



Wrangell-Petersburg Beach Monitoring Program

SFY16 Final Report



Prepared for:

Alaska Department of Environmental Conservation
Alaska Clean Water Action BEACH Grant #16-B02

July 1, 2015-June 30, 2016

This project has been funded wholly or in part by the United States EPA under assistance agreement number (BG-00J84602 Number) to the Department of Environmental Conservation through the Alaska Clean Water Actions (ACWA) program. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial product mentioned in this document.



Executive Summary

In July 2015 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 and Petersburg, Alaska. With funding and guidance from ADEC, SAWC monitored levels of fecal coliform and enterococci bacteria on a weekly basis from 7/8/15 to 9/18/15, and from 5/3/16 to 6/21/16. All samples taken tested safe within the limits of ADEC and EPA Marine Water Quality Indicator Standards, with the exception of two Petersburg Beach samples taken 9/11/15 and 9/16/15 that exceeded standards for levels of fecal coliform.

In addition to monitoring harmful bacteria levels at beaches SAWC conducted education and outreach efforts to inform the Wrangell and Petersburg communities 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 Petersburg Indian Association and the City and Boroughs of Wrangell and Petersburg. In conclusion, the communities of Wrangell and Petersburg are now better informed of the potential risks and sources of bacterial contamination at recreational beaches as well as current bacterial levels at City Park, Petroglyph Beach, and Sandy beach; and are better prepared to handle an incidence of unsafe levels of bacterial contamination to protect public health.



Sandy Beach, Petersburg, AK



Petroglyph Beach, Wrangell, AK

Introduction

The objective of this project was to continue recreational beach monitoring at City Park and Petroglyph Beaches in Wrangell, AK and to initiate recreational beach monitoring at Sandy Beach Park in Petersburg, AK. 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 Boroughs of Wrangell and Petersburg, as well as the Petersburg Indian Association to limit beach access in the event of bacterial exceedances.

City Park and Petroglyph Beach State Historic Park in Wrangell, AK host 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.



Sandy Beach Park hosts a wide range of recreational activities. Sandy Beach Park is located approximately 2 miles from downtown Petersburg and hosts walking, picnicking, fishing, camping, beach combing, wildlife viewing, and beach wading. A newly constructed shelter space makes 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, Petersburg Indian Association, and the City and Borough of Petersburg, 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 and Sandy Beach in Petersburg has produced valuable data enabling beach users to critically evaluate this assumption.



City Park, 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 Boroughs of Wrangell and Petersburg are major tourist attractions as well as valuable additions to the daily life of local residents. City Park, Petroglyph Beach, and Sandy Beach 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 the old town landfill and the current ferry terminal, there has been concern that the water quality of the beach could be compromised. There has also been concern regarding the high use of Sandy Beach Park by recreational dog walkers, as well as high numbers of wildlife sightings affecting water quality at Petersburg's popular beach.

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, Petroglyph beach, and Sandy 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 both Wrangell and Petersburg Beaches. In addition, a partnership was established with the Petersburg Indian Association to carry out the sampling plan at Sandy Beach; and partnerships were



established with the City and Boroughs of Wrangell and Petersburg, 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, Petroglyph Beach, and Sandy 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 and Petersburg 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 2015, ADEC-trained SAWC staff traveled to Petersburg to train the Petersburg sampling technician (in partnership with Petersburg Indian Association) on proper sampling and data collection protocols. Wrangell beach 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 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, Petroglyph Beach, and Sandy Beach were identified as Tier 1 beaches, or high priority for recreational Beach monitoring by the ADEC. ADEC's three tiered monitoring structure for general testing of recreational waters throughout the state was developed because Alaska does not have an extensive road system and easy access to microbiological laboratories. Tier 1 beaches include shorelines in more populated areas of the state, which are on an established road system and are within practical distance of an Alaska-certified microbiological laboratory. Practical distances are required because the microbiological samples need to travel from the recreation use beach to the laboratory for processing within a 6-hour sample holding time. 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 knee-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 for each respective community, the Wrangell replicate sample alternating between City Park and Petroglyph Beach. 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



