL reach is also recommended if the MDV plan area is within a TMDL.

It is strongly advised to collect phosphorus and flow data in tributaries/subwatersheds upstream of the MDV area pour point. These additional sampling locations are essential to prioritize management activities, determine the effectiveness of management activities, and quantify interim water quality improvements made in the watershed. Additional sampling points can also improve the accuracy of MDV watershed modeling requirements. Modeling the P reduction performance from various management activities is a requirement of MDV plans. This same effort can be expanded within an MDV plan area to predict anticipated load reductions gained from future practices implemented and to set interim success towards MDV plan goals for a watershed.

***Monitoring frequency:*** Minimum data requirements for MDV phosphorus monitoring should be the same as those used by DNR for waterbody assessments and impairment listing, unless otherwise specified by DNR. At the time this guidance was written, this methodology was available in Wisconsin's

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Consolidated Assessment and Listing Methodology ("WisCALM") guidance at http://dnr.wi.gov/topic/surfacewater/assessments.html. The WisCALM guidance for streams and rivers specifies that total phosphorus samples should be collected, during pre-selected days or dates (e.g., second Tuesday of the month), once per month (about 30 days apart) each month from May through October[15] at a minimum. In other words, monthly grab samples collected from May to October is the minimum monitoring frequency for the MDV plan. Flow data should be collected at the same time as phosphorus samples are collected. Sampling frequency for other WQ parameters may be more or less than the phosphorus samples. Please contact DNR WQ biologists or TMDL staff for recommended sampling frequency.

Counties or their partners within a MDV plan area may also want to consider collecting additional phosphorus samples and/or additional sampling parameters above the minimum requirements. Sampling at a frequency greater than the minimum requirement is advantageous for MDV and other projects, such as Adaptive Management plans. Additional sampling can minimize data variability, mitigate outliers in the dataset, and allow trends in water quality to be detected. Given these benefits, it is strongly encouraged to collect biweekly grab samples from May to October rather than monthly grab samples[16].

***Collecting Samples:*** The MDV plan should specify the person(s) responsible for collecting in-stream samples, and identify a primary point of contact for MDV monitoring activities. There may be opportunities in your watershed to work with partners such as consultants, point sources, or citizen groups to collect these data. Partnerships can be beneficial to help reduce overhead monitoring costs, and to maximize the public's involvement and connection to the watershed project.

Phosphorus samples must meet preservation requirements in ch. NR 219, Wis. Adm. Code, Table F. The current preservation requirements specify that the sample be acidified to a pH of less than 2 with sulfuric acid and the sample be cooled to less than or equal to 6°C (but not frozen). This means having acidified sample bottles and a cooler with ice available for sample collection. Certified laboratories can supply correct bottles and preservative.

Quality assurance protocols should be created to ensure that samples are collected and handled using proper sampling techniques. The MDV plan can specify its own quality assurances, or can take advantage of DNR's citizen-based monitoring assurance protocols already established. To successfully engage citizen-based monitoring volunteers and/or the citizen monitoring quality assurance protocols, monitoring participants are strongly recommended to attend a Water Action Volunteer (WAV) Training Program. For details on the WAV program, and training opportunities in your area, visit http://watermonitoring.uwex.edu/level1/wav.html. A marginal training fee may apply for this course.

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[15] Discharges with variable effluent flow in the winter months may be required to monitor in-stream

[16] Robertson, Dale (2003). Influence of Difference Temporal Sampling Strategies on Estimating Total Phosphorus and Suspended Sediment Concentrations and Transport in Small Streams. Jrnl. Of Am. Water Resrc. Assoc. 1281-1308.

Once stream locations have been selected, phosphorus and other WQ samples should be collected as follows (Note: the following guidance is subject to change as new monitoring protocols become available):

- ***Sample in portion of stream/river with greatest or strongest flow***

  This may or may not be in the middle of the stream. In general, relatively straight reaches of the stream are preferred. However, if a meandering section of the stream is selected for sampling, the sample should be collected in the portion with greatest flow at the outside of the meander. Slow flow areas along the banks, in eddies or immediately downstream of islands should be avoided.

- ***Sample at a depth of 3 to 6 inches below surface using triple rinsed sample bottles, completely filling the sample bottle***

  Surface samples tend to have debris and other things floating on them and should be avoided. Whether a sample is collected by hand directly in a sample bottle or with a sampling device, such as a Van Dorn sampling bottle, the collection vessel needs to be rinsed three times with water from the same location as the sample. Care should be made to avoid touching the inside cap of sample bottles.

