

Pollutant Variances

WWOA ANNUAL
CONFERENCE

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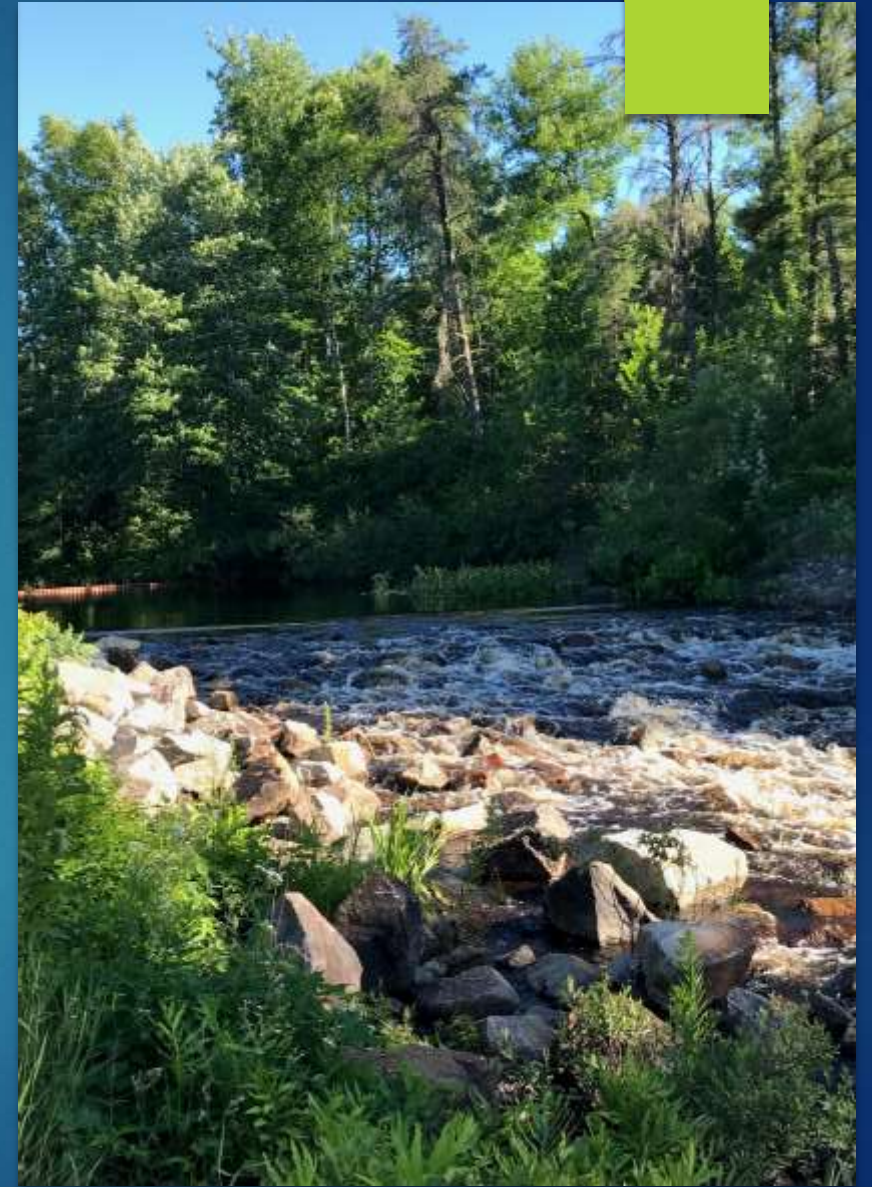
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PHOSPHORUS COORDINATOR



A WQS Variance Is...

...a **temporary** change to a designated use and criterion (effluent limitation or standard).

- Used to make incremental progress when standard cannot be met and the amount of reduction is not precisely known.
- All variances that the State adopts (individual or multi-discharger) are considered standard actions. Therefore, they must be reviewed and approved by EPA prior to implementation.



