

Kinnickinnic River Watershed Restoration Plan Fact Sheet

KK-1, Reach 831, Lyons Park Creek

Data resulting from model runs:

Figure	Overall Project Team Assessment	Analysis
Flashiness index	Moderate	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 slightly high at this location.
Dissolved oxygen v. days per year	Moderate to Poor	Typically, aquatic communities need 5 mg/l or more of dissolved oxygen to survive. Concentrations at this site fall below this level approximately 30% of the time, but do not go below 3 mg/l. However, the variance standard of 2 mg/l is met at all times.
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 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. As there is a variance that allows the fecal coliform counts to reach 2,000, another goal could be to find ways to decrease coliform loading in order to increase the number of days that have fewer than 2,000 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. Phosphorus concentrations do not exceed 0.4 mg/l on any day.
Suspended solids v. days per year	Very 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 and the concentration does not exceed 100 mg/l on any day.
Monthly dissolved oxygen	Moderate	Dissolved oxygen concentrations are highly variable in the spring. This variability suggests that there is either excessive algal growth or organic enrichment and biochemical oxygen demand within the ecosystem. The decline in oxygen concentrations in the summer is typical due to the decreased solubility of oxygen in warmer water. While oxygen concentrations decline below 5 mg/l, the variance (which allows levels as low as 2 mg/l) is met.
Monthly fecal coliform	Moderate	While the ranges of values are fairly consistent throughout the year, notice that the 75 th percentile values 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	Good	In the early spring, the low ends of the ranges of phosphorus concentrations increase, possibly related to fertilizer application. Phosphorus concentrations then decrease through the late spring, summer, and early fall. This may be related to uptake by plants during the growing season.
Monthly suspended solids	Very Good	Suspended solids concentrations fall below the reference concentration most of the time. The majority of 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	During mid-range to low flows, dissolved oxygen concentrations are lower than in the other flow conditions. This is likely due to a lack of water agitation (which would allow greater diffusion of oxygen into the water) and high temperatures (low flow conditions are often associated with summer which has higher temperatures and lower oxygen solubility).
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 variance standard. During low flows and dry conditions, the variance standard is met consistently. During these low flows would be the safest time for recreational uses (most likely wading).
Phosphorus by flow	Good to Moderate	Concentrations are greatest at high flows, with concentrations exceeding the 0.1 mg/l planning guideline less than 50% of the time during the highest flows. This suggests that the inputs are primarily non-point source pollution.
Suspended solids by flow	Good	Suspended solids concentrations increase with increased flows. This suggests a prevalence of non-point sources. All of the instances when the concentration exceeds the reference condition occur at the high flow condition. These conditions most often occur following large storms or major snow-melt events. 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.