- ***Avoid disturbing the sample site***

  If the sample is collected by wading in the stream, walk upstream to the sample location and take the sample facing upstream.

- ***Don't trespass on private lands to collect sample***

  Use a public access point, such as a road right of way, or seek permission from the landowner or operator to cross land for the purpose of collecting the samples.

***Analyzing samples:*** MDV plans need to identify who is financially responsible for the costs of collecting and analyzing samples. Samples must be analyzed by an accredited laboratory per ch. NR 149, Wis. Adm. Code, using proper sample preservation and analysis protocols (Table 15 displays currently approved methods). Those requirements can also be found in ch. NR 219, Wis. Adm. Code, Table B and F. If a facility has their own laboratory that is registered or certified to analyze phosphorus on-site, then they can be used to analyze samples as long as other requirements are met (i.e., level of detection - LOD - is low enough).

DNR requires analysis that will achieve a level of detection (LOD) at 30 µg/L and a level of quantitation (LOQ) at 90 µg/L to ensure that meaningful results are gathered. For a list of certified laboratories in your area visit http://dnr.wi.gov/regulations/labcert/lablists.html.

MDV monitoring partners should work with the certified lab of their choosing to establish a budget code, create lab forms, and ensure that the lab has proper LODs and LOQs to meet the project needs. A

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map of sampling locations and the quality assurance protocols should also be submitted to DNR with the MDV plan. It is also strongly recommended that the laboratory work with DNR to submit sampling results to DNR directly via the Surface Water Integrated Monitoring System (SWIMS) database. This will simplify MDV monitoring/annual reports and ensure that the LOD, LOQ and Lab ID are reported to DNR.

**Table 15. Currently approved Methods for Analysis of Total Phosphorus in Wastewater**

| Analytical Technology | U.S. EPA Method | Standard Methods | ASTM Method | USGS Method | Other[17] |
|---|---|---|---|---|---|
| **Persulfate digestion** | | 4500 - P B.5 18, 19, 20 or 21 edition | | | 973.55 |
| *Followed by one of the following :* | | | | | |
| **Manual Ascorbic acid reduction** | 365.3 (1978) | 4500 - P E[18] 18, 19, 20 or 21 edition | D515-88 (A) | I-4600-85 | 973.56 |
| **Automated Ascorbic acid reduction** | 365.1 rev 2.0 (1993) | 4500 - P F[18] 18, 19, 20 or 21 edition | | | |
| **Semi-automated block digester** | 365.4 (1974) | | D515-88 (B) | I-4610-91 | |

***Demonstrating Improvements:*** As previously mentioned MDV plans should be designed and implemented to evaluate and demonstrate progress towards meeting MDV plan goals throughout the duration of the project. Failure to collect samples, poor or limited sample collections or QA/QC methods will require re-evaluation of a county's MDV monitoring strategy. It may also be cause for DNR to reduce or withhold MDV funds to counties, per MDV statutory requirements. With that said, DNR recognizes the natural variability and the difficulty in completing monitoring. Progress can be demonstrated in several ways including demonstrating land use changes or changes in behavior in the project area, measuring water quality improvements through in-stream monitoring, or modeling load reductions over time.

In-stream monitoring is a critical piece to demonstrate improvements through modeling or through direct observation in MDV plans. It is unlikely that the minimum requirements specified in the above guidance will be sufficient to detect changes in phosphorus loading or water quality trends ***over time***; it is solely meant to address whether or not the phosphorus criteria is being attained or not at the time when the samples were collected.

There are several opportunities to expand the in-stream monitoring portion of the MDV plan to more accurately demonstrate water quality trends and progress over time. Because every MDV project will have a unique watershed, stream network, and project needs, no two monitoring programs will be identical. It is strongly recommended MDV plans and their partners work with the DNR MDV contacts and water quality biologists to develop a monitoring strategy. Additionally, Table 16 is meant to

[17] "Official Methods of Analysis of the Association of Official Analytical Chemists" 16th Edition 1998
[18] The letters E and F were switched in ch. NR 219, Wis. Adm. Code - this is the correct reference

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highlight some potential opportunities to strengthen the monitoring strategy. As mentioned, the monitoring strategy must sufficiently meet the minimum requirements specified in the section of the guidance to be approved; additional monitoring, although encouraged, is not required unless specified by the Department.