FY 2016 Sample Data

Samples were collected from City Park, Petroglyph Beach, and Sandy Beach¹ once weekly from 7/8/15 to 9/18/15 during the 2015 sample season. Samples were collected from Sandy Beach Park once weekly from 5/4/16 to 6/28/16, and from City Park and Petroglyph beaches once weekly from 5/3/16 to 6/2/16, with twice weekly samples collected at Wrangell beaches 6/8/16 to 6/21/16. Samples were 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 sample taken for each community at each sampling event, the Wrangell replicate alternating weekly between City Park and Petroglyph Beach.



Recording data at Sandy Beach

¹ A sample was not collected at Sandy Beach the week of 8/23/15-8/29/15



City Park Beach Sampling: July 8, 2015 – June, 21, 2016

Figure 1: City Park single sample² results.

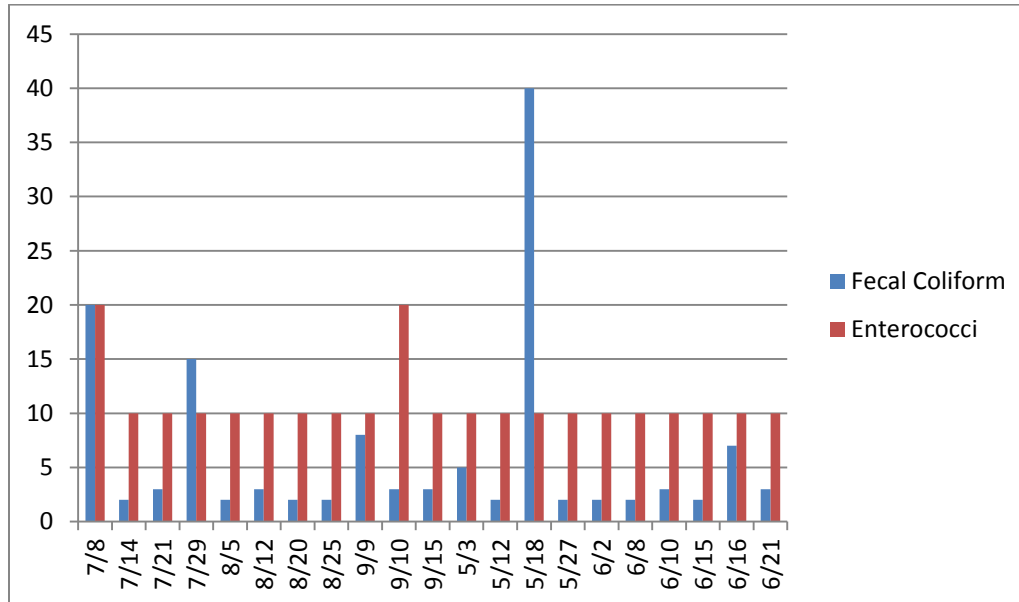
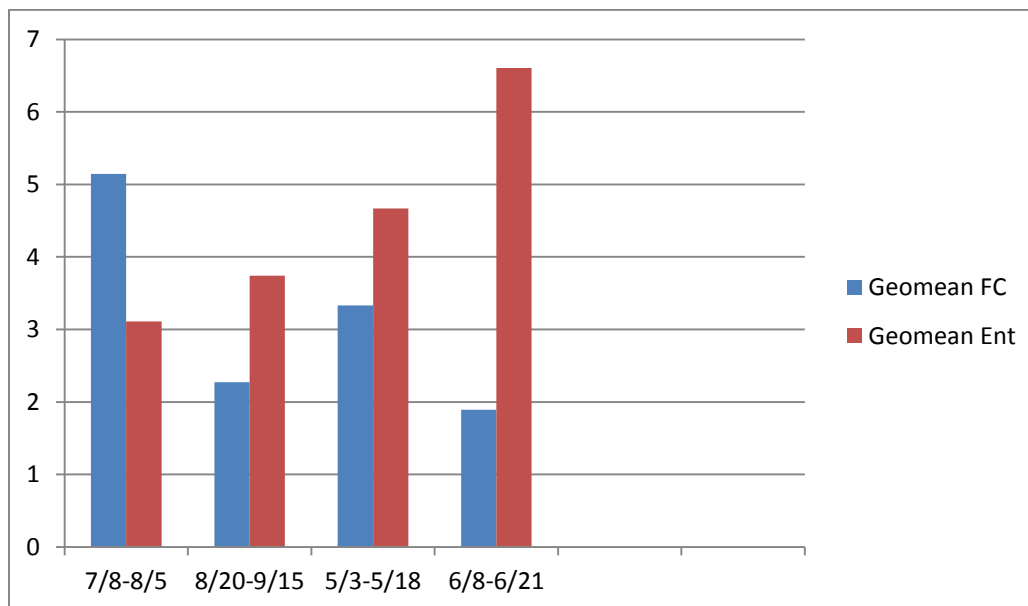