Governing Statutes and Code

NR 105/106 –
WQ criteria
and
calculating
limits

NR 217 –
phosphorus
requirements

NR 200
Subchapter III
– Application
for WQS
variances

s. 283.15 Wis.
Stats.–
Variances to
WQS

40 CFR 131
(131.14) –
Water Quality
Standard
Variances

40 CFR 132
-Water Quality
Guidance for
Great Lakes
System

s. 283.16 Wis.
Stats. –
Statewide
Variance for
Phosphorus

Roles



Steps in Variance Process:

Apply

Approved

- Step 1 – Permittee submits variance application with permit application for reissuance
- 2 – DNR Reviews Application
- 3 – DNR requests additional information and documentation from permittee to justify need and establish HAC, **if needed**
- 4 – DNR drafts permit and variance package, completes internal review
- 5 – DNR requests additional information from permittee, **if needed**
- 6 – DNR makes updates to draft package, **if needed**
- 7 – DNR sends pre-public notice package to EPA for initial review (**courtesy not required**)
- 8 – EPA completes initial review of pre-public notice submittal
- 9 – DNR requests additional information from permittee, makes updates to package **if needed**
- 10 – DNR sends permit and variance to public notice (45-days notice of hearing)
- 11 – Permittee, public, and EPA submit public comments no later than 7 days after hearing date
- 12 – DNR addresses comments, updates permit and/or variance package, **if needed**
- 13 – DNR makes final decision on variance and the State adopts the variance
- 14 - EPA reviews final variance submittal and approves variance
- 15 – DNR reissues permit with approved variance
- 16 - Permittee implements PMP actions and follows permit conditions in reissued permit

Permittee reapplies for variance if needed and submits with permit application for reissuance

Elements of an Approvable Variance

Approval



Justification

Reductions



Good SRM Plan

SRM Action	Year	Year	Year	Year	Year
1. Assess current SRM plan	0	0	0	0	0
2. Update SRM plan	0	0	0	0	0
3. Conduct training of public employees	0	0	0	0	0
4. Conduct training of private employees	0	0	0	0	0
5. Conduct training of contractors	0	0	0	0	0
6. Conduct training of other personnel	0	0	0	0	0
7. Conduct training of other personnel	0	0	0	0	0
8. Conduct training of other personnel	0	0	0	0	0
9. Conduct training of other personnel	0	0	0	0	0
10. Conduct training of other personnel	0	0	0	0	0

Detailed documentation of all actions



Good Annual Reports

Preliminary Variance Package Documents

Chloride

- WQBEL
- **CI Variance Application**
- **SRM Plan**
- **Annual Reports (for reissued variances)**
- Data Trends
- Substantial Compliance Determination
- **Economic Justification**
 - **RO Screener ** (Muni)**
 - **Lime Softening Screener** (Muni)**
- Facility Specific Data Sheet (FSDS)
- Map
- Draft Permit
- Draft Fact Sheet
- Previous Permit (reissued variances only)
- Public Notice

Mercury

- WQBEL
- **Hg Variance Application**
- **PMP Plan**
- **Annual Reports (for reissued variances)**
- Data Trends
- Substantial Compliance Determination
- Facility Specific Data Sheet (FSDS)
- Map
- Draft Permit
- Draft Fact Sheet
- Previous Permit (reissued variances only)
- Public Notice

Phosphorus

- WQBEL
- **TP Variance Application**
- **PMP (Type 3) or Optimization Plan (Type 2)**
- **3rd/4th year Reports**
- Data Trends
- Substantial Compliance Determination
- Facility Specific Data Sheet (FSDS)
- Map
- Draft Permit
- Draft Fact Sheet
- Public Notice

Red items are completed by permittee and submitted to WDNR.

**Permittee provides inputs, WDNR runs spreadsheet analysis.

Justifying the Need for the Variance:

Why is attaining the water quality standard not feasible?

Factors:

1. Naturally occurring pollutant concentrations
2. Natural, ephemeral, intermittent or low flow conditions
3. Human caused conditions...would cause more environmental damage to correct
4. Hydrologic modifications...not feasible to restore
5. Physical conditions related to the natural features of the water body unrelated to water quality
- 6. Will cause substantial and widespread adverse social and economic impacts in the area**

s. 283.15 (4) Wis.
Stats.

