SOUTHEAST ALASKA WATERSHED COALITION
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P.O. Box 283
Haines, AK 99827
info@sawcak.org
alaskawatershedcoalition.org
(907) 766-3745

Wrangell Beach Monitoring Program

SFY15 Final Report

Prepared for:

Alaska Department of Environmental Conservation

Alaska Clean Water Action BEACH Grant #15-B01

July 1, 2014-June 30, 2015

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Executive Summary

In July 2014 the Southeast Alaska Watershed Coalition (SAWC) and Alaska Department of Environmental Conservation (ADEC) partnered to monitor the levels of harmful bacteria at swimming beaches in Wrangell, Alaska. With funding and guidance from ADEC, SAWC monitored levels of fecal coliform and enterococci bacteria on a weekly basis from 7/16/14 to 9/10/14, and twice weekly from 5/27/15 to 6/24/15. All samples taken tested safe within the limits of ADEC and EPA Marine Water Quality Indicator Standards. In addition to monitoring harmful bacteria levels at beaches SAWC conducted an education and outreach program to inform the Wrangell community of potential risks of contamination at recreational beaches, as well as current bacterial conditions. This program included newsletters, PSA's, electronic media, and an established partnership with the City and Borough of Wrangell. In conclusion, the community of Wrangell is now better informed of the potential risks and sources of bacterial contamination at recreational beaches as well as current bacterial levels at City Park and Petroglyph Beach, and is better prepared to handle an incidence of unsafe levels of bacterial contamination to protect public health.

City Park Beach, Wrangell, AK

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Introduction

The objective of this project was to initiate recreational beach monitoring at City Park and Petroglyph Beach in Wrangell, Alaska. Through this project, the SAWC worked to increase public awareness of potential sources and the health risks associated with bacterial contamination and established a partnership with the City and Borough of Wrangell to limit beach access in the event of bacterial exceedances.

City Park and Petroglyph Beach State Historic Park hosts a wide range of recreational activities. City Park is located approximately 1 mile from downtown Wrangell and hosts walking, picnicking, fishing, camping and beach wading. Petroglyph Beach has the highest concentration of petroglyphs in Southeast Alaska and therefore a large historical draw for both residents and visitors. Petroglyph beach is also often used for fishing, walking, tide pooling, wildlife viewing, beach combing and wading. The trails, boardwalk and interpretive center make using this area easily accessible.

Bacterial contamination in Alaska's coastal recreational waters can originate from sources such as shoreline development, wastewater collection and treatment facilities, septic tanks, urban runoff, disposal of human waste from boats, commercial and domestic animals and natural animal sources such as wildlife. People who swim and recreate in waters contaminated with such bacterial pollution are at an increased risk of becoming ill. By monitoring these beaches for bacteria, SAWC has kept local managers and the public informed, thereby reducing the risk of infection to people who use our recreational waters. With the support of the City and Borough of Wrangell, SAWC put into place protocol that outlined responsibilities and established support to limit beach access in the event of a bacterial exceedance. Many year-round residents and seasonal visitors have come to expect Alaska's marine waters to be in pristine condition, monitoring City Park and Petroglyph Beach in Wrangell has produced valuable data enabling beach users to critically evaluate this assumption.

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Petroglyph Beach, Wrangell, AK

Problem Need Statement:

Every year thousands of beaches in the United States are posted with warnings that the water is contaminated and may be harmful to human health. Today, most beaches in Alaska are either not consistently monitored or not monitored at all, so visitors and residents face risks of illness from swimming and other activities in coastal areas that contain disease-causing microbes.

The beaches in the City and Borough of Wrangell are a major tourist attraction as well as a valuable addition to the daily life of local residents. City Park and Petroglyph Beaches receive hundreds, if not thousands of visitors each year for various recreational activities. These activities include: fishing, walking, picnicking, camping, wildlife viewing, tide pooling, walking, beach combing, and wading.

Although water quality is generally thought to be good, there is a lack of testing to confirm this assumption. In other parts of Alaska, such as Cook Inlet, communities had thought of their water quality as generally good until a testing program revealed nearly 20% of their samples exceeded EPA's suggested levels of E. coli. Because City Park and Petroglyph beaches are in close proximity to downtown Wrangell, and Petroglyph Beach is adjacent to

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the old town landfill and the current ferry terminal, there has been concern that the water quality of the beach could be compromised.

Project Description:

This project addressed specific actions detailed in the ACWA Stewardship of Alaska's Waters Beach Grant. The project objective was to reduce risks of disease to recreational beach users. This objective was accomplished by implementing a monitoring program for local high-priority beaches for disease-causing microorganisms, and notifying the public through local government if monitoring indicated a public health hazard.