Figure 2: City Park geometric mean³ (average of 5 samples within 30 days):



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.

³ Marine Water Quality Indicator Standards for geometric mean: 100 fecal coliforms/100 mL; 35 enterococci/100 mL.



Petroglyph Beach Sampling: July 8, 2015 – June, 21, 2016

Figure 3: Petroglyph Beach Single sample results⁴

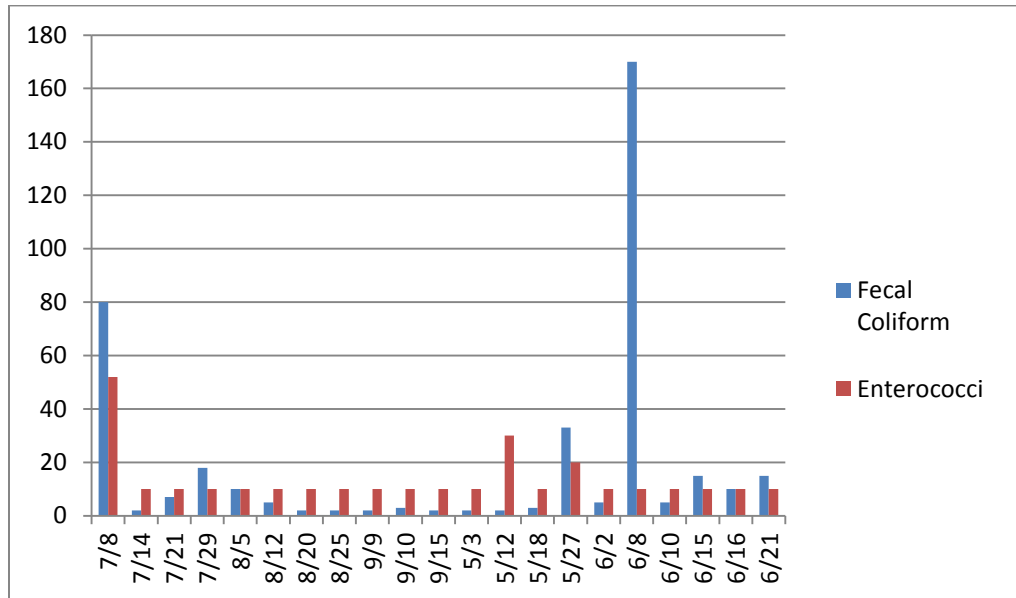
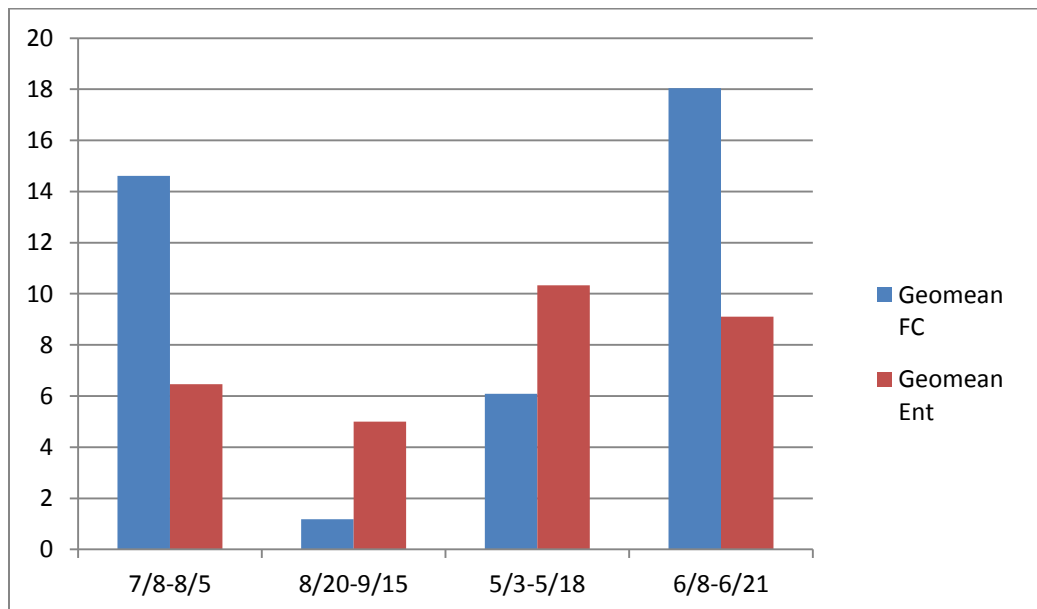