Highest Attainable Condition (HAC)

- ▶ Federal Regulations (40 CFR 131.14)

Variances must include requirements that apply **throughout the term of the variance** that represent the **highest attainable condition** of the waterbody segment.



What is HAC?

Highest Attainable Condition

In other words:
"The best possible environmental outcome given economic and technical constraints"

Type 2
The interim effluent condition that reflects the greatest pollutant reduction achievable

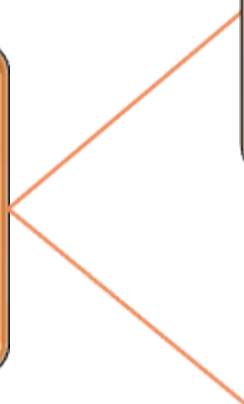
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Installation of treatment technology to achieve new interim limit

Type 3
If no additional feasible pollutant control technology can be identified

=

Interim limit equal to level currently achievable and implementation of PMP/SRM



Variance Documents: The Permittee's Role



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SRM/PMP Plan

Annual Reports

Source Reduction Measures

(Supports Type 3 HAC)

- ▶ Source Reduction Measures (SRMs) = Pollutant Minimization Plan (PMP)
- ▶ Every facility/community is different - think outside the box!
- ▶ It's the quality of the action that matters, not the quantity of actions.
- ▶ Actions should be specified for each year.
 - ▶ Contributors
 - ▶ In-plant Sources
 - ▶ Watershed



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Good SRM Plan

Department reviews to ensure Highest Attainable Condition

- ▶ 1. Source Identification
 - ▶ Mass balance approach (quantify as feasible)
 - ▶ Types of wastewater contributors (industrial, residential, etc.)
- ▶ 2. Address Sources
 - ▶ Prioritize largest sources first
 - ▶ Clear/logical steps to reduce pollutants at each source
- ▶ 3. Adapt as needed
 - ▶ Are SRMs still relevant?
 - ▶ New sources?
 - ▶ Does the approach work?
- ▶ 4. Only as long as necessary
 - ▶ Actions included in all years of permit term

Pollutant Specific - Chloride

Type 3 HAC

Source Reduction Measures

- ▶ NOT limited to what is listed in NR 106, Wis. Adm. Code.
 - ▶ Can use Tiers in 106.09, Wis. Adm. Code, as starting point but need to expand
 - ▶ Include actions to address all identified sources
 - ▶ Investigate any potential new sources
 - ▶ Example of a measure not listed in 106 – Road Salt!!



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SRM Initiative		Year 1 (2017)	Year 2 (2018)	Year 3 (2019)	Year 4 (2020)	Year 5 (2021)
EDUCATION						
	Water softener brochure available at Village Hall kiosk	ongoing	ongoing	ongoing	ongoing	ongoing
	Water softener info in sewer bill mailing	ongoing	ongoing	ongoing	ongoing	ongoing
	Water softener info on website	ongoing	ongoing	ongoing	ongoing	ongoing
NEW	Speak at Lake District annual town-hall style meeting in July	remind property owners of chloride concerns	update property owners of new ordinances and incentive programs	update property owners of new ordinances and incentive programs	update property owners of new ordinances and incentive programs	update property owners of new ordinances and incentive programs
NEW	Open house at sewer plant (tour and educational sessions)	develop event	hold event	evaluate event success	develop event	hold event
MONITORING						
NEW	Survey residents of water softening equipment and practices	develop survey	send survey out with sewer bill	develop new strategies based on survey results		
NEW	High-user visits to discuss equipment and practices	meet with all high users and document visits, actually look at equipment	meet with all new businesses	meet with all new businesses, ask existing businesses if any changes	meet with all new businesses	meet with all new businesses, ask existing businesses if any changes
REGULATIONS						
NEW	Ordinance mandating DIR for new and replacement softeners	develop ordinance and ask Board to adopt	notify vendors of Village ordinance			
NEW	Ordinance mandating outside hose-bibs not be softened water		develop ordinance and enforcement mechanism	ask Board to adopt ordinance	begin enforcement methods and tracking	

