

NPDES/SDS permit and sulfate

PolyMet is proposing an advanced, state-of-the-art wastewater treatment system (WWTS) as part of its project.

- The WWTS includes a combination of reverse osmosis and nanofiltration, which involve pushing water through membranes to remove pollutants.
- Pilot testing and engineering modeling shows the proposed system is capable of consistently producing an effluent below 10 mg/L sulfate.
- Because the water quality standard for wild rice is 10 mg/L sulfate, that value is considered to be the level of treatment necessary for the PolyMet project.

The Clean Water Act requires the MPCA to evaluate whether a discharge will have the “reasonable potential” to cause or contribute to an exceedance of a water quality standard in waters downstream of the discharge.

- MPCA uses a “reasonable potential” analysis to statistically predict whether a proposed discharge is likely to exceed a water quality standard in the receiving water or in waters farther downstream.
- MPCA’s analysis accounts for the projected water quality of the discharge, the volume of the discharge, the existing water quality of the receiving water, and the flow rate of the receiving water.

MPCA determined there is no reasonable potential to exceed the existing 10 mg/L wild rice sulfate standard in downstream waters because the discharge from the WWTS is projected to always be below 10 mg/L.

If a discharge does not have reasonable potential to exceed a water quality standard, then EPA guidance recommends that a “water quality-based effluent limit” is not required in the permit.

- Because MPCA determined there is no reasonable potential for sulfate in the PolyMet discharge, the draft permit does not include a water quality-based effluent limit for sulfate.

However, the final environmental impact statement (FEIS) for the PolyMet project based its analysis of environmental effects on the ability to achieve less than 10 mg/L sulfate in the discharge.

- As part of its project design, PolyMet included a WWTS with reverse osmosis membrane treatment that would be capable of producing a discharge with less than 10 mg/L sulfate.
- PolyMet committed to this treatment system design to reduce any uncertainty about the project’s potential to affect downstream wild rice.

Even though the MPCA found no reasonable potential for sulfate to cause a problem, and no effluent limit is required to be included in the permit, the MPCA wanted assurance that the WWTS would actually achieve less than 10 mg/L sulfate. Therefore, the draft permit includes an Operating Limit of 10 mg/L sulfate for the WWTS.

- The Operating Limit applies at a point immediately after the membrane treatment portion of the WWTS is complete, where the reverse osmosis and nanofiltration water mix.
- The permit prohibits the introduction of additional sulfate into the treated water after this point.
- The Operating Limit is an enforceable limit at both a state and federal level — an exceedance of this limit is a violation of the permit.

To reduce the chance of exceeding the 10 mg/L sulfate Operating Limit, the draft permit also includes an Operating Target of 9 mg/L sulfate.

- The Operating Target is a "trigger" value that, if exceeded, requires additional action by PolyMet but is not automatically a violation of the permit.
- If the Operating Target is exceeded, the draft permit requires PolyMet to implement a pre-approved Sulfate Reduction Plan that is designed to correct what is causing the higher levels of sulfate and prevent the discharge from ever exceeding the 10 mg/L Operating Limit.

With the inclusion of the Operating Limit and Operating Target as permit requirements, the draft permit provides maximum assurance that the discharge will not exceed 10 mg/L sulfate and that the proposed PolyMet project is protective of downstream wild rice.