EDWARD K. THOMAS BUILDING
JORDAN CREEK
GREEN INFRASTRUCTURE PROJECT
FINAL REPORT

JUNEAU WATERSHED PARTNERSHIP

SOUTHEAST ALASKA WATERSHED COALITION

JUNEAU WATERSHED PARTNERSHIP

Our mission is to promote watershed integrity in the City and Borough of Juneau through education, research and communication while encouraging sustainable use and development.

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Acknowledgements:

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The Jordan Creek Green Infrastructure Interpretive Sign was fabricated by Wilderness Graphics, Inc. and the frame was designed and constructed by Icy Straits Lumber and Milling, Inc. The sign content was developed in-house, with graphic design help from Kristy Sumner.

Cover Photo: Completed Rain Garden on Jordan Creek, June 11, 2016.

This project has been funded in part by the U.S. Environmental Protection Agency (EPA) under assistance agreement number (BG-00J84602) to the Department of Environmental Conservation (DEC) through the Alaska Clean Water Actions (ACWA) Program, and in part by a National Fish and Wildlife Foundation (NFWF) Wells Fargo Environmental Solutions for Communities Grant. The content of this document does not necessarily reflect the view and policies of the funders, nor do the funders endorse trade names or recommend the use of commercial products mentioned in this document.

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Introduction

The Jordan Creek is located on the east side of the Mendenhall Valley in Juneau, Alaska (Figure 1). Jordan Creek is an anadromous stream that supports coho, pink, and chum salmon along with Dolly Varden char, and cutthroat trout. However, Jordan Creek is listed as an Impaired Water Body by the State of Alaska for non-attainment of sediment, dissolved oxygen, and residue (debris) standards. Urban stormwater run-off is identified as the major source of pollution in Jordan Creek. Stormwater pollutants include fine sediment and chemicals such heavy metals, pesticides, petroleum hydrocarbons, de-icing solutions as well as fecal coliform bacteria. Pollutants attributed to stormwater runoff not only degrade water quality, but also have direct and indirect adverse effects on fish and other aquatic organisms.

The most intensely developed area is the lower watershed below Egan Drive, where residential and commercial developments encroach on the stream (Figure 1). This encroachment has caused several problems due to reduced riparian functions and poor snow management practices. Encroaching parking lots are not compliant with the City and Borough of Juneau (CBJ) stream-side setback required on anadromous streams, but many are "grandfathered" because they were built prior to the ordinance. Implementing best management practices (BMPs) would go a long way to improve water quality and fish habitat in this urban stream. However, property owners do not have an incentive to implement BMPs and are generally reluctant to voluntarily work on such projects.

The United States Fish and Wildlife Service (USFWS) and the Juneau Watershed Partnership (JWP) recently completed a stormwater inventory and assessment for the Lower Jordan Creek watershed, which identifies opportunities to manage the quantity and quality of stormwater entering the stream. As part of this project, the Edward K. Thomas building, owned by Central Council of Tlingit and Haida (CCTHITA), was identified as a site along Jordan Creek where stormwater treatment is needed. Run-off from the adjacent parking lot circumvents the storm sewer system, flows across the CCTHITA property and discharges untreated directly into the creek. The USFWS and JWP recommended implementing a bioswale or infiltration basin at this location to treat the stormwater.

The JWP subsequently listed the Edward K Thomas Building Stormwater Treatment project in their compilation of restoration, enhancement and mitigation measures for Juneau's watersheds developed under a Coastal Impact Assistance Program (CIAP) grant. The JWP identified the Edward K Thomas Building Stormwater Treatment project as a high priority for the Jordan Creek watershed due to the benefits, land-owner buy-in, feasibility in construction, and ability to obtain funding, and developed a conceptual design for the project under the CIAP grant in order to facilitate its implementation. The Southeast Alaska Watershed Coalition (SAWC) partnered with the JWP and the CCTHITA to pursue funding construction of the stormwater treatment. Funding was secured from the Alaska Clean Water Actions Grant Program administered by the Alaska Department of Environmental Conservation and the National Fish and Wildlife Foundation.

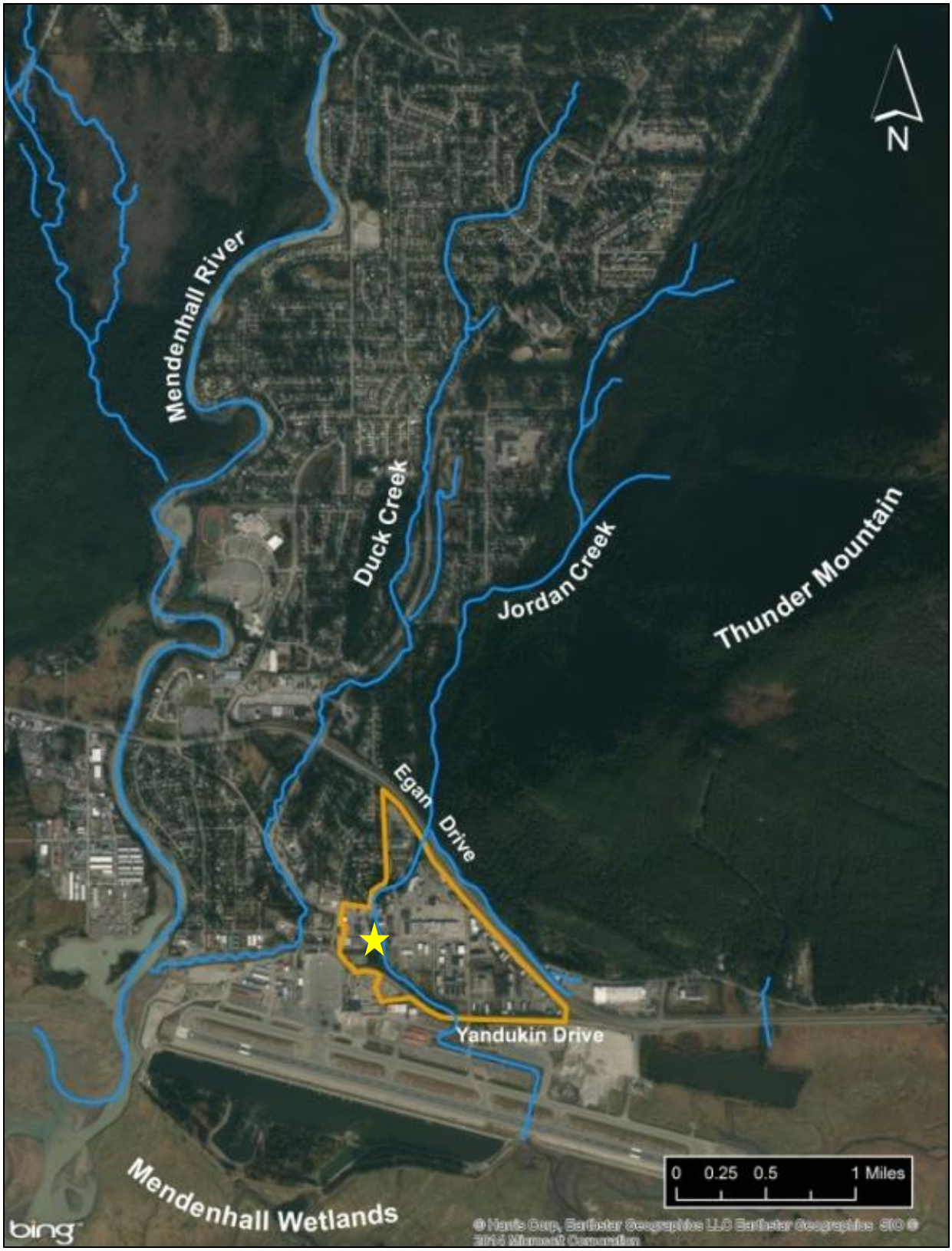


Figure 1. The Jordan Creek watershed in Juneau, Alaska. The highly impacted lower watershed boundary is outlined in orange. The location of the Edward K Thomas Building rain garden is indicated by the yellow star.

Pre-Construction Site Conditions

The Edward K. Thomas building sits on commercially zoned property owned by the Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA) (Figure 2). The Edward K. Thomas Building property adjoins other commercial developments in the Airport Shopping Center. The parking lot of the Shopping Center is paved except at the south end of the CCTHITA property, which contains an unpaved parking area utilized for the CCTHITA Driver Training School.

Figure 2. Central Council of Tlingit and Haida's property boundary for the Edward K Thomas Building located in the Airport Shopping Center in Juneau, Alaska.

Due to pavement wearing and setting, stormwater from the adjoining paved surfaces circumvents the storm sewer system, flows across the unpaved driver training area, and discharges untreated into Jordan Creek. The area contributing to the stormwater discharge is 36,000 ft^2 (0.83 acres) (Figure 3 and 4).