Chloride SRM Example

Pollutant Specific - Chloride

► Tools and Resources

- WI SaltWise website/resources - <https://www.wisaltwise.com/>
- WisDOT - <https://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/winter-maintenance/default.aspx>

► Other Facilities

- New DNR Guidance currently under development
 - Templates – fillable SRM Plan, residential water softener survey
 - List of potential SRMs
 - Examples



Tuning up your water softener can reduce chloride discharge by ~25%.¹

Replacing an older model with a new high efficiency model reduces chloride discharge by ~50%.¹



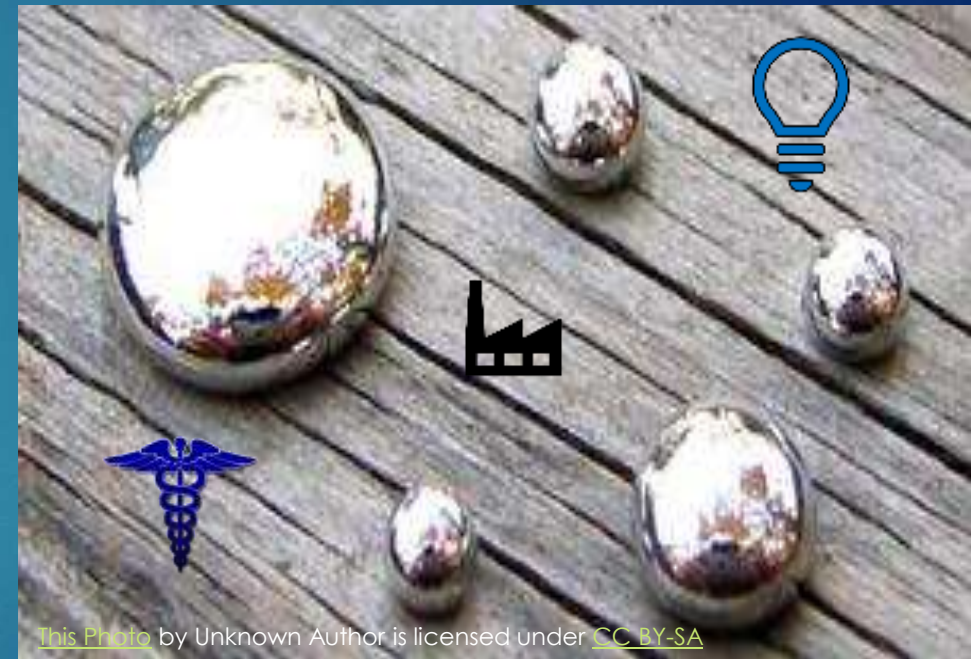
¹Lake, K., R. Erickson, and A. F. Cantor. 2015. The reduction of influent chloride to wastewater treatment plants by the optimization of residential water softeners. Madison Metropolitan Sewerage District, Madison, WI.

Pollutant Specific - Mercury

HAC Type 3

Pollutant Minimization Plan (s. NR 106.145(7), Wis. Adm. Code)

- ▶ Address common sources
 - ▶ Medical, Dental, Schools, Veterinary clinics
 - ▶ Industry
 - ▶ Collect Mercury containing devices
- ▶ What's causing the unexpected spikes in data?
 - ▶ Legacy mercury in collection system???





Mercury PMP Example

Action Item	Detail	Duration
Mercury Source Identification Efforts		
Monitor for any new sources that could increase the influent numbers to the plant.	Test any new industry or commercial account that comes into the city to ensure they are not adding to the issue. Then educate them on the program and its importance.	Ongoing.
Conduct additional testing on the influent to monitor progress of the Green Tier program	On an as needed basis if the influent numbers rise over time.	Ongoing.
Actions to Minimize Mercury Sources		
Community Education and Outreach	Use the City Web site to promote the Clean Sweep annual event.	Annual
Community Education and Outreach	Use MCTV and social media to educate the public on proper mercury management and how they can help the environment.	Ongoing.
Dental facility contact	Conduct on site visits on a random basis and connect with each facility every year by phone at minimum.	Ongoing.
Follow-up with all facilities listed	Make an annual site visit or phone contact with every facility listed in the Green Tier program.	Ongoing.
Maintenance of Source Reduction		
Update all facilities information in our records	Remain vigilant and current with all contact information about listed facilities.	Ongoing.
Community Education and Outreach	Use all types of media to educate the public about the need for mercury reduction in the	Ongoing.

