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# SAWMILL CREEK LOW IMPACT DEVELOPMENT DEMONSTRATION

## Final Report

Prepared for:

Alaska Department of Environmental Conservation

Alaska Clean Water Actions Program

Grant #: ACWA-16-08

*"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 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."*

*The mission of Takshanuk Watershed Council is to provide stewardship for the Chilkat, Chilkoot and Ferebee River systems. Through restoration, education, research, and community involvement we will benefit the natural ecology, economy and quality of life valued by all residents.*

**Executive Summary**

During FY16 the Takshanuk Watershed Council (TWC) and the Alaska Department of Environmental Conservation (ADEC) partnered to develop and install two (2) Low Impact Development (LID) projects in the Sawmill Creek drainage in Haines, Alaska. The LID projects included the installation of a bioswale at the corner of 6th and Dalton St. in Haines where snow is stored during winter plowing. Untreated, the runoff from the snow storage pile flows directly into Sawmill Creek. With the instillation of the bioswale, the runoff is now filtered before entering Sawmill Creek. The other LID project was the instillation of a rain garden at the Chilkoot Indian Association's building on 3rd Ave in Haines. The rain garden treats runoff from the building roof and adjacent gravel parking lot and direct excess flow to the nearby wetland rather than the stormdrain which drains to Sawmill Creek.

1: Rain garden at the CIA building during construction

## Introduction

As an urban anadromous stream, Sawmill Creek in Haines, AK, has long been impacted by surrounding development and urbanization. The goal of this project was to implement best management practices to protect the water quality of Sawmill Creek and to educate the public about the advantages of Low Impact Development (LID). This was accomplished through the implementation of three objectives.

1. To install a rain garden along the perimeter of 2-sides of the Chilkoot Indian Association's building on 3rd Ave.
2. To install a bioswale at the back of the Haines Borough right-of-way that is currently used as a snow storage location at the corner of 6th and Dalton St.
3. To educate the public about the water quality benefits of LID.

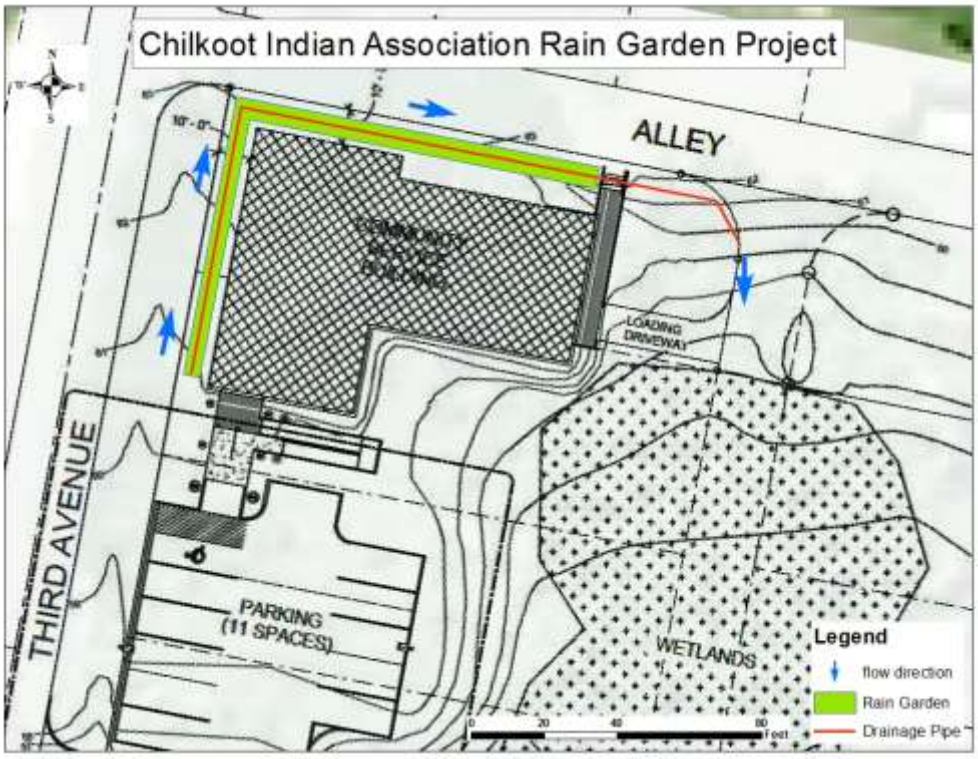
The environmental benefit of the implementation of these objectives will be the reduction of sediment and other pollutants into Sawmill Creek, which were concerns noted in the 2007 Sawmill Creek Water Quality Monitoring Strategy report prepared by TWC through a previous grant from ACWA.

## Implementation

Rain Garden

The CIA rain garden was designed to treat runoff from the building roof and the adjacent gravel parking lot and direct excess flow to the already functioning wetland (Figure _). During a Wetland Ecosystems Services Protocol for Southeast Alaska assessment conducted in 2014, TWC found that this wetland scored high in the function of sediment and nutrient retention.

The rain garden was designed as a shallow swale that was sloped to direct flow to the nearby wetland. At the bottom of the swale drain rock and a perforated pipe were placed and wrapped in geofabric to ensure that any excess water was directed away from the building and into the wetland. On top of the drain rock the native soil from the site was replaced and sculpted to be concave and collect water. Top soil was placed on top of the native soil to provide a better planting medium. Native plants, many from the nearby wetland, were transplanted to the site. Haines School 7th grade students assisted tremendously in the planting and development of an interpretive sign for the site. TWC will continue to monitor the site to ensure that the plants become established and the rain garden functions properly.