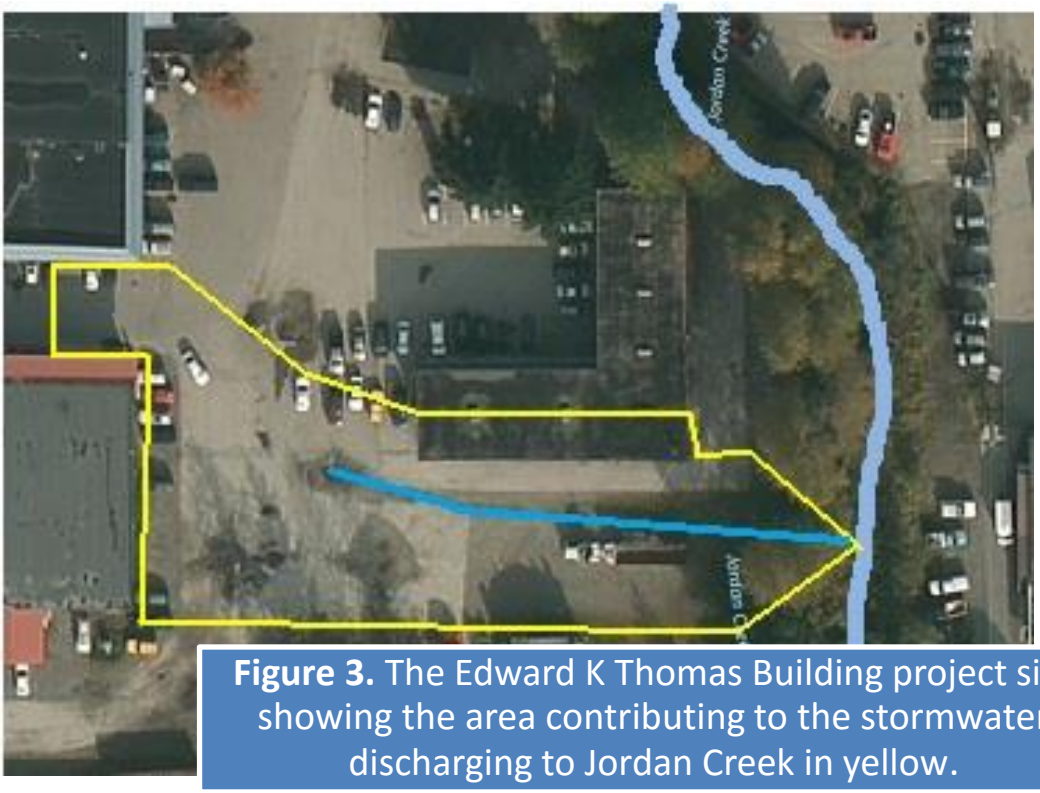


Figure 3. The Edward K Thomas Building project site showing the area contributing to the stormwater discharging to Jordan Creek in yellow.

Figure 4. The Edward K Thomas Building project site during a rain event with stormwater run-off draining towards Jordan Creek, which is in the background.

The property was developed prior to the establishment of the anadromous habitat setbacks codified in CBJ Municipal Code §40.70.310, and the existing developed area extends into these setbacks. However, there is a small riparian corridor along this adjacent reach of Jordan Creek. The vegetation in the riparian area consists of reed canary grass, other unidentified grasses, cow parsnip, mountain ash, alder, willow, cottonwood and spruce.

Edward K. Thomas Building/Jordan Creek Green Infrastructure Project

Concept

The concept for this project began with the *Stormwater in the Lower Jordan Creek Watershed* (USFWS, 2015) a stormwater inventory and assessment that identified opportunities to manage the quantity and quality of stormwater entering lower Jordan Creek. The field work for this assessment was conducted in 2012 and 2013. At that time, the Edward K. Thomas building, owned by Central Council of Tlingit and Haida (CCTHITA), was identified as a site where stormwater treatment was needed for the discharges entering the creek from the parking lot. The recommendations for the site included installing a best management practice (BMP) that would promote infiltration of the stormwater, and using fencing to maintain the streamside setback and discourage snow plowing into the creek.

In 2014, the Juneau Watershed Partnership (JWP) subsequently listed the Edward K Thomas Building Stormwater Treatment project in a compilation of restoration, enhancement and mitigation measures for Juneau's watersheds developed under a Coastal Impact Assistance Program (CIAP) grant. Simultaneously, the JWP and the Southeast Alaska Watershed Coalition (SAWC) coordinated with CCTHITA to gain their support for the project, which was given. This allowed the JWP to list the project as a high priority for the Jordan Creek watershed due to the benefits, land-owner buy-in, feasibility in construction, and ability to obtain funding, and develop a conceptual design for the project under the CIAP grant in order to facilitate its implementation.

The rain garden concept was designed according to the CBJ's *Manual of Stormwater Best Management Practices* (Manual) specifications for the Infiltration Basin BMP. This BMP was selected for the rain garden design since the CBJ's *Manual* is required for permanent BMPs constructed within the CBJ, and rain gardens are not specifically listed in the *Manual*; however, Infiltration Basins, "can be designed as ... a shallow earthen rain garden."

Following the *Manual*, the rain garden's conceptual dimensions were determined based on a calculation that included the site's conditions (size and percentage of impervious surface) and a design rainfall of 1.5 inches. This determines the water quality design volume, which is the amount of stormwater the rain garden should be able to retain and infiltrate. The water quality design volume for the rain garden was calculated to be approximately 3,368 ft^3. This requires the rain garden to be approximately 20 foot wide, by 80 foot long, by 3.6 foot deep.

The concept positioned the rain garden parallel to the stream and perpendicular to the stormwater flow, along the back side of the property in order to intercept the run-off, slow it down, and give space and time to allow the sediment and other pollutants to settle out of the water before it enters the creek. However, it was determined that, even with this positioning, the site may not accommodate a rain garden of the designed size, so the concept included constructing a rock swale to provide a stabilized the flow path for the stormwater, assist in infiltration, and to help reduce fine sediments entering the rain garden. The rock swale was positioned perpendicular to the rain garden and will be placed along where the stormwater currently flows across the parking area.

The project concept also included approximately 460 linear feet of barrier fencing along the property boundary that parallels the creek. The split-rail cedar fence will consist of 350 linear feet of the fencing, and will be constructed in areas with low potential impact from snow plows. More robust concrete barriers will comprise another 110 linear feet of the fencing in areas with higher potential of impact from snow plows. The concrete barriers may be replaced by split rail cedar fence depending on cost, but will be kept in the highest areas of potential impact from snow plows (e.g. corners). The split-rail cedar fence would stand approximately 4-feet high and the concrete barriers would be the standard 32 inches in height. The fence and concrete barriers will be placed along the edge of pavement and the vegetation. Breaks in the barrier fence will occur at larger trees.

The conceptual design for project is in Appendix A.

Construction

This project was completed over the course of a year, from July 31, 2015 to June 30, 2016. The project required several permits and authorizations before construction could begin. These were: a Grading Permit and a Variance authorization to the Habitat Setbacks from the CBJ. The rain garden, as a permanent stormwater control, potentially required a DEC Storm Water Engineering Plan Review (Letter of Approval); however, the DEC waived the need for a formal review based on their review of the CBJ Grading/Variance application package. All approvals were obtained by September 25, 2015. All permits/authorizations are provided in Appendix C.

Construction of the rain garden and snow barrier fence was scheduled to be completed by October 2015, with riparian vegetation plantings in the fall 2015 and spring 2016. However, while the snow barrier fence and riparian plantings were completed relatively on-time, the rain garden construction was not completed until June 2016.

Equipment and operator time were donated by two project partners, the CCTHITA and SOURCE, LLC. The delays were due to equipment, staffing and scheduling challenges suffered by our project partners throughout the course of the year. The JWP worked with the DEC, USFWS, and our project partners to adapt to the circumstances. This included installing the concrete barriers prior to finishing the construction of the rain garden, and installing a temporary diversion ditch to divert stormwater from the stream until the rain garden was completed.

The spring site assessment was completed by the JWP on April 15, 2016. The riparian vegetation plantings (willow and cottonwood) appeared to be successful, as most of the plants were found in various stages of budding and leafing. A few casualties were found from last winter's pre-barrier plowing in the high impact areas on the front and back corners alongside the Edward K. Thomas Building. Additional plants may have been impacted from the pre-barrier plowing, but were under the sediment and organic matter that resulted from the plowing and snow melt. The sediment and organic matter from these areas would have to be removed to assess the full damage, but the damage appeared to be the most significant along the side and back corner of the building. Photos from the site assessment are provided in the photo log provided in Appendix F.

An As-Built Drawing of the rain garden is included in Appendix B, and a detailed construction timeline is included on the following page. A Photo Log of the project's progress throughout the year is provided in Appendix F.

Figure 5. Volunteers constructing the cedar split-rail fence

The following are important dates in the project's construction:

September 25, 2015
All required permits obtained.