Pollutant Specific - Phosphorus



Rivers

100 µg/L



Streams¹

75 µg/L



Reservoirs

- Not Stratified = 40 µg/L
- Stratified = 30 µg/L



Inland Lakes²

Ranges from 15-30 µg/L



Great Lakes

- Lake Michigan = 7 µg/L
- Lake Superior = 5 µg/L

- ▶ 2010 Phosphorus Rule
- ▶ 7-9 Year Compliance Schedules
- ▶ Nonpoint source offsets viable for compliance and variance options

Pollutant Specific - Phosphorus

Multi-Discharger Variance (MDV)

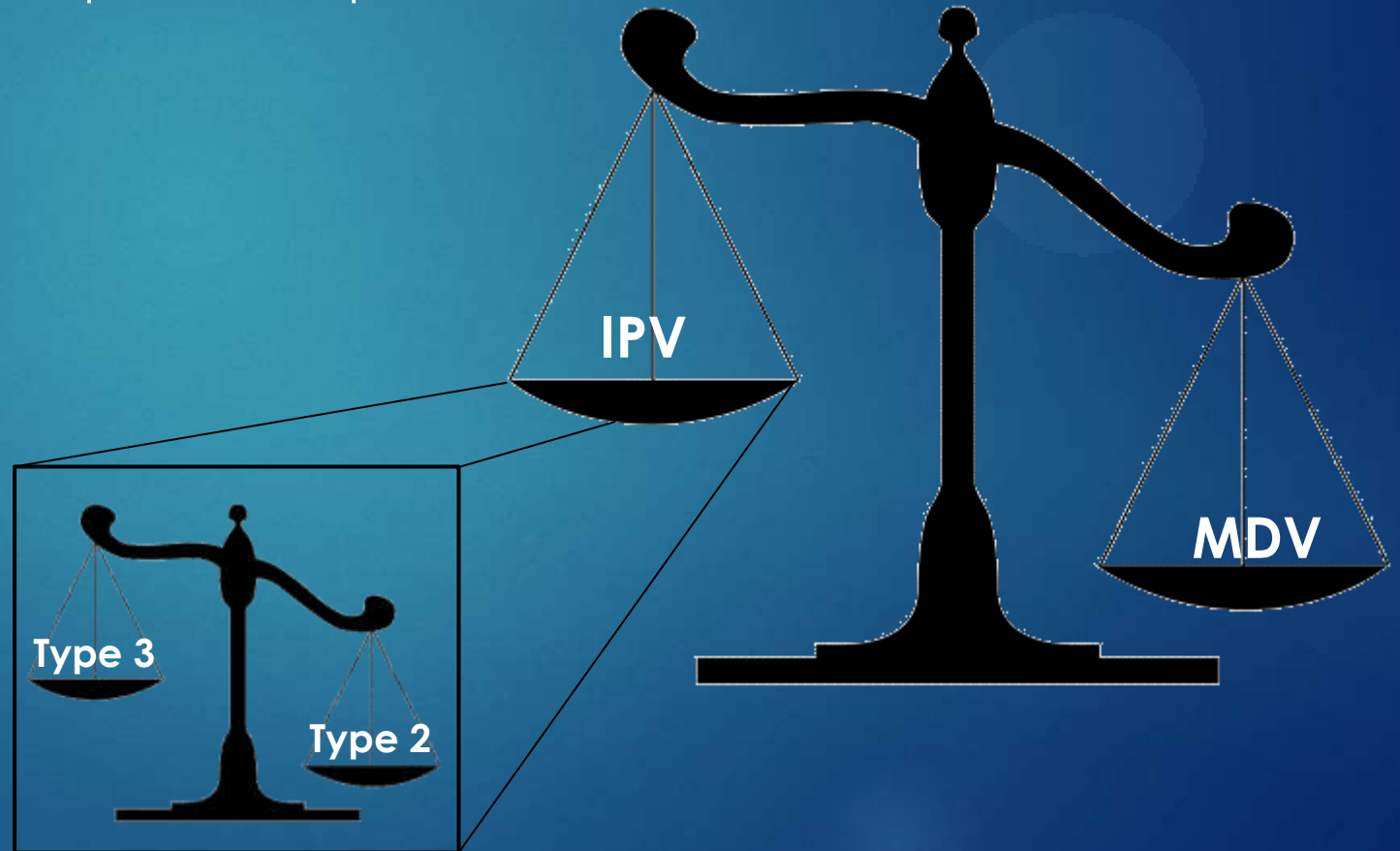
- ▶ Bundles multiple variances under one EPA approval
- ▶ Economics evaluated on statewide basis (economic screeners must be met)
- ▶ Facilities have to “fit the mold”
- ▶ Approaches to P reduction less flexible