**2: Rain garden plan on two sides of the CIA building**

**3: Before and after west facing side of the CIA rain garden**

**4: Before and after north/east facing side of the CIA rain garden**

Bioswale

The bioswale at the back of the Haines Borough right-of-way at the corner of 6th and Dalton St. was designed to collect runoff from the snow that is stored in this location. Snow storage piles are known to contain pollutants like grease, oils, salt, and high amounts of sediment. The instillation of a bioswale at this location was identified in the Haines Borough Snow Removal Plan, prepared by the Southeast Alaska Watershed Coalition and TWC through ACWA grant 15-03. The bioswale was designed to collect snow melt runoff and allow it to filter before entering Sawmill Creek. Similarly to the rain garden, the bioswale was excavated and drain rock wrapped in geofabric was placed. The geofabric ensures that the drain rock does not get clogged with sediments and debris and prolongs the life of the bioswale. On top of the drain rock potting soil was sculpted into a concave swale to collect water. The swale was planted with native willow, alder, red osier dogwood, and cottonwood.

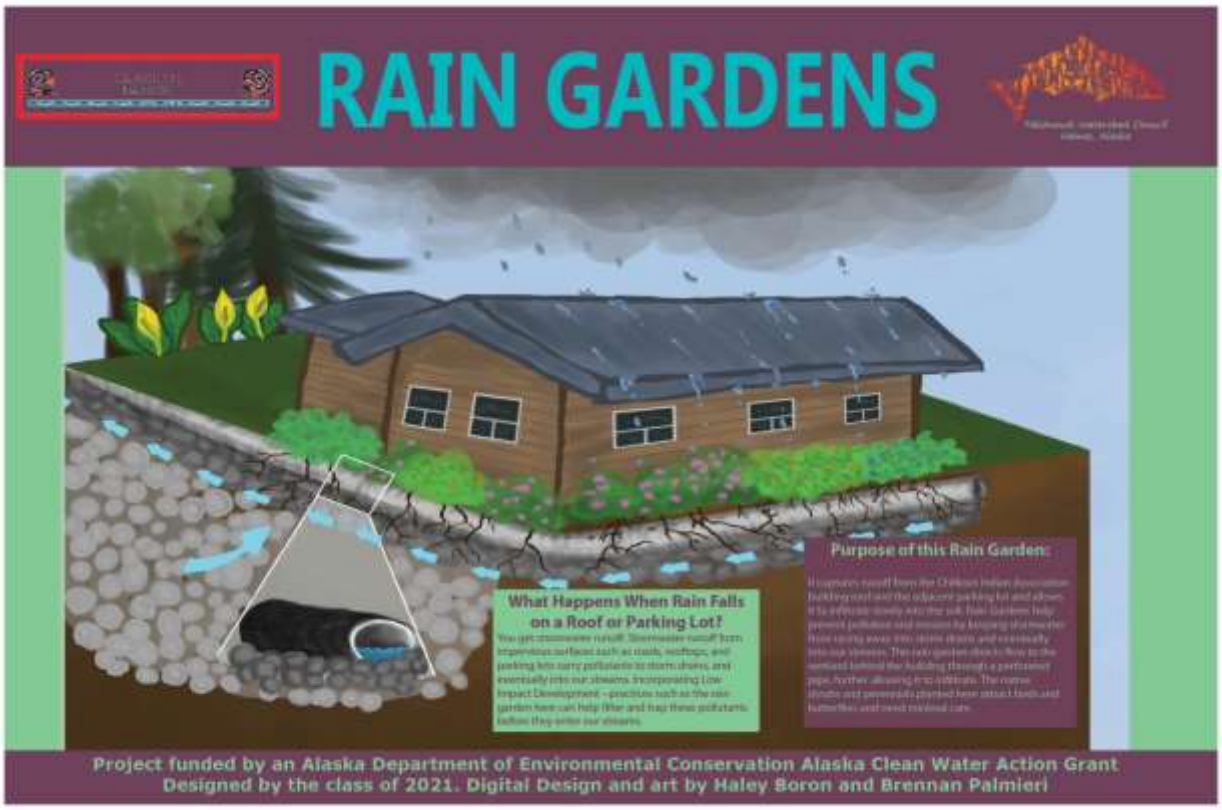
5: Bioswale during construction

6: bioswale after planting

Public Education

Developing education materials and informing the public about these types of projects helps ensure that they reach the broader community. Through TWC's education and after-school programs many students participated in both the bioswale and rain garden in several ways. TWC's after-school program Chilkat Forest Investigators helped plant the bioswale and learned about stormwater runoff. Haines 7th grade students played a key role in the development of the interpretive sign at the rain garden and in the plant selection and planting. These students felt pride in their participation in a project that is tangible and beneficial to the community and environment.

In addition to the school participation, TWC hosted a community presentation and tour of the CIA rain garden. Although there was a limited turnout to the community presentation and tour (5 attendees), those that did attend were very interested in the project. Additionally, articles on the bioswale and rain garden were featured in the TWC newsletter and Facebook page. This was all combined into a short education video filmed and produced with assistance from TWC afterschool film education program, EcoPro. The film has already reached over 150 people via TWC website and Facebook page. Youtube link for the video: https://www.youtube.com/watch?v=sMSBOHjRM5Q and the TWC website: http://www.takshanuk.org/




**Conclusion**

The construction of the rain garden and bioswale and the public education through this project aims to reduce the sediment and other pollutants into Sawmill Creek. The TWC will continue to implement these types of LID projects within the Haines Borough and work with the local government, developers, and business owners to improve the water quality of the watershed.

**Appendix**


RAIN GARDEN TOUR
Come learn about the new rain garden at the Chilkoot Indian Association building
When: Monday June 27th, 5:30pm
Where: Haines Library Community Room
(tour of the site after a short introduction and video)