To reduce risks of disease to recreational beach users, SAWC developed and implemented a monitoring plan for City Park and Petroglyph beach. These beaches were identified by ADEC as high priority beaches to monitor for the presence of harmful bacteria because of the large number of recreational users these beaches see each year. Prior to sampling a BEACH Water Quality Monitoring and Pathogen Detection Quality Assurance Project Plan (QAPP) was developed and approved by ADEC for sampling Wrangell Beaches. In addition, a partnership was established with the City and Borough of Wrangell, outlining the roles and responsibilities for notifying the public and limiting access to the beaches in the case of an exceedance.

To ensure accurate and consistent results the procedures outlined in the BEACH Monitoring Handbook were followed for bacteria monitoring at City Park and Petroglyph Beach. These sample collection protocols allowed for detecting levels of pathogens harmful to human health in coastal recreation areas. The Beach Pathogen Monitoring QAPP was followed with protocols specific to Wrangell to ensure quality control as well as quality assurance. These documents were reviewed between sampling seasons and amended as necessary, with review and approval by SAWC and the ADEC BEACH Program Manager and Quality Assurance Officer.

Prior to sampling in July 2014, ADEC-trained SAWC staff traveled to Wrangell to train the Wrangell sampling technician on proper sampling and data collection protocols. Monitoring was conducted by trained SAWC staff. The ADEC-certified lab Admiralty Environmental, LLC in Juneau received and processed water samples for fecal coliform and enterococci bacteria.

Data management was performed by SAWC's Executive Director and Communications Coordinator and all data was reviewed, validated and verified, and put into a STORET-compatible database. Data was compiled and reported to local municipalities, ADEC, and

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EPA. End of season results were summarized and made publicly available through SAWC's website, Facebook page, and newsletter, as well as submitted in a press release to local news outlets. See Appendix A for press releases issued.

Sample Methods

City Park and Petroglyph Beach were identified as high priority for recreation Beach monitoring by the ADEC. Sample sites at each beach were selected based on frequency of use by visitors and ease of access for sampling consistency. See Appendix A for detailed sampling location maps.

Sampling technicians followed sampling protocol specified in the ADEC-approved Quality Assurance Project Plan and Monitoring Handbook. At each sampling event weather and tidal conditions, as well as water temperature and beach activity were recorded, as well as any potential sources of pollution observed. Sampling technicians waded out to thigh-depth, and samples were collected at approximately one foot below the water surface at each beach location. Samples were packaged into laboratory-supplied coolers and shipped to Admiralty Environmental in Juneau for timely processing. Laboratory analysis included fecal coliform and enterococci bacteria, with one replicate sample evaluated weekly, alternating analyses for fecal coliform and enterococci. All sampling activities were performed by SAWC-trained staff, and all sample collection, preservation, transport, and chain of custody procedures were carried out in accordance with the ADEC-approved Quality Assurance Project Plan.

City Park beach, Wrangell, AK

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FY2015 Sample Data

Samples were collected from City Park and Petroglyph Beach once weekly from 7/16/14 to 9/10/14 and twice weekly from 5/27/15 to 6/24/15 to be tested for the presence of Fecal Coliform and enterococci bacteria. Two analytical samples (fecal coliform and enterococci) were taken at each beach, with one replicate of alternating analytics taken at alternating beaches each sampling event, for a total of 20 sampling events[1].

Recording data at City Park

[1] Due to laboratory error, 6/17 samples were not analyzed for enterococci bacteria. Geometric means reflect data gathered for fecal coliform on this date.

