

## Menomonee River Watershed Restoration Plan Fact Sheet MN-6, Reach 834, Nor-X-Way Channel

Data resulting from model runs:

Figure	Overall Project Team Assessment	Analysis
Flashiness index	Good	The Flashiness Index quantifies the frequency and rapidity of short-term changes in stream flow. The index ranges from 0 to 2, with 0 being constant flow. The flashiness is reasonable at this location.
Dissolved oxygen v. days per year	Good	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site rarely fall below this level.
Fecal coliform v. days per year	Variable (some good, some bad)	For recreational uses, lower fecal coliform counts (a measure of bacteria) are better (preferably under 400 counts / 100ml). The counts on most of the days are either 'below 400' or 'above 5,000'. A potential goal in this case may be to determine the conditions that create the 'above 5,000' days and discourage recreational use on days that meet these conditions. An additional goal may be to find ways to decrease fecal coliform loads in order to increase the number of days that have 'below 400' counts.
Phosphorus v. days per year	Good	Phosphorus is a nutrient that can lead to increased growth of algae. The concentrations on most of the days are at or below the 0.1 mg/l planning guideline. Throughout the year, the phosphorus concentrations do not exceed 0.3 mg/l on any day.
Suspended solids v. days per year	Good	Suspended solids cause water to become cloudy, which is aesthetically unpleasant. They can also clog the gills of fish and invertebrates, make feeding difficult, and lead to sediment deposition (poor habitat). The concentrations are less than 25 mg/l during the majority of the days, but the concentrations of suspended solids exceed 200 mg/l on some days.
Monthly dissolved oxygen	Good to Moderate	Note the lower dissolved oxygen concentrations during the summer. This is normal due to the decreased solubility of oxygen in warmer water. Conditions in early-to-mid summer approach the standard. While this is not a problem, it suggests that small amounts of additional organic inputs or algal growth may increase biochemical oxygen demand and create problems.
Monthly fecal coliform	Moderate	While the ranges of values are fairly consistent throughout the year, note that the 75 <sup>th</sup> percentile values decline during the summer swimming season. This may be related to the die-off of bacteria due to solar radiation. Also note that the conditions are poorest in March and are likely related to snow melt.
Monthly phosphorus	Very Good to Good	In each month, phosphorus concentrations exceed the planning guideline less than 25% of the time. Note that the 75 <sup>th</sup> percentile concentrations decline during the late spring and early summer, possibly related to phosphorus uptake from plants and algae.
Monthly suspended solids	Good	The 75 <sup>th</sup> percentiles of suspended solids concentrations are highest in the late winter and early spring. Particularly in March, this is probably related to runoff from snow melt. The maximum concentrations of suspended solids are lowest in the winter, likely due to frozen conditions, decreased construction activities, and low-impact storms (snow doesn't pound the soil like rain).

Figure	Overall Project Team Assessment	Analysis
Dissolved oxygen by flow	Good	Note the decline in dissolved oxygen concentrations at low flows. This is likely due to a combination of decreased water agitation and higher temperatures (low flow conditions are often associated with the warm summer months). This is somewhat natural, but may be exacerbated by alterations in the stream and watershed (for example, a concrete-lined channel).
Fecal coliform by flow	Moderate to Poor	Generally, a pollutant that is present at high concentrations during high flows and low concentrations during low flows (fecal coliform, in this case) is attributed primarily to non-point sources. Note that during any period with the highest flows, fecal coliform counts exceed the regulatory standard more than 75% of the time. During dry conditions and low flows, the standard is met more than 75% of the time. This would be the safest time for any recreational uses (boating, swimming, wading, etc.), although the amount of water in the stream may limit recreational use to wading.
Phosphorus by flow	Good	Concentrations of phosphorus are lowest at high and low flows. This suggests that the inputs are primarily non-point sources that are activated during small storms, but that are diluted by heavy storms.
Suspended solids by flow	Good	The concentrations of suspended solids increase with increased flows, suggesting contributions from non-point sources. The suspended solids may come from runoff that carries a sediment load, from stream bank erosion, or re-suspended stream sediments.