Figure 4: Petroglyph Beach Geometric Mean⁵ (average of 5 samples within 30 days)



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.

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



Sandy Beach Sampling: July 8, 2015 – June, 28, 2016

Figure 5: Sandy Beach Single sample results⁶

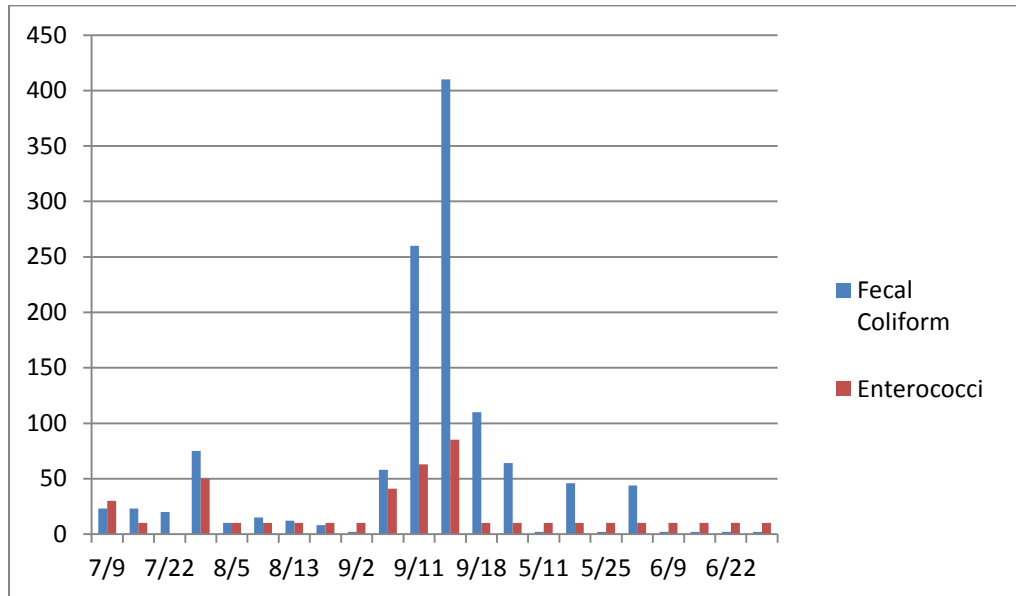
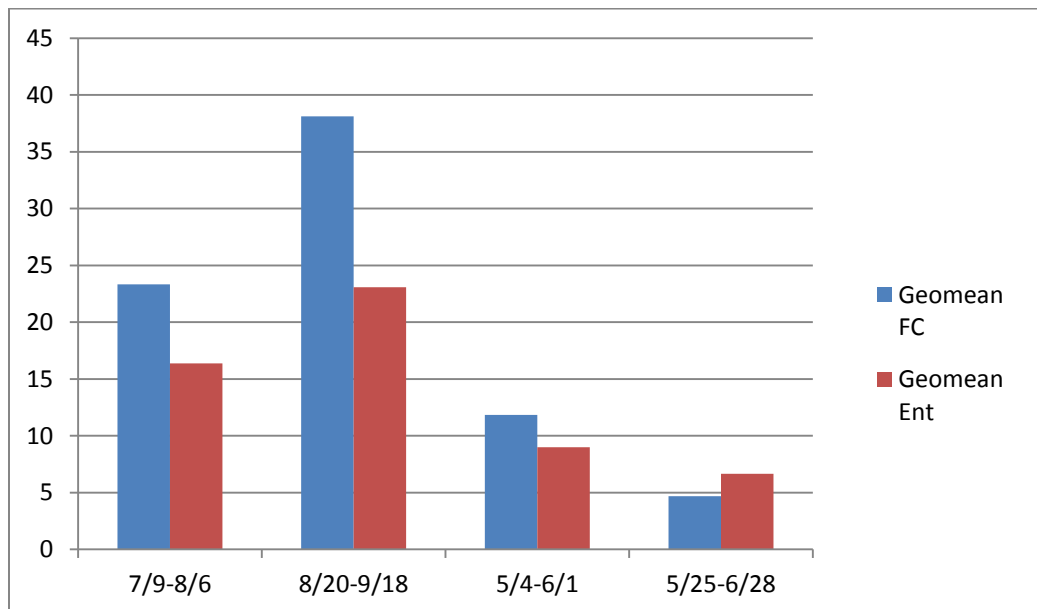