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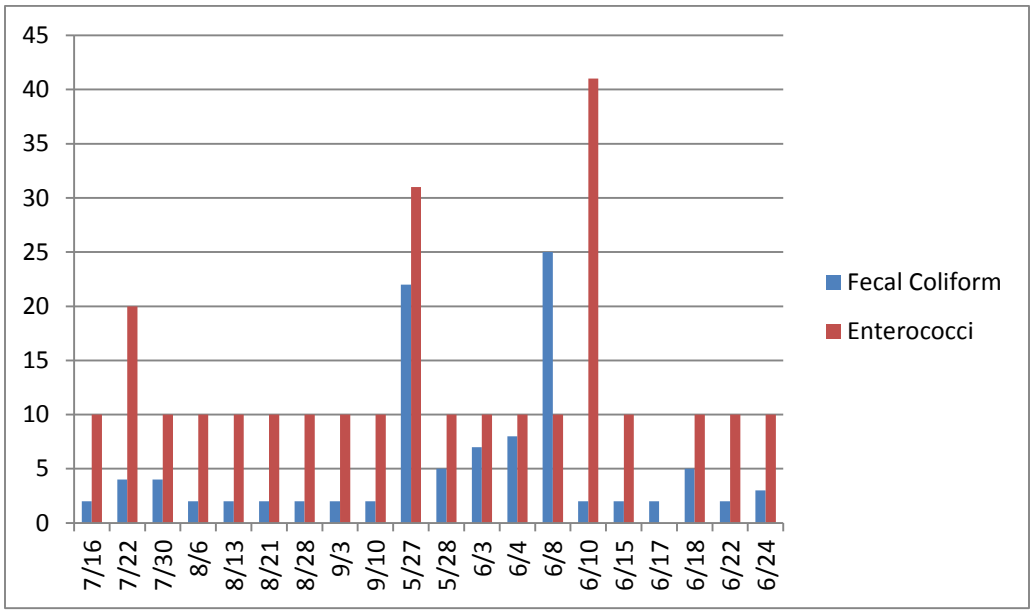
City Park Beach Sampling: July 16, 2014 – June, 24, 2015

Figure 1: City Park single sample[2] results.



[2] Marine Water Quality Indicator Standards for single-samples: Not more than 10% of samples may exceed 200 fecal coliforms/100 mL; No sample may exceed 276 enterococci/100 mL.

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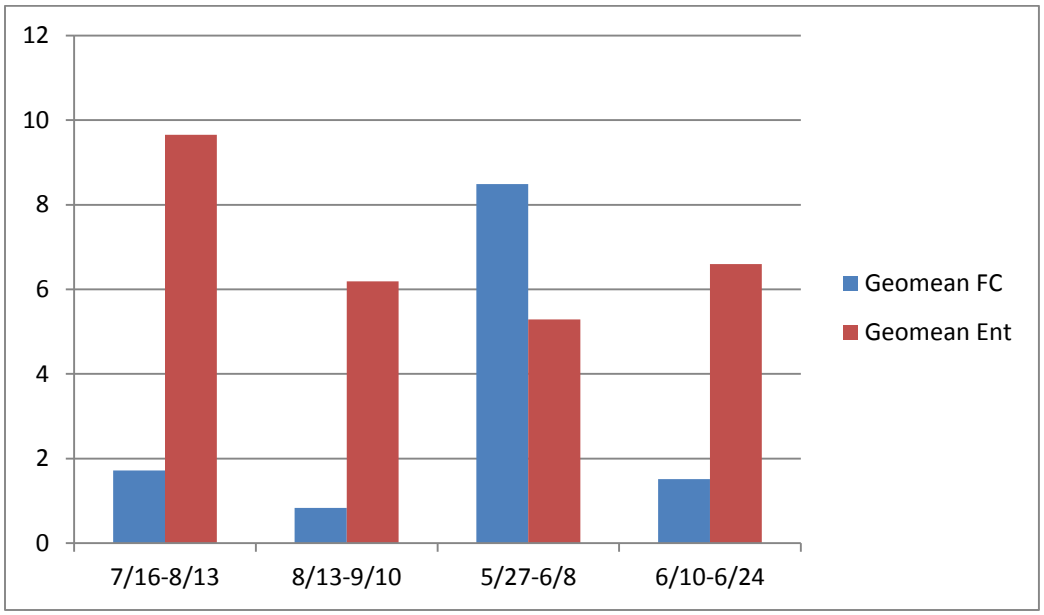
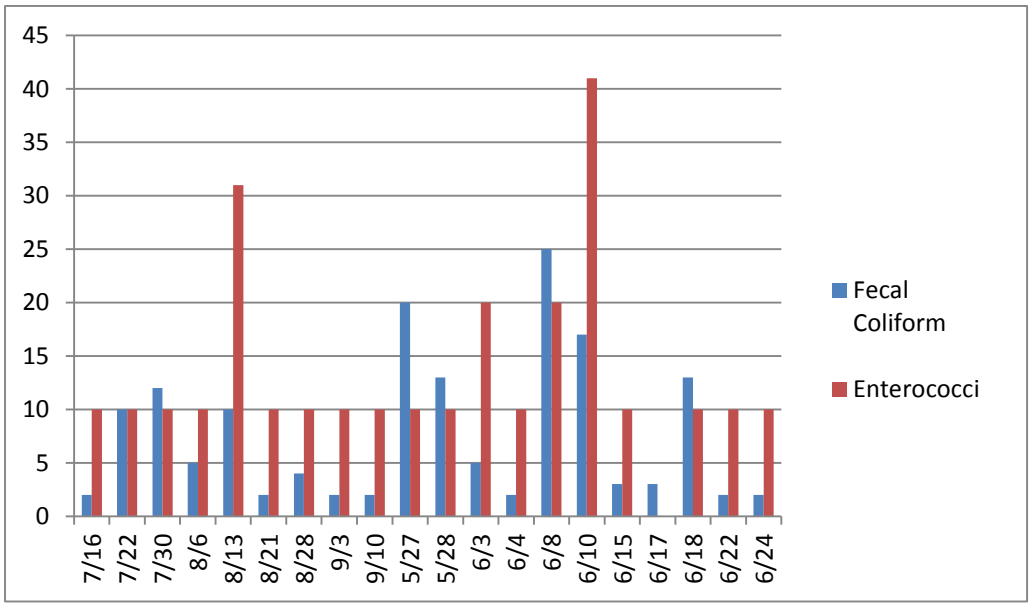
Figure 2: City Park geometric mean[3] (average of 5 samples within 30 days):



