

Kinnickinnic River Watershed Restoration Plan Fact Sheet
KK-4, Reach 828, Wilson Park Creek Upstream of Holmes Avenue Creek

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 good at this location.
Dissolved oxygen v. days per year	Moderate	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site decline below this level very infrequently. There is a preponderance of days with concentrations at the lower end of the acceptable range. This suggests the presence of biochemical oxygen demand within the waterway.
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 majority 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 could be to find ways to decrease the fecal coliform loads in order to increase the number of days that are 'below 400'.
Phosphorus v. days per year	Moderate	Phosphorus is a nutrient that can lead to increased growth of algae. The concentrations on most days are at or below the 0.1 mg/l planning guideline. The concentrations of phosphorus exceed 5 mg/l on some days.
Suspended solids v. days per year	Good	Suspended solids cause water to become cloudy and aesthetically unpleasant. They can clog the gills of fish and invertebrates, make feeding difficult, and lead to sediment deposition (poor habitat). The concentrations on most of the days are less than 25 mg/l, but the concentrations on a few days exceed 200 mg/l.
Monthly dissolved oxygen	Good	Dissolved oxygen concentrations are somewhat variable at this site. The median and minimum concentrations decline more than would be expected. This variability suggests that there is a source of oxygen demand in the ecosystem. The decline in dissolved oxygen concentrations during the summer is typical and is likely due to the decreased solubility of oxygen in warmer water. While the regulatory standard is not exceeded, the concentrations approach the standard.
Monthly fecal coliform	Moderate to Poor	While the ranges of values are fairly consistent throughout the year, note that the median concentrations decline during the summer swimming season. This may be related to the die-off of bacteria due to solar radiation. Conditions are particularly poor in March and are likely related to snow melt.
Monthly phosphorus	Moderate to Poor	Phosphorus concentrations are notably very high during the winter. This might be caused by deicing fluids used at the airport; these fluids often contain phosphorus compounds that serve as corrosion inhibitors. Phosphorus concentrations decline through the late spring, summer, and early fall. This may be related to uptake by plants during the growing season.
Monthly suspended solids	Good	Suspended solids concentrations fall below the reference concentration most of the time, particularly in the winter. The higher concentrations are likely related to larger rain or snow melt events that disturb bare soil. As this is a concrete-lined channel, there is little sediment to re-suspend from the stream bed.

Figure	Overall Project Team Assessment	Analysis
Dissolved oxygen by flow	Good to Moderate	Dissolved oxygen concentrations are relatively consistent throughout all flow conditions. At the highest flows, there appears to be a slight increase in oxygen concentrations, perhaps due to increased water agitation (which would allow greater diffusion of oxygen into the water).
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. The infrequent sewer overflows (once every 2-5 years) would only contribute during the high flows when substantial non-point loads are already present. Note that during any period with the highest flows, fecal coliform counts exceed the regulatory standard. During low flows and dry conditions, the standard is met approximately 75% of the time. This would be the safest time for recreational uses (boating, wading, swimming), although the amount of water in the stream may limit recreational use to wading.
Phosphorus by flow	Moderate	Phosphorus concentrations are highest at high flows. This suggests the prevalence of non-point loads of phosphorus. However, concentrations exceed the 0.1 mg/l planning guideline during mid-range flows more decisively than at high flows. This suggests that phosphorus loading in the waterway is not limited to non-point sources.
Suspended solids by flow	Good	Suspended solids concentrations increase with increased flows. This suggests a prevalence of non-point sources. The suspended solids may come from runoff that carries a sediment load, from stream bank erosion, or re-suspended stream sediments. Note that this site is located downstream of some concrete-lined reaches within the watershed. As a result, upstream activities such as stream bank erosion and re-suspension of stream sediments likely make less of a contribution to suspended sediment loads at this site compared to sites that are situated downstream of natural reaches that experience these activities.