Figure 6: Sandy Beach Geometric Mean⁷ (average of 5 samples within 30 days)



⁶ 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.

⁷ Marine Water Quality Indicator Standards for geometric mean: 100 fecal coliforms/100 mL; 35 enterococci/100 mL.



Summary and Recommendations

No bacterial exceedances were detected for City Park or Petroglyph Beaches over the course of the FY16 sampling season. Therefore, no public beach advisory or closure notices were issued. Monitoring results indicate levels of bacteria at the two Wrangell beaches consistently below the Marine Water Quality Indicator Standards for the 2015 and 2016 sample seasons.

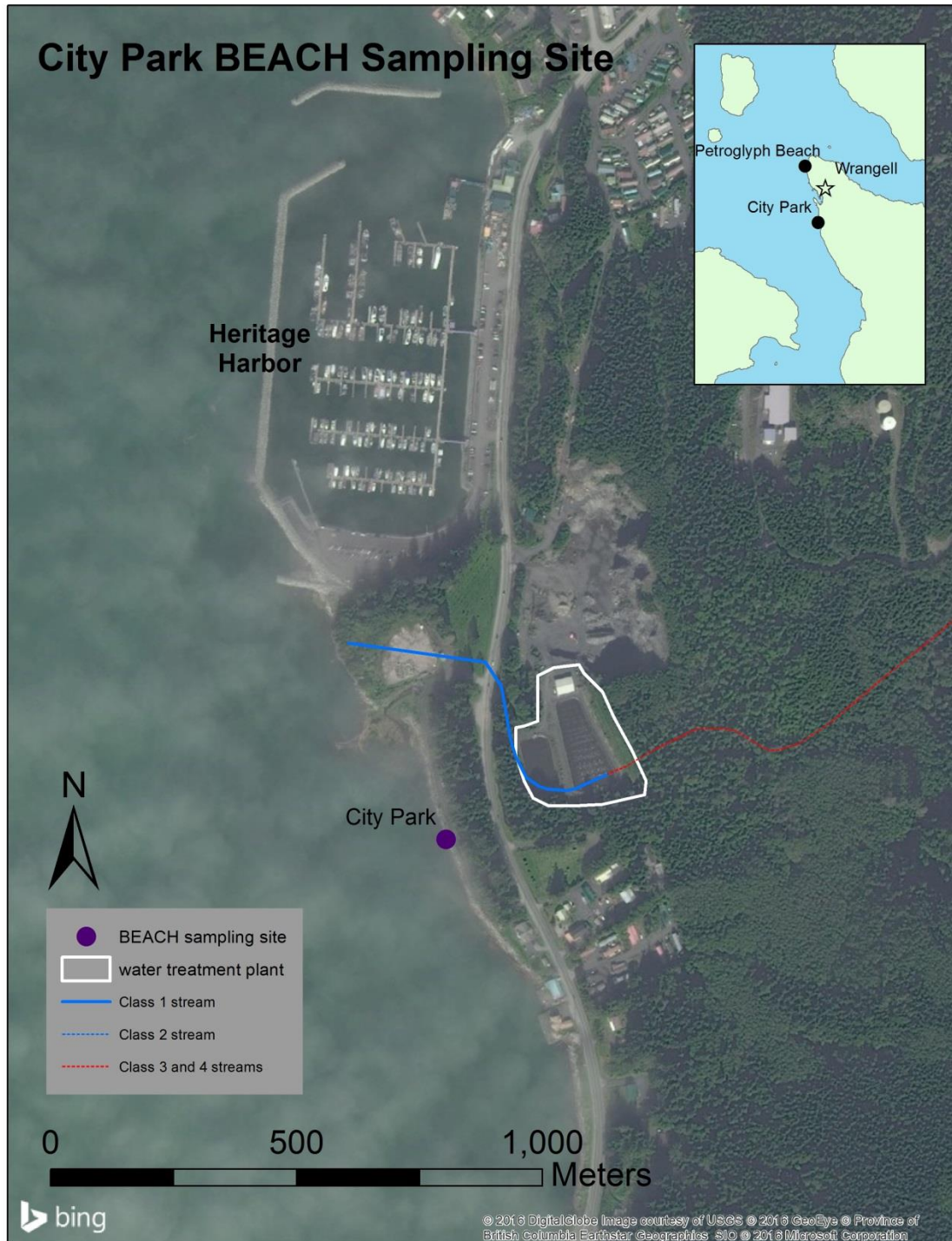
Two bacterial exceedances were detected for Sandy Beach in Petersburg over the course of the FY16 sampling season. Samples taken on 9/11/15 and 9/16/15 both exceeded standards for levels of fecal coliform. A beach advisory and press release were issued to inform residents of elevated levels. An additional sample was taken on 9/18/15, detecting no bacterial exceedances.