Petroglyph Beach Sampling: July 16, 2014 – June, 24, 2015

Figure 3: Petroglyph Beach Single sample results[4]



[3] Marine Water Quality Indicator Standards for geometric mean: 100 fecal coliforms/100 mL; 35 enterococci/100 mL.
[4] Marine Water Quality Indicator Standards for single-samples: Not more than 10% of samples may exceed 200 fecal coliforms/100 mL; No sample may exceed 276 enterococci/100 mL.

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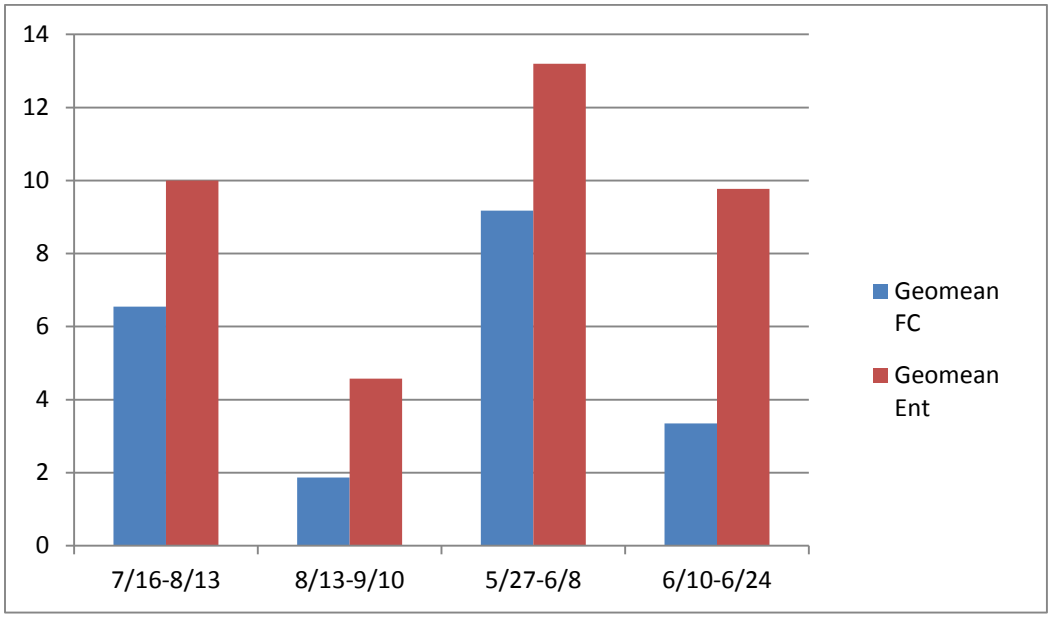
Figure 4: Petroglyph Beach Geometric Mean[5] (average of 5 samples within 30 days)



Summary and Recommendations

No bacterial exceedances were detected over the course of the FY15 sampling season. Therefore, no public beach closure notices were issued. Monitoring results indicate levels of bacteria consistently below the Marine Water Quality Indicator Standards for the 2014 and 2015 sample seasons.

The publication of results and outreach and education efforts associated with this monitoring program have sparked interest and engagement regarding the importance of water quality among the Wrangell community. Community organizations and residents have expressed interest in building community capacity to monitor other community water resources.

SAWC recommends continuing sample collection and analysis for an additional year to compile a larger data set to detect any apparent trends in water quality and better inform the public and city managers. SAWC looks forward to continued partnership with ADEC on water quality issues in the region.

[5] Marine Water Quality Indicator Standards for geometric mean: 100 fecal coliforms/100 mL; 35 enterococci/100 mL.

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Appendix A.