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Table 16. Advantages and disadvantages of monitoring opportunities for MDV projects.

| Opportunities | Recommendation | Advantages | Disadvantages | Potential Data Collection Methods |
|---|---|---|---|---|
| **Collecting data prior to MDV project starts** | Collect biweekly samples 1-2 years prior to project start date | • Established baseline for project<br>• More accurate data to help determine phosphorus reductions needed to meet water quality standards<br>• Better detection of water quality trends, and changes in phosphorus loadings<br>• More accurate dataset to run/calibrate watershed models | • Additional costs/time | • Collect using same methodology and protocols described in this section of guidance<br>• Set up gauging stations/continuous monitoring stations<br>• Install a staff gauge |
| **Collecting additional samples** | Collect samples biweekly instead of monthly | • Can be used to offset/mitigate the impacts of large storm event or abnormal weather patterns when determining final compliance with MDV<br>• Better detection of water quality trends, and changes in phosphorus loadings<br>• More accurate dataset to run/calibrate watershed models<br>• Results can be used in concentration-flow-time regression approach to project changes in load over time | • Additional costs/time<br>• Additional sampling points may still be necessary | • Collect using same methodology and protocols described in this section of guidance<br>• Set up gauging stations/continuous monitoring stations<br>• Install a staff gauge |
| **Collecting data at additional sampling locations** | Target samples throughout the watershed with a particular emphasis on areas of greatest land use change | • Helps detect changes in water quality resulting from management practice installation or other MDV actions<br>• Identifies areas of potential concern where additional improvements are needed<br>• Earlier detection of water quality improvements (headwater systems likely to respond more quickly than at the pour point)<br>• More accurate dataset to run/calibrate watershed models | • Additional costs/time<br>• Additional samples may still be needed at each sampling location | • Sample at upstream tributaries before they enter the direct receiving water<br>• Target samples where management practices will be installed |
| **Extended sampling collection period** | Monitor from ice out to ice in, rather than May-Oct | • Helps capture large loading events that occur in the spring/fall of the year<br>• Helps detect changes in water quality resulting from | • Additional costs/time<br>• Data collected outside May-Oct cannot be used | • Collect samples using same/consistent |

| | | | | |
|---|---|---|---|---|
| | | management practice installation or other MDV actions<br>• Identifies areas of potential concern where additional improvements are needed<br>• Helps identify which management practices may be more effective | to calculate compliance with the P criteria | methodology and protocols described in this section of guidance |
| **Targeted storm event sampling** | Collect samples during runoff events (typically during/after a rain event) | • Captures large loading events<br>• Helps detect changes in water quality resulting from management practice installation or other MDV actions<br>• Identifies areas of potential concern where additional improvements are needed<br>• Helps identify which management practices may be more effective | • Additional costs/time<br>• More labor intensive<br>• Difficult to predict when rain/runoff events will occur | • Collect grab samples<br>• Set up gauging stations/continuous monitoring stations<br>• Install a staff gauge |
| **Biological data collection** | Collected macro IBI data | • Quantifies the biological response/benefits of MDV and management practices | • Additional costs/time<br>• Additional training needed to accurately collect samples | • Contact DNR WQ biologist |

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**Table 17. Blank monitoring overview table. A map of samples points should also be submitted.**

| **Monitoring Location** | | | | | |
|---|---|---|---|---|---|
| **Sample Point** | **Sample Point Description** | **Latitude** | **Longitude** | **Parameters to be collected** | **Sampling Frequency** |
| *Example: Point 1* | *Point of Compliance* | *43.324946 (43° 19' 30" N)* | *-89.533045 (89° 31' 59" W)* | *Phosphorus, Total Suspended Solids* | *Biweekly, May-Oct.* |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| **Sampling Methodology** | | | |
|---|---|---|---|
| Who will collect samples? | | | |
| Lab Information | Name: | | |
| | Lab ID: | | |
| | Address: | | |
| Phosphorus Analysis | Methodology used: | | |
| | LOD: | | |
| | LOQ: | | |
| Other Lab Analyses for Adaptive Management | Pollutant 1 Name: | Pollutant 2 Name: | Pollutant 3 Name: |
| | Methodology used: | Methodology used: | Methodology used: |
| | LOD: | LOD: | LOD: |
| | LOQ: | LOQ: | LOQ: |