September 25 – 26, 2015
Cedar split rail fence installed and riparian vegetation (willow and cottonwood) planted.

October 24, 2015
Excavation of rain garden began.

November 30, 2015
Concrete barriers placed in response to concerns about poor winter maintenance practices

April 6, 2016
Temporary diversion ditch installed in response to concerns about continued stormwater discharges due to construction delays

April 15, 2016
Spring site assessment conducted by JWP.

April 30, 2016
JWP partnered with Litter Free to host the annual community Spring Clean-up; volunteers were directed to Jordan Creek to clean-up along the reach near the rain garden.

May 28 – June 9, 2016
More excavation, addition of rock and top soil.

June 11, 2016
Planting of the rain garden.

June 17, 2016
Rock swale construction finished

June 29, 2016
Installation of the interpretive sign

Figure 6. DEC Project Manager, Gretchen Pikul, gets her hands dirty planting willows in the riparian area.

Figure 7. Excavation of the rain garden by Source, LLC.

Figure 8. Planted rain garden

Benefits

Jordan Creek is listed as an Impaired Water Body by the State of Alaska for non-attainment of sediment, dissolved oxygen, and residue (debris) standards. Urban stormwater run-off is identified as the major source of pollution in Jordan Creek. In 2008, the City and Borough (CBJ) completed a stormwater outfall inventory project to help manage stormwater discharges in Juneau's impaired urban watersheds. However, this inventory did not identify many outfalls or stormwater structures within the Jordan Creek watershed, and most of those identified were in the upper Jordan Creek watershed.

Since much of the upper Jordan Creek watershed is relatively healthy compared to the lower, densely developed watershed, the United States Fish and Wildlife Service (USFWS) and the Juneau Watershed Partnership (JWP) completed a stormwater inventory and assessment for the lower Jordan Creek watershed to identify opportunities to manage the quantity and quality of stormwater entering the stream. The resultant report, *Stormwater in the Lower Jordan Creek Watershed* (USFWS, 2015), identified thirteen outfalls discharging directly to Jordan Creek. Eight of these outfalls did not have stormwater BMPs treating the stormwater discharges.

Figure 9. Sediment discharging into Jordan Creek from the Edward K. Thomas building site prior to the installation of the rain garden.

This project addresses one of these eight outfalls by implementing two of the three recommendations for this location: installing a BMP that would promote infiltration of the stormwater and using fencing to maintain the streamside setback and discourage snow plowing into the creek. The recommendation to pave the remaining unpaved areas of the parking lot to reduce sediment sources was not implemented as part of this project, as this is a potentially costly undertaking.

A rain garden was determined to the best green infrastructure option because rain gardens: are relatively inexpensive and easy to install; encourage infiltration; are recommended for treating run-off from parking lots; can treat 40 to 80 percent of the run-off; and are able to remove pollutants such as fine sediments, hydrocarbons, copper, lead, zinc, phosphorus and nitrogen. The design of the Edward K. Thomas building rain garden was intended to provide these benefits.

The rain garden was constructed smaller than the conceptual design dimensions in order to prevent damaging or removing existing riparian trees and to stay within the limits allowed by CCTHITA. A rock swale was included to help stabilize the flow path, since the parking lot is not being paved, as well as providing some pre-treatment of the run-off prior to it entering the rain garden. This should reduce the amount of surface water and sediment entering the rain garden and, therefore, also reduce the associated maintenance. The infiltration capacity of the rain garden combined with the infiltration

capacity of the rock swale should provide 3,513 cubic feet of storage capacity. This is more than the design water quality volume of 3,368 cubic feet of stormwater.

The plants selected for the rain garden were limited to perennial native plants recommended for rain gardens in Alaska. Although some non-native species were also on recommended plant lists, the benefit to using perennial native plants is that they are adapted to local conditions, require less maintenance, and have wildlife habitat values. In addition, to be sensitive to the rain garden's proximity to Jordan Creek, many of the selected plants are suited to being in riparian areas. Ultimate selection of plants was also driven by local availability. All willow was donated by the Native Plant Nursey and the remaining plants were purchased from other local nurseries. Table 1 on the following pages provides a synopsis of the plants included in the rain garden and their benefits.

Rain gardens, in general, require moderate maintenance in order to maintain their effectiveness. To ensure proper care, the JWP developed a *Re-Vegetation and Maintenance Plan* (Appendix D) to guide inspection and maintenance of the rain garden. Per this plan, an inspection will be conducted in the fall. The JWP and SAWC have additional funding through the National Fish and Wildlife Foundation (NFWF) Wells Fargo Environmental Solutions for Communities grant to perform any required maintenance such as re-vegetation at that time.

The other element of this project is the cedar split-rail fence and concrete barriers. These benefit Jordan Creek by discouraging snow from being plowed into the riparian area, reducing snow as a source of sediment and other pollutants. The concrete barriers were placed in the locations with the highest impact, where snow was most frequently pushed into the stream. Concrete barriers were also placed in front of the rain garden in order to protect it from the trucks using the adjacent parking lot. However, the barriers do not prevent a snow plow operator from lifting snow over the barrier, so on-going observation and discussions with CCTHITA may be needed to ensure proper winter maintenance techniques.

Figure 10. Concrete barriers discouraging snow from being plowed into the creek.

Plant Type	Plant Common/Scientific Name	Photo	Wildlife Values	Characteristics Beneficial for Rain Gardens
Shrubs	Willow spp./ *Salix spp.*		Food source for deer, small mammals, song birds; provides cover and nesting habitat for birds; and provides cover for small mammals.	Many species are fast growing; grows in riparian areas and on stream banks; known success in revegetation/restoration projects; fire-wise recommended plant.
	Red twig dogwood/ *Cornus sericea*		Food source for deer, black bear, small mammals, song birds and butterflies; provides cover and nesting habitat for birds; and provides cover for small mammals. *On Seattle's list of salmon-friendly garden plants.	Easy to grow; rapid establishment and growth; tolerance of wet soils; adaptable to a variety of conditions; grows in riparian areas and on stream banks; fire-wise recommended plant.
	Lingonberry/ *Vaccinium vitus idaea*		Food source for song birds and small mammals; provides cover for song birds and small mammals; attracts birds.	Able to survive harsh sites; propagation through rhizomes allows spreading; great ground cover.
Forbs/Herbs	Bunchberry (dwarf dogwood)/ *Cornus canadensis*		Low to moderate food source for song birds; provides moderate cover for song birds and small mammals; attracts birds. *On Seattle's list of salmon-friendly garden plants.	Excellent groundcover; tolerance of wet soils; fire-wise recommended plant.
	Lady Fern/ *Athyrium felix-femina*		Cover for song birds and small mammals.	Hardy and tolerant of a variety of conditions; easy to grow; easily spreads through spores and root stocks; will grow in swales and ditches; grows in riparian areas and on stream banks; fire-wise recommended plant.

Plant Type	Plant Common/Scientific Name	Photo	Wildlife Values	Characteristics Beneficial for Rain Gardens
Forbs/Herbs	Alaska wild iris/ *Iris setosa*		Attractive to pollinators (hummingbirds, bees, butterflies, moths).	It grows primarily by rhizomes, making it good for revegetation; seeds can be harvested and planted in August; can tell success if new shoots in the following spring; tolerant of a variety of soil conditions; strong competitor; recommended for revegetation and erosion control in Alaska; fire-wise recommended plant.
Grasses	Tuft hair grass/ *Deschampsia cespitosa*		Use as food source by wildlife is highly variable (poor to good), but it is a larval food source for several butterfly species); dense hummocks provide nesting foliage; provides cover for song birds and small mammals.	Easy to grow; has a long life-span; moderate seed production and good reseeding potential; good drought resistance; high winter-hardiness; strong competitor; recommended in revegetation projects in Alaska; some populations tolerant of heavy metals; grows on stream banks.

Table 1. Native plants included in the rain garden and their wildlife values and characteristics that are beneficial to a rain garden. Information presented in the table regarding wildlife values and plant characteristics came from Anchorage Wildlife Partnership (2004); Carter (2014); Hunt and Wright (2004 and 2006); King County, WA (nd); U.S. Department of Agriculture, Natural Resource Conservation Service (2016); Washington State University (nd).

Outreach

While this project is treating one of the smaller stormwater systems in the lower Jordan Creek watershed, it is the first step to addressing identified stormwater concerns. This project was selected due to the ease of constructability and the willing participation of the landowner, CCTHITA, who has worked with the JWP on another restoration project on Jordan Creek. The rain garden can serve as a demonstration site to other landowners and help increase awareness about stormwater pollution.

The JWP conducted several outreach efforts around Jordan Creek and stormwater concerns as part of this project. Much of the outreach was done using our website and social media. The JWP also hosted meetings and got a news article published about the project.

At the beginning of the project, the JWP developed a project website, which was updated throughout the course of the project. The website was also used to provide general information on rain gardens. The project website was finalized after the rain garden was completed and can still be accessed at: http://www.juneauwatersheds.org/programs/stormwater/raingarden.html.

