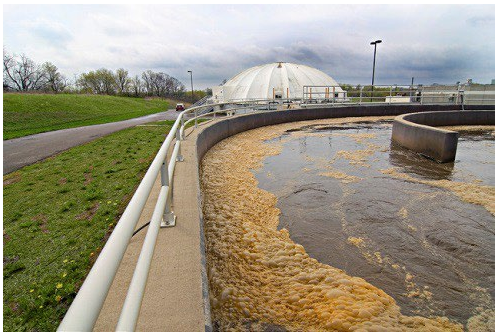
Regulatory certainty for nutrient removal in wastewater treatment

New incentive for wastewater facilities to treat beyond current requirements and accept an early total nitrogen limit

The Minnesota Pollution Control Agency (MPCA) can hold fixed total phosphorous and nitrogen limits for up to 20 years for wastewater facilities that voluntarily employ treatment options that remove those nutrient parameters, as allowed by a new law signed by Governor Mark Dayton in May 2016. This fact sheet explains the regulatory certainty incentive, and what facilities will be good candidates for the incentive.



Participating facilities will:

- Implement phosphorous and nitrogen reduction processes into wastewater treatment
- Voluntarily receive a nitrogen limit in their NPDES permits
- Receive assurance that MPCA will not further reduce phosphorous and nitrogen limits for 20 years, or the expected life of the new treatment processes

What is regulatory certainty?

Regulatory certainty is a concept first proposed in the Wastewater Think Tank, a collaborative effort of the University of Minnesota, MPCA, and wastewater professionals. It was further discussed in the Governor's water infrastructure listening sessions in late 2015, when Governor Dayton's staff and state agencies held sessions throughout Minnesota to hear from communities on issues important to them.

The incentive provides regulatory certainty for facilities that agree to install and operate Biological Nutrient Removal (BNR) treatment. Facilities that agree to build BNR and accept a total nitrogen (TN) limit, in addition to their total phosphorous (TP) limit, will receive assurance that the phosphorus and nitrogen requirements in their permits would not change for the expected design life of the biological nutrient removal system, or 20 years, whichever is shorter.

Communities and industries that participate will know what future nitrogen water quality standards mean for them. The MPCA believes this incentive will lead to wastewater treatment facilities making significant decreases in nitrogen levels in their discharges.

What type of facilities might take advantage of this incentive?

The most likely candidates are communities and industries at a point in the design life of their facilities that they need to look at building a new facility to meet their needs for the next 20 years. Other good candidates include:

- Communities and industries planning to build or upgrade mechanical wastewater treatment facilities designed to achieve phosphorus removal
- Facilities with existing nitrate removal

Is BNR a good choice for all Wastewater Treatment Facilities (WWTFs)?

No, BNR is **not** a good choice for all WWTFs:

- Influent characteristics must be responsive to BNR, having sufficient concentrations of alkalinity, volatile fatty acids, and organic material.
- Facilities receiving large variations in flows and loadings or toxic constituents can face difficulties in consistently meeting low level nutrient limits.
- Operators who primarily work with ponds or other low maintenance facilities could have some operational challenges with BNR systems.
- The ability to retrofit existing facilities for BNR is also a consideration because some types of facilities are not well suited to BNR.
- Controlled discharge stabilization ponds and trickling filters are not suitable to be retrofitted for BNR because they typically lack the necessary tankage and aeration equipment.

BNR is a good choice for others:

- Some activated sludge plants have excess tank volume and are currently nitrifying and can be easily modified for BNR because treatment is accomplished within existing aeration tanks.
- Sequencing Batch Reactors (SBRs) may be a good choice for BNR, again depending on the tank volume.
- Some oxidation ditches may be suitable for conversion to BNR.

How would regulatory certainty be implemented through permits?

Facilities receiving regulatory certainty would have discharge permits that include TP water quality based effluent limits and annual average TN discharge requirements, proposed in the 10 mg/L range. Facilities would be responsible for compliance with conditions. However, the regulatory certainty proposal guarantees that TP and TN effluent limits would not become more restrictive over the 20-year design life of the facility.

Does Minnesota plan to adopt a TN or nitrate standard?

In September 2014, Minnesota finalized a Statewide Nutrient Reduction Strategy to protect downstream waters, including the Gulf of Mexico, from nitrate levels in the Mississippi River Basin. The strategy calls for a 45% reduction in TN by 2040 and a 20% interim reduction by 2025.

To fulfill its responsibilities to protect downstream waters and to provide sufficient protection to waters across the state, Minnesota intends to adopt a nitrate water quality standard to protect aquatic life. Up to this point the data and resources necessary to adopt that standard have been limited. Minnesota will work with the U.S Environmental Protection Agency to understand how the state's nutrient reduction approach is supported by federal action and complements actions by neighboring states.

For more information about the Nutrient Reduction Strategy, visit http://www.pca.state.mn.us/water/nutrient-reduction-strategy.

Contact information

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