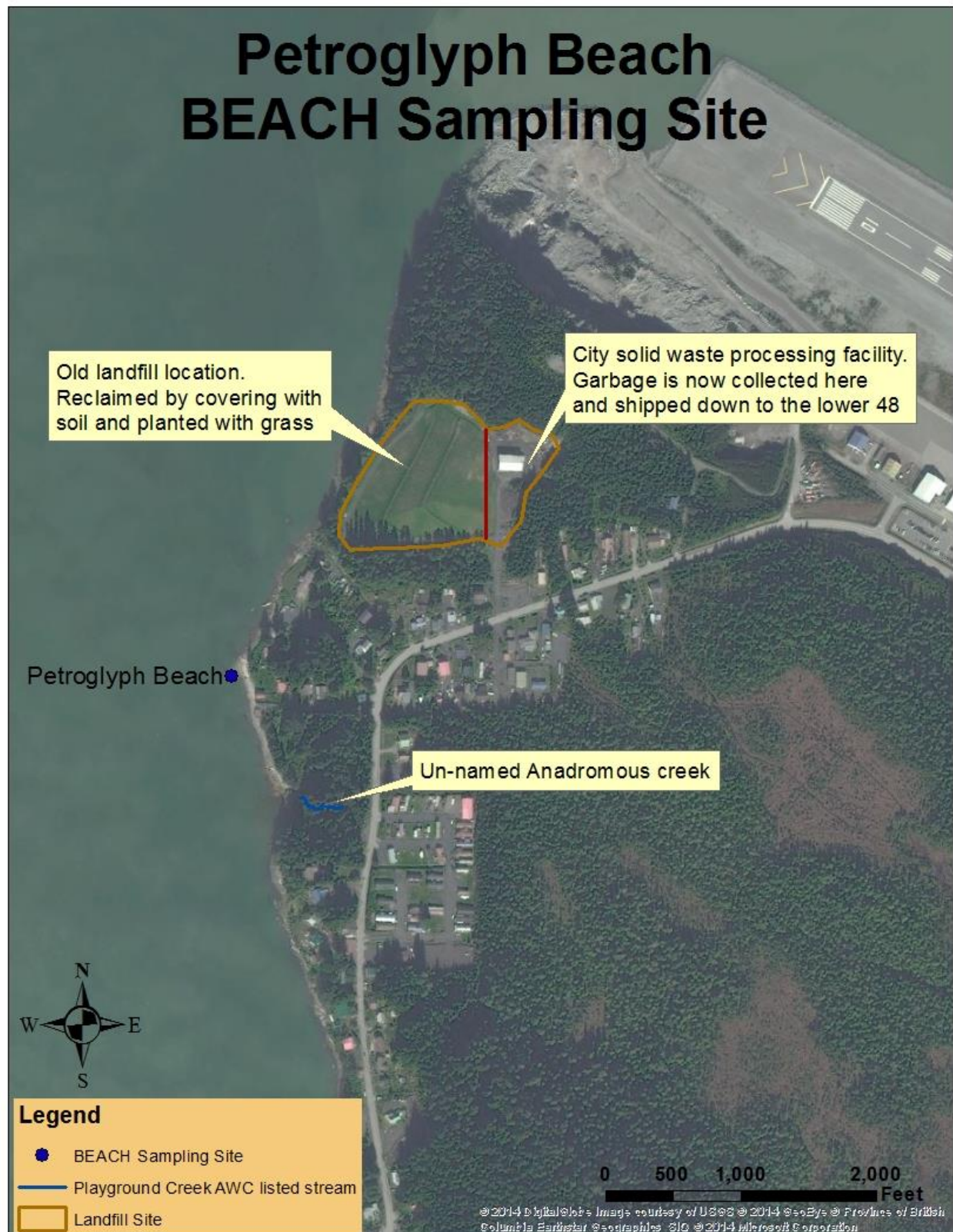
The publication of results and outreach and education efforts associated with this monitoring program have sparked interest and engagement regarding the importance of water quality among the Wrangell and Petersburg communities. Community organizations and residents have expressed interest in building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

SAWC recommends continuing sample collection and analysis for an additional year at Sandy Beach in Petersburg 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.



Appendix A.









Press Release

For Immediate Release
March 30, 2016

Contact: Angie Flickinger
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2015 Wrangell Beach Monitoring Program Results: Beaches Meet Water Quality Standards

Wrangell, AK - This summer the Southeast Alaska Watershed Coalition (SAWC) implemented its second year of recreational beach monitoring to test popular 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 Alaska DEC through the Alaska Clean Water Actions (ACWA) program to provide support for communities to begin monitoring marine water quality at high-priority beaches for bacterial pollution, specifically, fecal coliform and enterococci. A partnership between the State of Alaska's Departments of Environmental Conservation, Fish & Game, and Natural Resources, ACWA was created to characterize Alaska's waters in a holistic manner, and facilitate the sharing of data, resources, and information among state agencies. City Park and Petroglyph beaches were identified by DEC as high priority because they are commonly used for community recreation.