The stormwater webpage was updated to provide the public with information about the effects of stormwater on our local watersheds: http://www.juneauwatersheds.org/stormwater.html. This included updates to the Slash the Trash webpage and a new stormwater mapping page, both of which are linked on the stormwater page.

The JWP also placed a solicitation on our Volunteer webpage encouraging lower Jordan Creek landowners to partner with JWP on green infrastructure projects. It includes a link to the brochure that was developed to provide information about stormwater concerns on Jordan Creek and how green infrastructure, like the rain garden, can help improve water quality. This can still be accessed on the JWP webpage at: http://www.juneauwatersheds.org/volunteer.html.

In addition, the JWP held two meetings about the rain garden and stormwater concerns on Jordan Creek. On January 15, 2016 the JWP and USFWS gave a presentation to the CBJ Engineering and Planning staff to make CBJ aware of the stormwater mapping efforts that JWP has completed with USFWS and DEC support, make them aware of the green infrastructure projects currently in progress, like the Jordan Creek Rain Garden, and provide them with the JWP's plan to promote green infrastructure and restoration on Jordan Creek in the future. The meeting was attended by ten CBJ staff.

The JWP also held a lower Jordan Creek stakeholder meeting at the Mendenhall Public Library on March 4, 2016 from 4:00PM to 5:30PM. The purpose of the meeting was to inform landowners about the benefits of green infrastructure and how they could partner with JWP and SAWC to make improvements on their property. JWP advertised the meeting on Facebook and its website. JWP also mailed invitations to landowners, whose addresses were compiled from the CBJ's Assessor's database. During the meeting,

the JWP gave a PowerPoint presentation and made several green infrastructure educational materials available, including the brochure JWP developed as part of the project.

The JWP and SAWC used Facebook to inform the public about the project, recruit volunteers to install the fence and plant vegetation, and to advertise the landowner meeting. The JWP used social media around the annual community-wide clean-up event to make the public aware of litter and stormwater concerns, particularly in regards to Juneau's impaired watersheds.

- JWP's Facebook pages: https://www.facebook.com/JuneauWatersheds and https://www.facebook.com/JuneauWatershedPartnership

- SAWC's Facebook page: https://www.facebook.com/alaskawatershedcoalition

Other media coverage includes an article in the Juneau Empire and a blog article. The JWP sent out a press release to the Capital City Weekly and the Juneau Empire in hopes of getting coverage during installation of the fence. However, a reporter did not contact JWP until after the fence installation. The article was published in the Juneau Empire on November 17, 2015. The article is available on JWP's project website. The JWP also wrote a blog article on the completed project on June 15, 2016. The blog article is available on JWP's blog webpage: http://www.juneauwatersheds.org/blog.html

Figure 11. Interpretive sign display at the rain garden

However, the rain garden site itself has the principal outreach piece. The JWP designed an interpretive sign in-house, with input from the DEC Project Manager and U.S. Fish and Wildlife Service. The interpretive sign was fabricated by Wilderness Graphics on 24 inch by 18 inch aluminum sheeting. A mounting frame was constructed out of sustainably harvested yellow cedar by Icy Straits Lumber & Milling, Inc. The frame is constructed in a manner that will allow for easy disassembly for maintenance. The JWP mounted the frame to an angled sign post for easy viewing. Reflectors were added to the sign post for visibility, since the sign is in a parking lot. The sign was installed at the site on June 29, 2016 (Figures 11 and 12).

Figure 12. Close up of the interpretive sign

Educational materials not accessible online are provided in Appendix E. A photo log of the project's progress is included in Appendix F.

Sources

Anchorage Wildlife Partnership. 2004. *Firewise Vegetation Guide*. https://www.muni.org/Departments/Fire/Wildfire/Documents/Firewise%20Alaska%202003%20vegetation%20guide.pdf

Carter, R. 2014. *Revegetation Plant Identification Field Guide*. Alaska Plant Materials Center. http://plants.alaska.gov/pdf/RevegetationFieldGuide.pdf

City and Borough of Juneau (CBJ). 2010. *Manual of Stormwater Best Management Practices*. http://www.juneau.org/engineering/SW_BMP/documents/Aug_2010_Manual_Stormwater_BMPs_000.pdf

CBJ. 2008. *Stormwater Outfall Inventory and Mapping*. http://www.juneau.org/engineering/SW_BMP/Guidance_Manual.php

Juneau Watershed Partnership (JWP). 2015. *Restoration, Enhancement and Mitigation Measures in Juneau Watersheds*. http://www.juneauwatersheds.org/REM.html

Hunt, P. and Stoney, W. 2004. Nortran tufted hairgrass. Plant Flyers. Alaska Plant Materials Center. http://plants.alaska.gov/pdf/plant-flyers/NortranTuftedHairgrass.pdf

Hunt, P. and Stoney, W. 2006. Knik germplasm wild iris. Plant Flyers. Alaska Plant Materials Center. http://plants.alaska.gov/pdf/plant-flyers/Knikwildiris.pdf

King County, Washington. *Native Plant Guide*. https://green2.kingcounty.gov/gonative/Index.aspx

U.S. Department of Agriculture, Natural Resource Conservation Service. 2016. The PLANTS Database (http://plants.usda.gov, 17 June 2016). National Plant Data Team, Greensboro, NC 27401-4901 USA.

U.S. Fish and Wildlife Service (USFWS). 2015. *Stormwater in the Lower Jordan Creek Watershed*. http://www.juneauwatersheds.org/programs/stormwater/Jordan%20Creek%20SW%20Report%20Final.pdf

Washington State University. Northwest Plants Database. http://pnwplants.wsu.edu/Default.aspx

Appendix A.

CONCEPTUAL DESIGN FOR THE EDWARD K. THOMAS BUILDING/

JORDAN CREEK GREEN INFRASTRUCTURE PROJECT

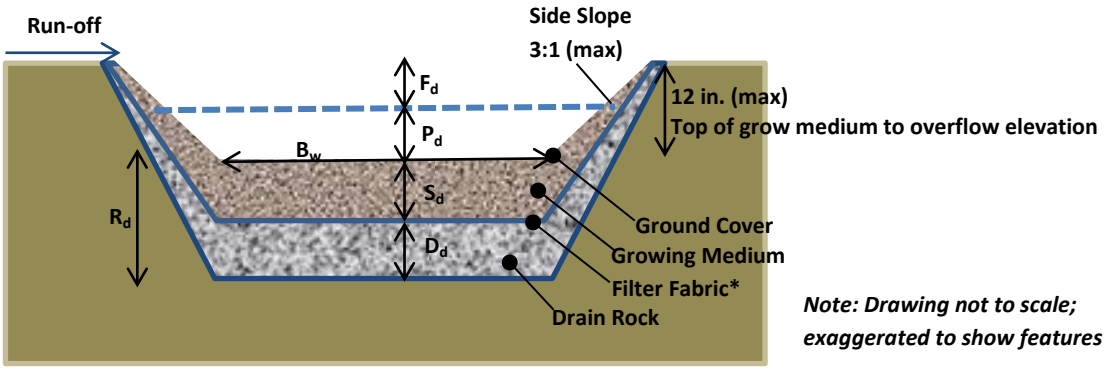
JUNEAU WATERSHED PARTNERSHIP

"Working together for healthy watersheds"

EDWARD K THOMAS BUILDING

RAIN GARDEN CONCEPTUAL DESIGN

Cross-Section



Note: Drawing not to scale; exaggerated to show features

Measurements per CBJ Stormwater BMP Manual:
F_d = Minimum freeboard of 2 in.
Ground cover = 2 – 3 in. thick
S_d = Growing medium (soil) minimum of 6 – 8 in. deep
B_w = Minimum bottom width of 2 ft.

Measurements per MOA Low Impact Development Design Manual:
P_d = Maximum ponding depth of 8 in.
R_d = Minimum depth of Retention and Filtration Zone (Soil and Drain Rock) of 2.5 ft.