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Press Release

For Immediate Release
March 9, 2015

Contact: Angie Eldred
(907) 231-1710
Angie.eldred@sawcak.org

2014 Wrangell Beach Monitoring Program Results: Beaches Meet Water Quality Standards

Wrangell, AK - This summer the Southeast Alaska Watershed Coalition began a recreational beach monitoring program to test popular local beaches for levels of harmful bacteria. With support from the Alaska Department of Environmental Conservation the Wrangell Beach program sampled waters at City Park and Petroglyph beach for organisms that indicate fecal contamination.

The Beach Program was established by the Alaska DEC through the Alaska Clean Water Actions program to provide support for communities to begin monitoring marine water quality at high-priority beaches for bacterial pollution, specifically, fecal coliform and enterococci. City Park and Petroglyph beaches were identified by DEC as high priority because they are commonly used for community recreation.

The Southeast Alaska Watershed Coalition (SAWC) began collecting samples at City Park and Petroglyph beaches in July and sampled weekly until the middle of September, for a total of 9 sampling events in 2014. During the 2014 season there were no bacterial exceedances identified; all samples came back safely below limits set by the State of Alaska and US EPA for public health criteria. Water quality standards set safe limits for fecal coliform bacteria at 200 fecal coliforms per 100mL sampled, and safe limits for enterococcus bacteria at 276 enterococci per 100mL.

Shoreline developments, wastewater collection and treatment facilities, septic tanks, urban runoff, disposal of waste from boats, and domestic and wildlife animal waste can all contribute to bacterial pollution at public beaches and in other waterbodies. People who swim and recreate in contaminated waters are at an increased risk of becoming ill. Through this monitoring program, SAWC's goal is to keep local managers informed and reduce public health risks for people recreating at these beaches. In the event of an unsafe level of bacterial contamination detected during monitoring, SAWC has plans in place with the Alaska DEC and the City and Borough of Wrangell to notify the public and limit beach access until water quality is returned to a level safe for public health.

The Wrangell Beach monitoring program will continue this year with water sampling beginning in May. The Southeast Alaska Watershed Coalition has sought funding to continue the program into 2016, and should receive confirmation on program continuation sometime this spring.

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The Southeast Alaska Watershed Coalition is a regional nonprofit organization that works to build a network of community based watershed efforts achieving informed management of the resources in Southeast Alaska. More information at www.alaskawatershedcoalition.org

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Press Release

For Immediate Release
July 15, 2015

Contact: Angie Eldred
(907) 231-1710
Angie.eldred@sawcak.org

2014/15 Wrangell Beach Monitoring Program Results: Beaches Meet Water Quality Standards

Wrangell, AK – In July 2014 the Southeast Alaska Watershed Coalition (SAWC) began a recreational beach monitoring program to test high use local beaches for levels of harmful bacteria. With support from the Alaska Department of Environmental Conservation (DEC), the Wrangell Beach program sampled waters at City Park and Petroglyph Beaches for organisms that indicate fecal contamination.

The Beach Program was established by the DEC through the Alaska Clean Water Actions program to provide support for communities to begin monitoring marine water quality at high-priority beaches for bacterial pollution, specifically, fecal coliform and enterococci. City Park and Petroglyph beaches were identified by DEC as high priority because they are commonly used for community recreation.

SAWC collected samples weekly at City Park and Petroglyph beaches from July to mid-September in 2014, and twice weekly from May to the end of June in 2015, for a total of 20 sampling events. Throughout the course of the 2015 sampling year no bacterial exceedances were identified; all sample results were safely below limits set by the State of Alaska and US Environmental Protection Agency for public health criteria. Water quality standards set safe bacterial limits for daily sampling, and for the 30-day geometric mean of waters sampled at 100 fecal coliforms per 100mL, and 35 enterococci per 100mL. A final report and summary of water quality data collected are available on the SAWC website, alaskawatershedcoalition.org; and on the State of Alaska DEC website at http://dec.alaska.gov/water/wqsar/wqs/beachprogram.htm

Shoreline developments, wastewater collection and treatment facilities, septic tanks, urban runoff, disposal of waste from boats, and domestic and wildlife animal waste can all contribute to bacterial pollution at public beaches and in other waterbodies. People who swim and recreate in contaminated waters are at an increased risk of becoming ill. Through this monitoring program, SAWC's goal is to keep local managers informed and reduce public health risks for people recreating at these beaches. In the event of an unsafe level of bacterial contamination detected during monitoring, SAWC has plans in place with the DEC and the City and Borough of Wrangell to notify the public and limit beach access until water quality is returned to a level safe for public health.

The Wrangell Beach monitoring program will continue through the next year, collecting samples during the high use months until the end of June 2016.

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