

## Grant Park Project – South Milwaukee, WI

### Location

Grant Park Beach, a part of the Milwaukee County Park System, is located along the shore of Lake Michigan in South Milwaukee, Wisconsin. Grant Park Beach appears on the Wisconsin Department of Natural Resource's list of impaired surface waters (Clean Water Act, Section 303(d)) for excessive beach closures or advisories.

### Sources of Pollution

Several sources of pollution have been identified as negatively influencing water quality, via the sanitary survey, process including: Oak Creek, a large resident wildlife population, domestic animals, beach sediments and Cladophora.

### Major Findings:

Water quality degrades with increasing wave height and turbidity, the amount of Cladophora present, and the number of seagulls observed.

Currents directed across the beach face deteriorate water quality by transporting Cladophora originating from the groins to the north or discharge from the adjacent Oak Creek.

A correlation exists between E. coli concentrations in sediment and the water column. This suggests that beach sands have a negative impact on water quality.

The evidence of birds, as determined by footprints/feathers/feces is correlated to elevated E. coli levels. Genotyping of E. coli isolates also suggests an avian source.

Increases in log mean E. coli concentrations are associated with precipitation events in the 24-hour period prior to sample collection.

Bird feces is observed daily on Grant Park beach. Gulls and geese are more frequently observed at the widest, least vegetated sections of the beach (Figure 1).

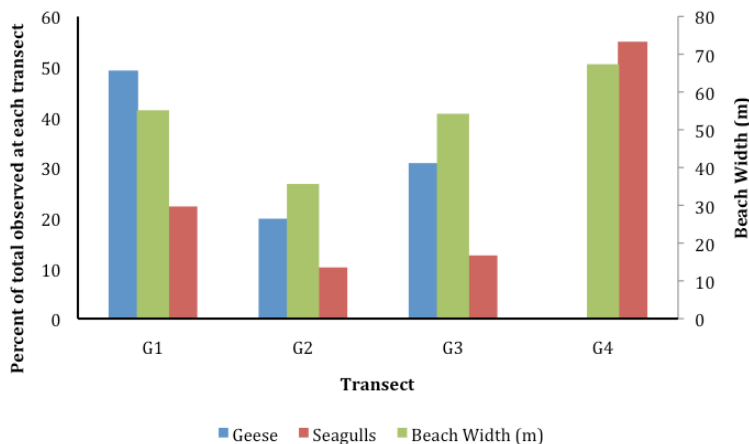


Figure 1: The distribution of wildlife across Grant Park as a function of position and beach width.

Precipitation mediated increases in E. coli may be a function of surface runoff, re-suspension (from foreshore or submerged sediments) or the negative influence of Oak Creek. Discharge from Oak Creek

contains significantly higher E. coli concentrations than the near shore waters of Lake Michigan, suggesting it could be a significant source of FIB ( $p < 0.001$ ).

### **Recommendations**

Mitigation of pollution sources and best management practices at Grant Park should include:

- Implementing/maintaining an appropriate grade ending in a defined berm crest.

- Daily deep grooming to remove stranded algal mats and facilitate drying of beach sands and a reduction in E. coli available for transport to near shore waters.

- Vegetated buffer to deter geese.

- Naturalized vegetation originating in the back beach area and extending onto the mid-beach area to decrease the open expanse of beach transects, especially at the end most transects.

- Increase the number of trash receptacles on the beach as well as in the parking lot.

- Return of lifeguards.

Focus of future beach sanitary survey assessments

- Conduct physical, chemical, and microbial assessments within the Oak Creek watershed to identify sources of pollution which are impacting the near shore waters of Lake Michigan.

- Develop a watershed restoration plan for Oak Creek.

- Examine circulation patterns surrounding and suggest potential mitigation measures for the groin field to the north of Grant Park beach.

### **Redesign Plan**

Grant Park beach is the most highly used beach in the Milwaukee County Parks system south of the City of Milwaukee. The City of South Milwaukee recognizes the social and recreational value of this site and sponsored a 2009 research study. The Milwaukee County Parks District wishes to expand upon their successful remediation of Bradford and McKinley beaches and Grant Park beach is the logical choice due to its location (within a large park complete with walking/bike paths, golf course, and fishing pier). There are toilets, a beach house for changing, and showers. Concessions are available during summer months. There is a full playground and picnic area at the beach.

The redesign concept plan, developed by Miller Engineers and Scientists, will include rain gardens or wetland cells in the back beach area to retain surface runoff and stormwater discharging to the beach from the considerable amounts of impervious surface (parking and sidewalks). A vegetated French drain system may also be used to intercept sheet flow during high intensity/high volume precipitation. Encouraged dunes will be placed along the interface between the turf grass and the beach, extending out onto the beach at key points to reduce width and deter wildlife. Footpaths at the openings between the existing concrete walls will allow beach patrons to traverse the dune system without degrading it to the point of no longer performing its useful purpose. The Milwaukee County Parks Department 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 Grant Park Beach will serve as a focal point for Southside beachgoers.