Material Specifications per CBJ Stormwater BMP Manual:
Ground cover – Fine to medium hemlock bark or organic compost
Growing medium (soil) – sandy loam mixed with compost or a sand/soil/compost blend (1/3 compost by volume)
Drain rock – 1 ½ in. – 1 ¾ in. washed drain rock (infiltration), ¾ in. washed drain rock (retention/flow-through)
*Filter fabric – can be replaced with a 2 – 3 in. layer of ¾ - ¼ in. washed, crushed rock

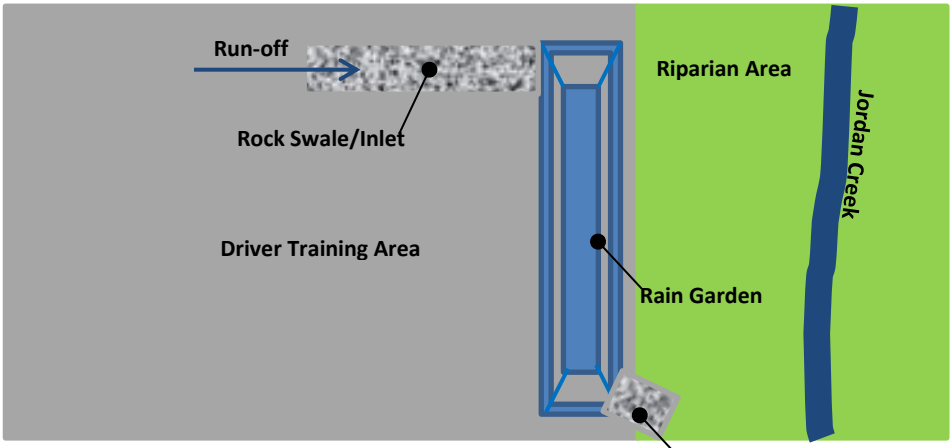
JUNEAU WATERSHED PARTNERSHIP

"Working together for healthy watersheds"

EDWARD K THOMAS BUILDING

RAIN GARDEN CONCEPTUAL DESIGN

Plan View



Note: Drawing not to scale; exaggerated to show features

Water Quality Volume Determination per CBJ Stormwater BMP Manual:

$WQ_v = (WQ_d)(R_v)(A)/12 = (1.51)(0.743)(0.826)/12 = 0.0773$ acre – feet or 3,368 ft^3

where WQ_d = Water Quality Rainfall Depth = 1.51 in.

R_v = Site Run-off Coefficient, defined as $R_v = 0.05 + 0.009(I) = 0.05 + 0.009(77) = 0.743$

I = Site Impervious Cover (%) = 77%

A = Total Site Area (acres) = 0.826 acres

Preliminary Rain Garden Dimensions:

Length = 80 ft.

Width = 20 ft.

Depth = 3.6 ft.

Cost Estimate:

Cost estimate per Fairbanks Green Infrastructure Group,

~ $\$20/ft^2 = \$20*1600\ ft^2 = \$32,000$ (high end, self-installed)

~ $\$25/ft^2 = \$25*1600\ ft^2 = \$40,000$ (high end, professionally installed)

Cost estimate per Municipality of Anchorage,

~ $\$5/ft^2 = \$5*1600\ ft^2 = \$8,000$ (high end, self-installed)

~ $\$12/ft^2 = \$12*1600\ ft^2 = \$19,200$ (high end, professionally installed)

JUNEAU WATERSHED PARTNERSHIP
"Working together for healthy watersheds"

EDWARD K THOMAS BUILDING

RAIN GARDEN CONCEPTUAL DESIGN

Recommended Native Plants

Shrubs

Red-twig Dogwood (*Cornus sericea*)
Highbrush Cranberry (*Viburnum edule*)
Lingonberry (*Vaccinium alaskaense*)
Soapberry (*Shepherdia Canadensis*)
Prickly Rose (*Rosa acicularis*)
Silverberry (*Eleagnus commutata*)

Perennials

Goat's Beard (*Aruncus delphinifolium*)
Wild Geranium (*Geranium erianthum*)
Devil's Club (*Oplopanax horridus*)
Lady Fern (*Athyrium felix-femina*)
Chocolate Lily (*Frittilaria camschatcensis*)
Wood Fern (*Dryopteris dilitata*)
Alaska Wild Iris (*Iris setosa*)
Cranesbill Geranium (*Geranium erianthum*)
Ostrich Fern (*Matteuccia struthiopteris*)
Bluebells (*Mertensia*)
Forget-Me-Not (*Myosotis alpestris*)
Dwarf Fireweed (*Chamerion latifolium*)

Grasses and Sedges

Native Sedge (*Carex gmelini*)
Tuft Hair Grass (*Deschampsia cespitosa*)

Sources

City and Borough of Juneau (CBJ). 2010. Manual of Stormwater Best Management Practices. http://www.juneau.org/engineering/SW_BMP/documents/Aug_2010_Manual_Stormwater_BMPs_000.pdf

Fairbanks Green Infrastructure Group. Green Infrastructure Project: Rain Garden. http://www.fairbankssoilwater.org/user-files/pdfs/Rain%20Garden%20Guide.pdf

Municipality of Anchorage (MOA). Rain Gardens: A How To Manual for Homeowners in the Municipality of Anchorage. http://www.anchorageraingardens.com/RGmanualWEB.pdf

MOA Watershed Management Services. 2008. Low Impact Development Design Guidance Manual. http://www.muni.org/Departments/works/project_management/Publications/LID_Design_Guidance_1208.pdf

Appendix B.

AS-BUILT DRAWING FOR THE EDWARD K. THOMAS BUILDING/

JORDAN CREEK GREEN INFRASTRUCTURE PROJECT

Appendix C.

APPROVED PERMITS/AUTHORIZATIONS

City & Borough of Juneau
Alaska's Capital City

Grading Permit Checklist

JUNEAU PERMIT CENTER, 4TH FLOOR MARINE VIEW CENTER, (907) 586-0770

All grading must conform with CBJ Title 19.12, Excavation and Grading.

Section I: **Case Number:**_____

Applicant's Name Southeast Alaska Watershed Coalition
Mailing Address PO Box 283, Haines, AK 99827
Phone Number 907-314-0477
Project Address 9095 Glacier Hwy
Project Parcel Number 5B1601000021

Section II:

GRADING PLAN REQUIREMENTS

Grading permit applications must be accompanied by a drawing which graphically shows the grading site and the proposed grading changes. The plan shall show the following features:

- ☐ A. Name, address and phone number of applicant
- ☐ B. Lot number, legal description, and street address of grading site
- ☐ C. Lot boundary lines
- ☐ D. Buildings (existing and proposed)
- ☐ E. All easements affecting lot
- ☐ F. Location of driveway, including width and size of culvert
- ☐ G. Streams, ditches, swales and all other drainage features including locations where drainage leaves the grading site. (PLAN SHALL SHOW ALL DRAINAGE FLOWING INTO AN APPROVED DRAINAGE WAY)
- ☐ H. Location of underground utilities (water, sewer, phone, power, tv)
- ☐ I. Limits of all proposed cuts and fills
- ☐ J. Elevations and dimensions of proposed grading and buildings
- ☐ K. All structures within 15 feet of the boundaries of the site
- ☐ L. Survey of existing terrain shown with, elevations, cross sections or contours

The Building Official may require a more detailed plan and/or survey by licensed professionals for grading on sites with steep slopes, large excavations or fills (greater than 5,000 cubic yards), or for structural fills.

Section III:

Will there be excavation activity? ☒ YES ☐ NO

How many cubic yards? 270 Cubic Yards

What type of material will be excavated? Soil + Rock

Will excavated material be removed from the site? ☒ YES ☐ NO

How many cubic yards of material will be removed? 270 Cubic Yards

What is the location of the disposal site? Montana Creek waste Disposal site

ask Brad → Has a permit been obtained for the disposal site? ☐ YES ☒ NO Landfill

Will fill be brought on to site? ☐ YES ☐ NO

How many cubic yards? 200 Cubic Yards

What type of material? Rock and Top Soil

From where will the material be obtained? Hanna Construction

Will stumps need to be removed? ☐ YES ☒ NO

Describe method of disposal: _____

Will erosion protection be required? ☐ YES ☒ NO

Describe method: _____

Will a retaining wall be required to hold the cut or fill? ☐ YES ☒ NO

(Note: Walls four feet or greater in height must be designed by a professional engineer licensed in the State of Alaska.)

