

## Simmons Island Park – Kenosha, WI

### Location

Simmons Island Park is located at 5001 Simmons Island Drive, Kenosha, Wisconsin. In addition to the beach there is a paved bike trail, two historic lighthouses, two playgrounds (one on the beach) and an open air picnic pavilion. The Simmons Island beach house was added to the national register of historic places in 2003. Simmons Island Beach is Kenosha's flagship beach and is the subject of a comprehensive master concept plan to enhance amenities and increase opportunities for public access.

### Sources of Pollution

Sources of pollution impacting Simmons Island Beach include: gulls, beach sands, storm water, surface runoff and to a lesser extent the Pike River and the Kenosha Harbor. There is an association between elevated E. coli levels and turbidity as well as antecedent precipitation in conjunction with onshore winds.

### Major Findings:

The number of water quality advisories across beach transects is correlated to beach width and the seasonal number of gulls with the widest transects having the greatest numbers of gulls and the most frequent advisories (Figure 2).

E. coli concentrations were highest in sediments collected at the berm crest, the interface between the terrestrial and aquatic environment. E. coli concentrations were significantly higher when there was evidence of wildlife.

The frequency and depth of current beach grooming practices may influence the amount of bacteria in beach sands available for transport to the near waters of Lake Michigan.

Water quality at Simmons Island is impacted by large rain events (>0.13 cm) within 48 hours of sampling and in the presence of easterly (onshore) winds.

Significant amounts of food related debris may serve as attractant for nuisance waterfowl.

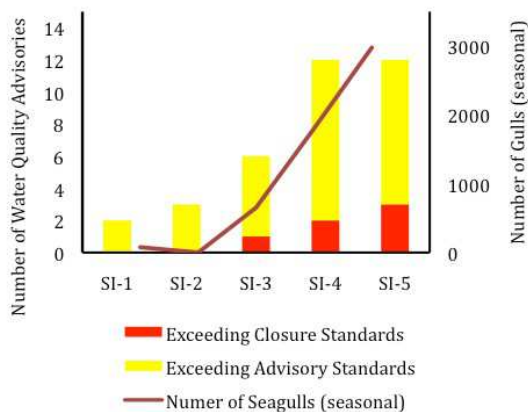


Figure 2 - The relationship between the seasonal number of seagulls and instances with poor water quality by transect (SI-1 to SI-5).

## Recommendations

Mitigation of pollution sources and best management practices at Simmons Island should include:

- Implement best management practices to deter the presence of seagulls from the north end of the beach (including habitat modifications).

- Remove standing water in the back beach area resulting from the French drain system.

- Increase the frequency of beach grooming and modify current grooming practices to increase effectiveness.

- Evaluate current waste receptacles used at the beach and consider replacing/modifying with ones that are covered/anchored to prevent wildlife feeding and blowing over.

Focus of future beach sanitary survey assessments:

- Continue to evaluate the Kenosha Harbor and the Pike River to determine the exact nature of their impact on fecal pollution.

- Conduct microbial, physical, and chemical assessments on the Pike River and Pike Creek to determine likely sources of fecal loading (\$225,000 of external funding has been secured).

## Redesign Plan

The mission statement of the City of Kenosha's Parks Department is to: "To advance parks, recreation and environmental conservation efforts that enhance the quality of life for all people." This is reflected in the

Simmons Island master plan (<http://www.kenosha.org/departments/parks/SimmonsIsland.pdf>). The conceptual beach redesign plan for Simmons Island Park incorporates elements from the City of Kenosha

master plan such as a playground, paved walkway and promenade. The position of some of these features will be altered to accommodate the design features necessary to improve surface water quality. The elevation of the beach will be altered to decrease the amount of interaction between waves and foreshore sands. Manufactured dunes, berms, and vegetation enhancements will create barriers to prevent sand migration, act as a buffer against non-compatible uses, and decrease the width of the beach in areas where gulls currently tend to congregate.