Individual Phosphorus Variance (IPV)

- ▶ Variances issued facility-by-facility
- ▶ Requires economic demonstration (% MHI)
- ▶ HAC determined on a case-by-case basis
- ▶ PMP required, allows for flexibility in approaches and timing for P reductions

Pollutant Specific - Phosphorus

- ▶ 3 Avenues to Implement HAC for Phosphorus Variances
 - ▶ MDV – Permit requires a watershed offset
 - ▶ Type 2 – Permit requires effluent/process improvement
 - ▶ Type 3- Permit requires efforts



Pollutant Specific - Phosphorus

- ▶ PMP
 - ▶ Select a final alternative and make logical steps towards it.
 - ▶ Compliance via upgrade
 - ▶ Common route: Chemical addition implemented throughout permit term
 - ▶ Compliance via water quality trading or adaptive management
 - ▶ Common route: efforts to find nonpoint source offsets throughout permit term
 - ▶ Steps should be relevant to phosphorus
 - ▶ Integrate with overall facility planning objectives
 - ▶ Some facility planning objectives may be outside the scope of the variance

“If you don’t know where you’re going, you might wind up some place else...”

Implementation

- ▶ How do YOU demonstrate HAC?



- ▶ PMP

- ▶ Implement PMP actions for each year
- ▶ Opportunities may exist outside your annual PMP revisit
- ▶ Document Efforts
- ▶ Document Results

- ▶ Annual Report

- ▶ Summarize efforts / results
(You did document them, right?)

- ▶ Adapt as needed



Lets show the skeptics that variances work!