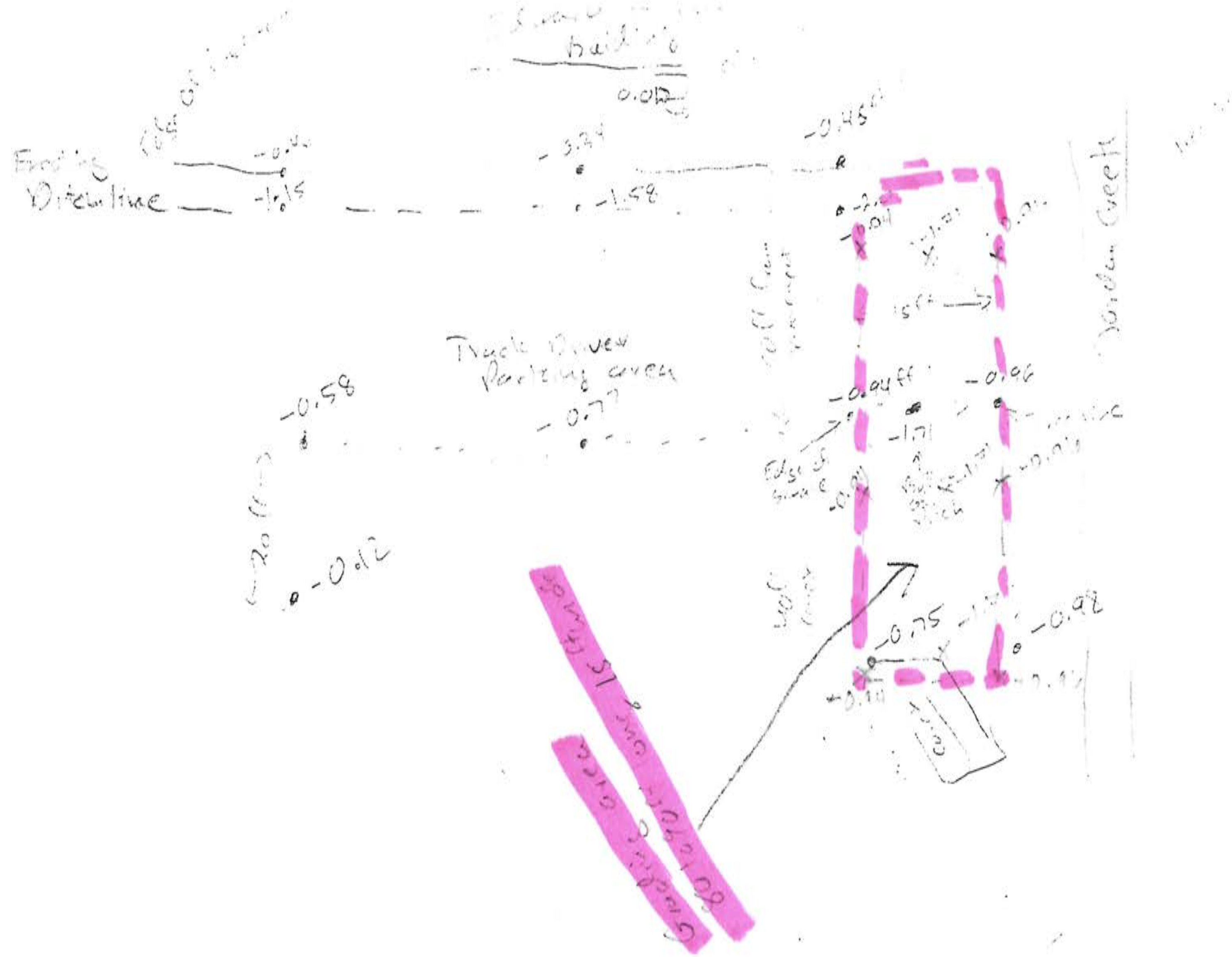
Section IIII:

Has a grading plan been stapled to this checklist? (Note: See Grading Plan Requirements on the back of this page.)	YES	NO
If a driveway is to be constructed to a State of Alaska Department of Transportation right-of-way, attach a copy of the ADOT driveway permit. (Note: Glacier Highway, Mendenhall Loop Road, and other major arterial roads in the CBJ are ADOT rights-of-way.) Are ADOT permits required and attached to this checklist?	YES	NO
If grading project will require a well or on-site sanitary sewer disposal, permits from the State of Alaska Department of Environmental Conservation are required. Are ADEC permits required and attached to this checklist?	YES	NO
) CBJ Land Use Code may require a Conditional Use Permit be issued by the Planning Commission for Sand and Gravel Extraction. Please respond to the following questions in order to determine if the extraction is exempt from a planning permit.		
Is the extraction a necessary incident to work authorized under a valid building permit for a proposed permitted use?	YES	NO
Has a building permit been issued for the proposed permitted use?	YES	NO
Is the extraction a necessary incident to improvements which are part of an approved subdivision plat?	YES	NO
If associated with subdivision improvement, will the material excavated remain entirely on the property or original tract or parcel subdivided?	YES	NO
Is the extraction less than two feet in depth and not creating a slope greater than five feet in height or steeper than one and one-half horizontal to one vertical?	YES	NO
Does the extraction involve the removal of less than two hundred cubic yards from the lot?	YES	NO
Is the extraction a necessary incident to the location or placement of work located primarily in the public way which is exempt from the building code?	YES	NO
Is the extraction for cemetery graves, excavations for wells or tunnels, utilities or exploratory excavation totaling less than two hundred cubic yards?	YES	NO

A NO answer to one or more of the questions A through H above may indicate that a Conditional Use Permit is required.

⇒ **See Example Grading Plan. Required features are shown on example plan by encircled letters which correspond to the above list.**

1. All grading must conform with CBJ Title 19.12, Excavation and Grading. (Note: Grading activity shall comply with grading setbacks.)
2. Prior to placing fill, all organic material and overburden must be removed.
3. Stumps shall be disposed of in an approved manner.
4. If fill or excavation has the potential to endanger adjoining property, the Building Official may require a soils engineering report.
5. If drainage is modified, the site plan must show no additional drainage impact on adjoining properties.
6. All retaining walls shall be shown on the grading plan, and with a detail which shows the wall's construction. Walls four feet in height or grater must be designed by a professional engineer licensed in the State of Alaska.
7. Some projects on steep slopes will require a HILLSIDE DEVELOPMENT PERMIT as defined in section 49.70 of the municipal code. For information, contact the CBJ Community Development Department at 586-0770.
8. Fills placed on existing slopes between 5:1 and 2:1 shall be benched to minimize slippage.
9. Fills placed on slopes steeper than 2:1 must be placed in accordance with an approved soil engineer's or geologists plan or report.
10. Fills to be used to support structures must be placed in accordance with an approved plan and soils report prepared and submitted by a civil or soils engineer licensed in the State of Alaska.



X = Propsed elevations

9/23/18
Approved
RDC

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

BOARD OF ADJUSTMENT
NOTICE OF DECISION
Date: September 24, 2015
File No.: VAR2015 0024

Southeast Alaska Watershed Coalition
PO Box 283
Haines, AK 99827

Application For:	The construction of a 460 foot fence within the 25 foot "No Disturbance" stream side setback along Jordan Creek, and the installation of a rain garden and required grading within the 50 foot "No Development" setback along Jordan Creek.
Legal Description:	USS 381 Glacier Mall Tract A3
Property Address:	9095 Glacier Highway
Parcel Code No.:	5-B16-0-100-002-1
Hearing Date:	September 22, 2015

The Board of Adjustment, at its regular public meeting, adopted the analysis and findings listed in the attached memorandum dated September 10, 2015, and approved the Variance to be conducted as described in the project description and project drawings submitted with the application.

Attachment: September 10, 2015, memorandum from Allison Eddins, Community Development, to the CBJ Board of Adjustment regarding VAR2015 0024.

This Notice of Decision does not authorize construction activity. Prior to starting any development project, it is the applicant's responsibility to obtain the required building permits.

This Notice of Decision constitutes a final decision of the CBJ Board of Adjustment. Appeals must be brought to the CBJ Assembly in accordance with CBJ §01.50.030. Appeals must be filed by 4:30 P.M. on the day twenty days from the date the decision is filed with the City Clerk, pursuant to CBJ §01.50.030 (c). Any action by the applicant in reliance on the decision of the Board of Adjustment shall be at the risk that the decision may be reversed on appeal (CBJ §49.20.120).

Effective Date:	The permit is effective upon approval by the Board, September 22, 2015
Expiration Date:	The permit will expire 18 months after the effective date, or March 22, 2017, if no Building Permit has been issued and substantial construction progress has not been made in accordance with the plans for which the development permit was authorized. Application for permit extension must be submitted thirty days prior to the expiration date.

Project Planner: A. Eddins

Allison Eddins, Planner
Community Development Department

Michael Satre, Chair
Planning Commission

Filed With City Clerk Deputy Clerk

9/25/15
Date

cc: Plan Review

NOTE: The Americans with Disabilities Act (ADA) is a federal civil rights law that may affect this development project. ADA regulations have access requirements above and beyond CBJ-adopted regulations. Owners and designers are responsible for compliance with ADA. Contact an ADA-trained architect or other ADA trained personnel with questions about the ADA: Department of Justice (202) 272-5434, or fax (202) 272-5447, NW Disability Business Technical Center (800) 949-4232, or fax (360) 438-3208.