Rain gardens or wetland cells will be used to retain surface runoff and stormwater discharging from the French drain system. Designated overflow sites will maintain the dune system during periods of high intensity/high volume precipitation. Footpaths will allow beach patrons to traverse the dune system without degrading it to the point of no longer performing its useful purpose. The City of Kenosha will revisit its current beach grooming practices and develop a program which will decrease the FIB burden while maintaining beach aesthetics. Additional litter waste receptacles will be placed along the footpaths, paved areas, and beach proper as a means of deterring nuisance wildlife. The revitalized Simmons Island Park, when complete, will include an amphitheater, bike ramp, observation platform, and picnic area.

## Eichelman Park – Kenosha, WI

### **Location**

Eichelman Park Beach is located within the downtown area of Kenosha, WI. It has a distinct configuration from the other beaches in Kenosha County as it is embayed and faces south. Due to the embayed nature of the beach, it is subject to less wave action and has a weaker circulation pattern than the other open water beaches. This configuration likely explains its attraction for families with young children but may also explain the frequency with which water quality advisories occur. One of the City of Kenosha's permitted discharge zones is located just downstream of the beach.

### **Sources of Pollution**

Sources of pollution impacting Eichelman Park Beach include: a stagnant pool adjacent to the breakwater, physical configuration, bird feces, beach sands, direct storm water discharge, and surface runoff. There is an association between elevated E. coli levels and turbidity as well as antecedent precipitation in conjunction with onshore winds.

### **Major Findings:**

- Surface water quality was significantly poorer adjacent to the breakwater.
- E. coli concentrations were higher following precipitation events.
- E. coli concentrations varied based on wind direction, increasing with onshore winds.
- E. coli concentrations increased as a function of wave height and turbidity.
- The majority of exceedances of water quality standards occurred adjacent to the breakwater; the area where most of the wildlife is observed.
- There was a significant correlation between E. coli concentration in sediments and surface water.
- Refuse was not always removed promptly which served as a public health hazard and nuisance animal attractant.

### **Recommendations**

Mitigation of pollution sources and best management practices at Simmons Island should include:

- Develop a plan to fill in and prevent further stagnation of water next to the breakwater.
- Evaluate techniques to deter the presence of seagulls from the beach (habitat modification).
- Increase the frequency of beach grooming and modify current grooming practices to increase effectiveness.
- Remove all refuse promptly.

Focus of future (2012) beach sanitary survey assessments:

- Investigate submerged sediments as a source of fecal pollution.
- Conduct dry weather and event-based monitoring at the storm water outfalls in proximity to the beach.
- Compare peak E. coli densities to dates when bypassing was occurring to look for causal relationships between discharge volume and duration and beach closures.

### **Redesign Plan**

The elevation of the beach will be altered to decrease the amount of interaction between waves and foreshore sands. Manufactured dunes, including bump outs extending from the back beach area onto the beach property, and vegetation enhancements will create barriers to prevent sand migration and

decrease the attractiveness of this area to geese and gulls. Rain gardens or wetland cells will be used to retain surface runoff traveling over land from the paved park paths and onto the beach. Footpaths, including a central ADA compliant access point, will allow beach patrons to traverse the dune system without degrading it to the point of no longer performing its useful purpose.

The elevation of the seawall will be raised to reduce the frequency and intensity of waves cresting the structure. The landward side of the breakwater will be amended with permeable fill (i.e. rip rap or similar) at a lower grade to promote infiltration rather than erosion, thus eliminating the pool of stagnant water. A vegetated revetment will create a smooth transition from the seawall to the beach proper. Beach elevation will be altered to decrease the interaction between waves and beach sands.

The City of Kenosha will revisit its current beach grooming practices and develop a program which will decrease the FIB burden while maintaining beach aesthetics. Additional litter waste receptacles will be placed along the footpaths, paved areas, and beach proper as a means of deterring nuisance wildlife.