Annual Reporting

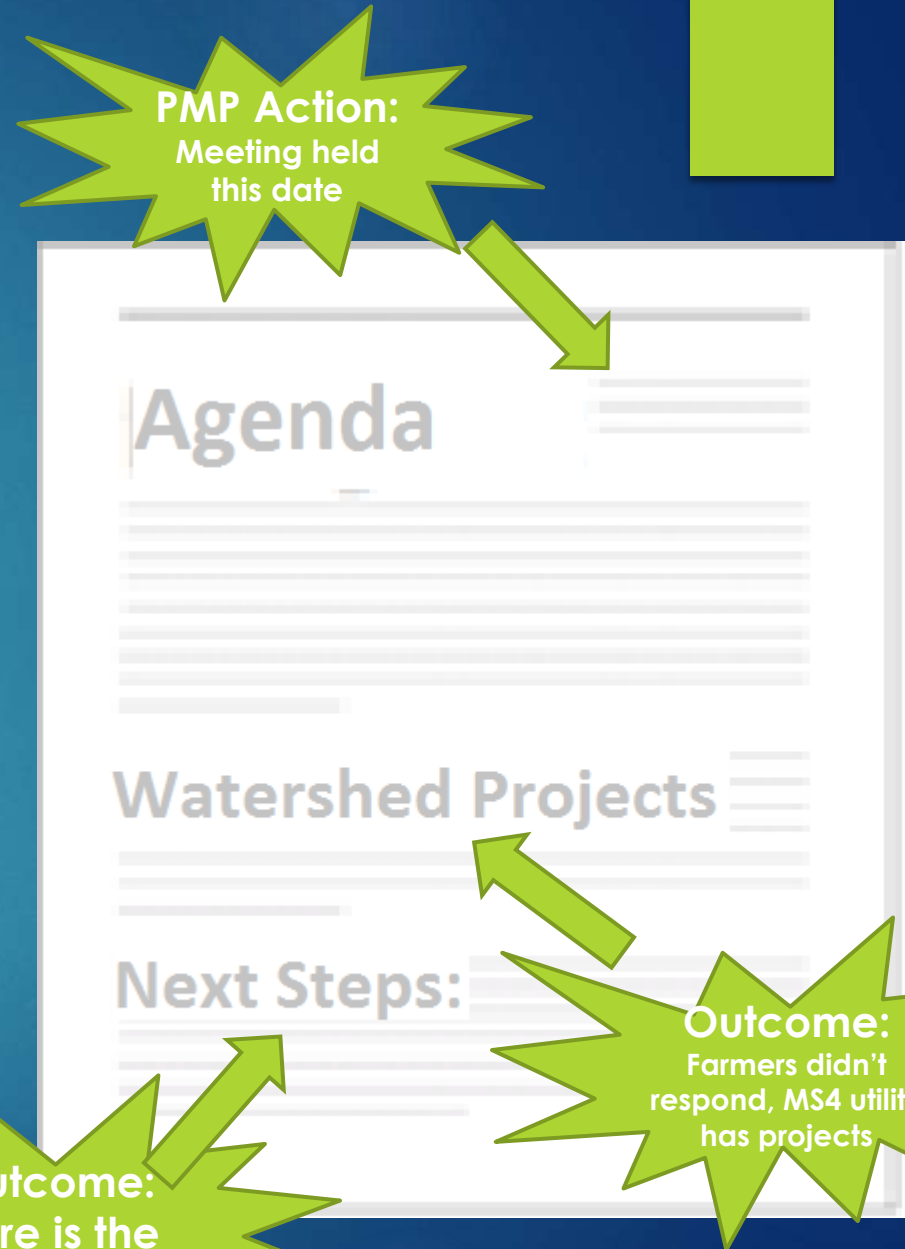
- ▶ Annual Reports
 - ▶ Summary of Pollutant Reduction Work Done
 - ▶ Which actions were implemented, were any actions not implemented?
 - ▶ Operational improvements or minor facility modifications
 - ▶ Contacts / Conversations regarding watershed offsets
 - ▶ Summary of Progress
 - ▶ Influent and effluent pollutant data
 - ▶ Data analysis: averages and trends
 - ▶ Interpretation of data: are we seeing any impacts
 - ▶ Planned Actions
 - ▶ Adjustments based on evaluation



DETAILS

Annual Reporting

- ▶ Discuss the source reduction measures completed during the previous year.
- ▶ For each of the actions, provide a detailed summary and attach any supplemental information. This could include date/date range of action, copy of meeting minutes, inspection results, rebates, etc.
- ▶ Include a list of planned actions for the year, according to the SRM, that were not completed.
- ▶ A detailed explanation as to why the planned actions were not completed should be included.



Annual Reporting

- ▶ All data collected for the previous 5 years should be included.
- ▶ Include an analysis summary of the data.
- ▶ List the planned actions for upcoming year, according to the SRM.
- ▶ WDNR compliance staff will review

Started PMP Action



Section III: Summary of Progress

Data Analysis

- All data collected for the previous 5 years should be included. This data could include any influent, effluent, blanks, industry or other sampling performed.
- Provide data in the following formats:
 - Graphs
 - Tables, Averages
 - Raw Data
- Include an analysis summary of the data. This could include high effluent due to seasonality, industrial loads, or unknown spikes.

Section IV: Planned Actions

SRMs/PMPs Planned

- List the planned actions for upcoming year, according to the SRM. This list should also include any follow-up/next step actions identified in Section II above.

Section V: Final Report

Only applies to the final annual report prior to permit expiration

- Next steps pertaining to the permit reissuance should be included. This should be a discussion on the ability to meet the final water quality limit and additional justification for applying for another variance term.
- Submit a new SRM plan if the facility is planning on applying for another variance term.

Questions? Comments? Concerns?

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