Community Development

City & Borough of Juneau • Community Development
155 S. Seward Street • Juneau, AK 99801
(907) 586-0715 Phone • (907) 586-4529 Fax

DATE: September 10, 2015

TO: Board of Adjustment

FROM: Allison Eddins, Planner
Community Development Department

FILE NO.: VAR2015 0024

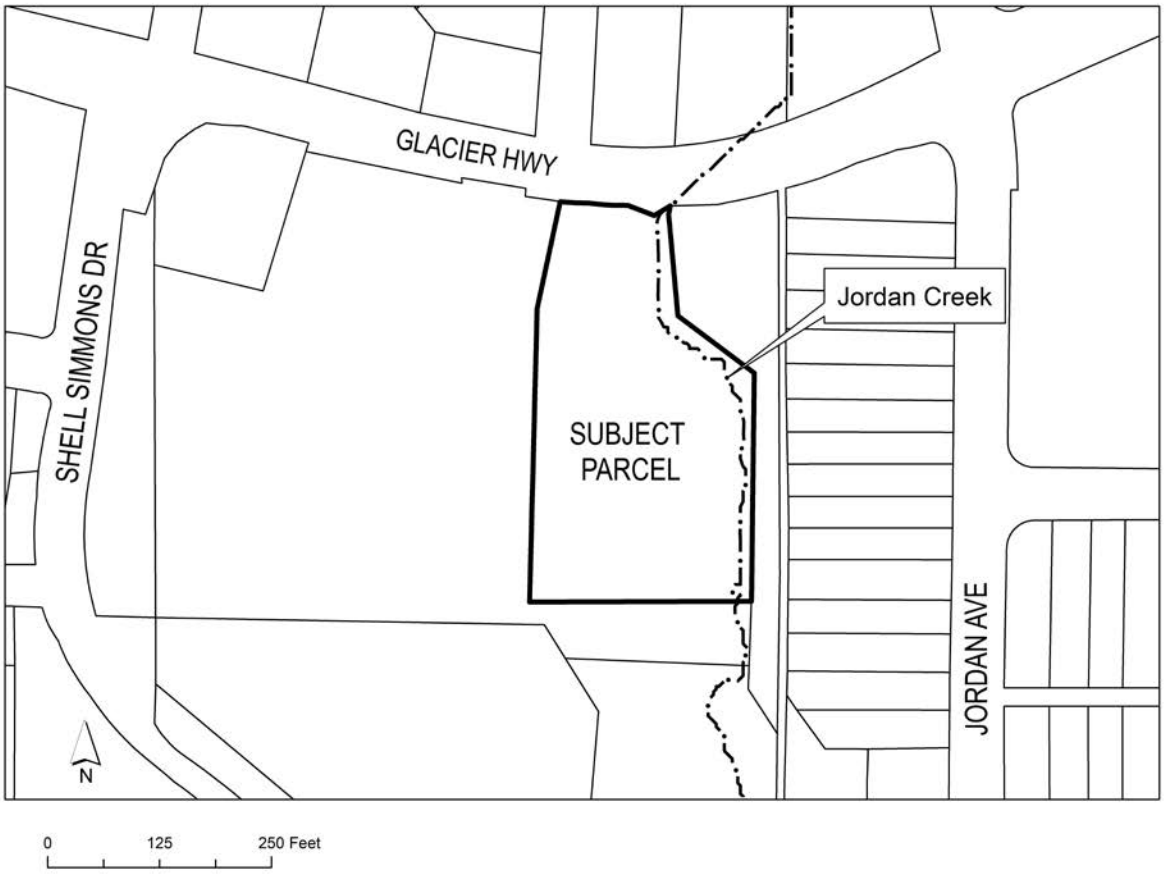
PROPOSAL: Construction of a 460 foot fence within the 25 foot no disturbance stream side setback along Jordan Creek, and the installation of a rain garden and required grading within the 50 foot no development setback along Jordan Creek.

GENERAL INFORMATION

Applicant:	Southeast Alaska Watershed Coalition
Property Owner:	Tlingit and Haida Central Council
Property Address:	9095 Glacier Highway
Legal Description:	USS 381 Glacier Mall Tract A3
Parcel Code Number:	5-B16-0-100-002-1
Site Size:	2 acres (88,644 square feet)
Comprehensive Plan Future Land Use Designation:	Commercial
Zoning:	General Commercial
Utilities:	CBJ water and sewer
Access:	Glacier Highway and Shell Simmons Drive
Existing Land Use:	Commercial offices and CDL driver training

Surrounding Land Use:
North – Valley Auto Repair (Light Commercial)
South – Vacant Lot (General Commercial)
East – Lyle's Home Furnishings and Juneau Youth Services (General Commercial)
West – Airport Shopping Mall (General Commercial)

VICINITY MAP



ATTACHMENTS

Attachment A – Variance and Development Permit Application
Attachment B – Project Narrative
Attachment C – Site Photos
Attachment D – Site Map
Attachment E – Wetlands Review Board Minutes
Attachment F – Public Notice

PROJECT DESCRIPTION

The Southeast Alaska Watershed Coalition (SAWC), with the property owner's permission, is seeking a variance to construct a 460 foot long fence and rain garden along Jordan Creek within the 25 foot and 50 foot streamside setbacks.

A split rail fence, measuring 4 feet in height, will be constructed out of cedar and erected along the eastern portion of the property between the parking lot and Jordan Creek in areas not impacted by snow plows. In areas with higher potential impact from snow plows, 32 inch high concrete barriers will be installed. The most likely place for a concrete barrier will be along the north-eastern corner of the lot where snow plows have a tendency to push snow and gravel into Jordan Creek. A second concrete barrier will be placed in front of the rain garden to keep snow and gravel out during plowing. The fence will be placed within the 25 foot no disturbance setback. (See Attachment D) The fence and concrete barriers can be installed without requiring the removal of trees.

Years of heavy traffic have created a large depression that runs east to west in the southern portion of the parking lot. This causes a large amount of storm water and pollutants to gather and swiftly run-off into Jordan Creek. (See Attachment C) To stabilize the flow of storm water and filter out pollutants, SAWC would like to install a bio swale that will divert water into the rain garden. The rain garden will be situated parallel to Jordan Creek and perpendicular to the bio swale. The rain garden will be 20 feet wide and 80 feet long, and will be placed within the 50 foot no development setback. (See Attachment D) The construction of a rain garden this size will require approximately 270 cubic yards of excavation which will be replaced with 120 cubic yards of gravel and topsoil. CBJ Land Use Code considers grading and fill to be development *(CBJ 49.80.120 Development).*

Much of the riparian area along this section of Jordan Creek is infested with reed canary grass. This is a highly invasive, non-native species that, if left untreated, will continue to spread and could cause further harm to the already impaired creek. As part of this project, the reed canary grass will be removed. Using pesticides was mentioned in the variance application but Tlingit and Haida Central Council (THCC), the property owners, are opposed to this method. Instead the reed canary will be removed by hand and the riparian area will be routinely monitored by the property owner to make sure the plant does not have a chance to take over again.

BACKGROUND

This lot was first developed in the late 1960's and the building was constructed in 1976. The current streamside setback requirements were not adopted until 1987. The parking area was constructed prior to 1987 within the 25 foot no disturbance setback and is legally non-conforming. Jordan Creek has been classified as an impaired water body due to non-attainment of water quality standards for sediment and pollution resulting from urban runoff.

SAWC and the Juneau Watershed Partnership (JWP) were awarded an Alaska Clean Water Actions grant from the Alaska Department of Environmental Conservation and a grant from the National Fish and Wildlife Foundation for this project. The intent is to help improve the water quality and fish habitat along this portion of Jordan Creek.

The proposal was reviewed by the Wetlands Review Board (WRB) on August 20, 2015. A motion was made to support the project because it will "greatly improve water quality in Jordan Creek". The motion passed unanimously. (See Attachment E)

The CBJ General Engineering Department reviewed the project and determined that the storm water removal methods proposed in the application meet the standards in the *CBJ Manual of Storm water Best Management Practices.*

ANALYSIS

Jordan Creek is a cataloged anadromous water body and is classified as an impaired waterbody. Development along Jordan Creek is subject to habitat buffers set-out in CBJ Title 49.70.130 (a) (4) and (b) (1), as well as 49.70.950 (c) (7).

49.70.310 Habitat
(a) Development in the following areas is prohibited:

> *(4) Within 50 feet of the banks of streams designated in Appendix B of the comprehensive plan of the City and Borough of Juneau, 2013 Update;*

(b) In addition to the above requirements there shall be no disturbance in the following areas:

> *(1)Within 25 feet of streams designated in Appendix B of the comprehensive plan of the City and Borough of Juneau, 2013 Update*

49.70.950 Habitat
(c) In addition to the standard contained in subsection (b) of this section, the following standards shall apply to the management of the following habitats:

(7) Rivers, streams and lakes shall be managed so as to protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow.

In some places the cedar fence and concrete barriers will be located within 10 to 40 feet of Jordan Creek. The rain garden will be placed within 35 to 50 feet of the creek.

The Title 49.80.120 definition of development includes grading, fill and the construction of structures larger than 120 square feet. The requested variance to construct a 460 foot long fence, concrete barriers and a rain garden meets the definition of development.

Variance Requirements

Under CBJ §49.20.250 where hardship and practical difficulties result from an extraordinary situation or unique physical feature affecting only a specific parcel of property or structures lawfully existing thereon and render it difficult to carry out the provisions of Title 49, the Board of Adjustment may grant a Variance in harmony with the general purpose and intent of Title 49. A Variance may vary any requirement or regulation of Title 49 concerning dimensional and other design standards, but not those concerning the use of land or structures, housing density, lot coverage, or those establishing construction standards. A Variance may be granted after the prescribed hearing and after the Board of Adjustment has determined:

1. That the relaxation applied for or a lesser relaxation specified by the Board of Adjustment would give substantial relief to the owner of the property involved and be more consistent with justice to other property owners.