SAWC began the second year of monitoring by collecting samples at City Park and Petroglyph beaches in July and sampled weekly until the middle of September, for a total of 11 sampling events in 2015. During the 2015 season there were no bacterial exceedances identified; all samples came back safely below limits set by Alaska DEC and US EPA for public health criteria. Water quality standards set safe limits for fecal coliform bacteria at 200 fecal coliforms per 100mL, 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 in 2016 with water sampling beginning in May and wrapping up at the end of June. This project has been funded wholly or in part by the United States EPA under assistance agreement number (BG-00J84602) to the Department of Environmental Conservation through the Alaska Clean Water Actions (ACWA) program. The contents of this document

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2015 Petersburg Beach Monitoring Program Results: Sandy Park Beach

Petersburg, AK - This summer the Southeast Alaska Watershed Coalition (SAWC) in partnership with the Petersburg Indian Association began a recreational beach monitoring program to test a popular local beach for levels of harmful bacteria. With support from the Alaska Department of Environmental Conservation (DEC), the Petersburg Beach program sampled waters at Sandy Beach Park 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. A partnership between the State of Alaska's Departments of Environmental Conservation, Fish & Game, and Natural Resources, ACWA was created to characterize Alaska's waters in a holistic manner, and facilitate the sharing of data, resources, and information among state agencies. Sandy Beach Park was identified by DEC as high priority because it is commonly used for community recreation.

The Petersburg Indian Association began collecting samples at Sandy Beach Park beach in July and sampled weekly until the middle of September, for a total of 13 sampling events in 2015. During the 2015 season two bacterial exceedances were identified; samples taken on September 11 indicated levels of fecal coliform at 260 per 100mL, and samples taken on September 16 indicated levels of fecal coliform at 410 per 100mL. The Alaska DEC and United States Environmental Protection Agency (US EPA) water quality standards set safe limits for fecal coliform bacteria at 200 fecal coliforms per 100mL, and safe limits for enterococcus bacteria at 276 enterococci per 100mL. Local officials were notified and an Alaska DEC press release informed the public of the exceedance and associated health risks. All other samples taken returned safely below limits set by the Alaska DEC and US EPA for public health criteria.

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.

The Petersburg Beach Monitoring Program will continue in 2016 with water sampling beginning in May.

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2015/16 Petersburg Beach Monitoring Program Results: Sandy Park Beach

Petersburg, AK – This month the Southeast Alaska Watershed Coalition (SAWC), in partnership with the Petersburg Indian Association (PIA) completed the first year of a recreational beach monitoring program to test a popular local beach for levels of harmful bacteria. With support from the Alaska Department of Environmental Conservation (DEC), the Petersburg Beach program sampled waters at Sandy Beach Park 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. A partnership between the State of Alaska's Departments of Environmental Conservation, Fish & Game, and Natural Resources, ACWA was created to characterize Alaska's waters in a holistic manner, and facilitate the sharing of data, resources, and information among state agencies. Sandy Beach Park was identified by DEC as high priority because it is commonly used for community recreation.

Trained PIA technicians collected samples weekly at Sandy Beach Park from July to mid-September in 2015, and from May to the end of June in 2016, for a total of 20 sampling events. Throughout the course of the 2016 sampling season 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. The Alaska DEC and United States Environmental Protection Agency (US EPA) water quality standards set safe limits for fecal coliform bacteria at 200 fecal coliforms per 100mL, and safe limits for enterococcus bacteria at 276 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 Petersburg to notify the public and limit beach access until water quality is returned to a level safe for public health.

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The Petersburg Beach monitoring program will continue through the next year, collecting samples during the high use months until the end of June 2017.

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2015/16 Wrangell Beach Monitoring Program Results: Sandy Park Beach

Wrangell, AK – This month the Southeast Alaska Watershed Coalition (SAWC) completed the second and final year of a recreational beach monitoring program to test popular 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 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. A partnership between the State of Alaska's Departments of Environmental Conservation, Fish & Game, and Natural Resources, ACWA was created to characterize Alaska's waters in a holistic manner, and facilitate the sharing of data, resources, and information among state agencies. Sandy Beach Park was identified by DEC as high priority because it is commonly used for community recreation.

SAWC technicians collected samples weekly at City Park and Petroglyph Beach from July to mid-September in 2015, through May 2016, and twice weekly through June 2016; for a total of 20 sampling events. Throughout the course of the 2016 sampling season 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. The Alaska DEC and United States Environmental Protection Agency (US EPA) water quality standards set safe limits for fecal coliform bacteria at 200 fecal coliforms per 100mL, and safe limits for enterococcus bacteria at 276 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>

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