The relaxation applied for would allow SAWC to place a fence, concrete barriers and a rain garden within the stream side setbacks along Jordan Creek. If the relaxation applied for is not granted the fence, barrier and rain garden would have to be placed on the existing parking lot, reducing the area available for parking and CDL training. The property owner has stated that if the project results in a reduction of parking spaces they would not allow SAWC to carry out the project on their property.

Approving the Variance would allow SAWC to carry out the project as designed while maintaining the existing parking. The project is designed to improve the health and stability of Jordan Creek and to not adversely affect surrounding property owners.

Yes. The criterion has been met.

2. That relief can be granted in such a fashion that the intent of this title will be observed and the public safety and welfare be preserved.

The intent of Title 49 is established in Section 49.05.100 Purpose and Intent are stated below:

1) To achieve the goals and objectives and implement the policies of the Juneau Comprehensive Plan and the coastal management program;
2) To ensure that future growth and development in the city and borough is in accord with the values of its residents;
3) To identify and secure, for present and future residences, the beneficial impacts of growth while minimizing the negative impacts;

4) To ensure that future growth is of the appropriate type, design, and location, and is served by a proper range of public services and facilities such as water, sewage, and electrical distribution systems, transportation, schools, parks and other public requirements, and in general to promote public health, safety and general welfare;
5) To provide adequate open space for light and air; and
6) To recognize the economic value of land and encourage its proper and beneficial use.

The proposed Variance meets the intent of Title 49. The 2013 *Comprehensive Plan* Policy 7.3 calls for the protection of riparian habitat, including stream corridors, from adverse effects of development. Through policies like this and similar recommendations in the coastal management program, Juneau shows that it values the preservation of natural areas, even if they are in urban areas.

Yes. The criterion has been met.

3. That the authorization of the Variance will not injure nearby property.

Staff finds no evidence that the reduction of the 25 foot no disturbance setback and the 50 foot no development setback for the SAWC project will injure nearby property. Several nearby properties have development within the Jordan Creek setbacks. The development will benefit nearby property owners by proposing to improve the Jordan Creek habitat.

Yes. The criterion has been met.

4. That the Variance does not authorize uses not allowed in the district involved.

The property is zoned General Commercial. The Variance would allow for the construction of a cedar fence, the installation of concrete barriers and a rain garden within the 50 foot no development and 25 foot no disturbance stream side setbacks, and would not authorize uses not allowed in the General Commercial zone.

Yes. The criterion has been met.

5. That compliance with the existing standards would:

(A) Unreasonably prevent the owner from using the property for a permissible principal use;

The current use as commercial offices and CDL training are both allowed uses in the General Commercial zones. Denial of the Variance would not prevent the current or future

property owners from using their property for an permissible principal use allowed in General Commercial.

No. The sub-criterion has not been met.

(B) Unreasonably prevent the owner from using the property in a manner which is consistent as to scale, amenities, appearance or features, with existing development in the neighborhood of the subject property;

The proposed project is consistent with other storm water and habitat improvements along Jordan Creek. Property owners in the area have constructed fences and installed concrete barriers along property lines that border the creek. They are most commonly used as buffers between parking lots and the creek.
There are currently no rain gardens in the area but similar storm water and sediment treatments ponds have been built on nearby commercial properties.

Yes. The sub-criterion has been met.

(C) Be unnecessarily burdensome because unique physical features of the property render compliance with the standards unreasonably expensive;

The subject lot is 88,644 square feet and a large portion of the lot is used for parking and CDL training. The applicant states that requiring the fence, barriers and rain garden to be built outside of the stream side setbacks would limit the amount of space available for parking and driver training. Although compliance with the setback requirements will reduce the parking area, it would not be unnecessarily burdensome or expensive to comply with Title 49.

No. This sub-criterion has not been met.

or

(D) Because of preexisting nonconforming conditions on the subject parcel the grant of the Variance would not result in a net decrease in overall compliance with the Land Use Code, CBJ Title 49, or the building code, CBJ Title 19, or both.

The parking lot encroaches into the 25 foot no disturbance setback and the 50 foot no development setback. When the building and parking lot were constructed in 1976, Juneau did not have habitat setbacks along Jordan Creek, making it a pre-existing nonconforming situation. Allowing the project to be constructed within the setbacks would not result in a net decrease in overall compliance with the Land Use Code. The project will reduce the

property's impact on Jordan Creek which is consistent with the intent of the streamside setbacks.

Yes. This sub-criterion has been met.

Since sub-criterion B and D are met, criterion 5 is met.

6. That a grant of the Variance would result in more benefits than detriments to the neighborhood.

Granting the Variance requested would result in more benefits than detriments both to surrounding neighbors and to Jordan Creek. The creek is listed as an impaired water body due to sediment, dissolved oxygen and residues resulting from run-off. The proposed concrete barriers would help prevent snow and sediment from being pushed into the creek. The rain garden will help to filter out pollutants coming off the parking lot and will slow the flow of storm water into the creek, minimizing erosion.

Yes. This sub-criterion has been met.

FINDINGS

1. Is the application for the requested Variance complete?

Yes. Staff finds the application contains the information necessary to conduct full review of the proposed operations. The application submittal by the applicant, including the appropriate fees, substantially conforms to the requirements of CBJ Chapter 49.15.

Per CBJ §49.70.900 (b)(3), General Provisions, the Director makes the following Juneau Coastal Management Program consistency determination:

2. Will the proposed development comply with the Juneau Coastal Management Programs?

Yes. The Variance, if approved, will help protect natural vegetation, water quality, fish habitat and natural water flow into Jordan Creek, compliant with CBJ 49.70.950 (b) (7).

3. Does the variance as requested, meet the criteria of Section 49.20.250, Grounds for Variances?

Yes. Based on the analysis above, the Variance as requested meets the criteria of Section 49.20.250, *Grounds for Variance*. **Criteria 1, 2, 3, 4, 5, and 6 are met.**

RECOMMENDATION

Staff recommends that the Board of Adjustment adopt the Director's analysis and findings and **approve** the requested Variance, VAR2015 0024. The Variance permit would allow for the construction of a split rail cedar fence and installation of concrete barriers within the 25 foot no disturbance stream side setback and the installation of a rain garden within the 50 foot no development stream side setback along Jordan Creek.

DEVELOPMENT PERMIT APPLICATION

Project Number	CITY and BOROUGH of JUNEAU	Date Received:
Project Name (City Staff to Assign Name)		

PROJECT / APPLICANT INFORMATION

Project Description
Installation of ~460 linear feet of fence [combination of cedar split rail fence and concrete barriers], construction of a 20ft. wide by 80ft. long by 3.6 ft deep rain garden, and construction of a 15ft. wide by 80ft. long by 3ft. deep rock swale.

PROPERTY LOCATION

Street Address	City/Zip
9095 Glacier Hwy.	Juneau, AK 99801

Legal Description(s) of Parcel(s) (Subdivision, Survey, Block, Tract, Lot)
USS 381 Glacier Mall TR A3

Assessor's Parcel Number(s)
5B1601000021

LANDOWNER/ LESSEE

Property Owner's Name	Contact Person:	Work Phone:
Central Council of Tlingit and Haida		
Mailing Address	**Home Phone:**	**Fax Number:**
9097 Glacier Hwy. Juneau AK 99801		
E-mail Address	**Other Contact Phone Number(s):**	

LANDOWNER/ LESSEE CONSENT

****Required for Planning Permits, not needed on Building/ Engineering Permits****

I am (we are) the owner(s)or lessee(s) of the property subject to this application and I (we) consent as follows:

A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission.
B. I (we) grant permission for officials and employees of the City and Borough of Juneau to inspect my property as needed for purposes of this application.

X _____ Landowner/Lessee Signature — Date 7/16/15

X _____ Landowner/Lessee Signature — Date

NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours and will attempt to contact the landowner in addition to the formal consent given above. Further, members of the Planning Commission may visit the property before the scheduled public hearing date.

APPLICANT

If the same as OWNER, write "SAME" and sign and date at X below

Applicant's Name	Contact Person:	Work Phone:
Southeast Alaska Watershed Coalition	Brad Ryan	907-314-0477
Mailing Address	**Home Phone:**	**Fax Number:**
P.O. Box 283, Haines, AK 99827		
E-mail Address	**Other Contact Phone Number(s):**	
brad.ryan@sawcak.org		

X _____ Applicant's Signature — Date of Application

---OFFICE USE ONLY BELOW THIS LINE---

STAFF APPROVALS

✓	Permit Type	***SIGN	Date Received	Application Number(s)
	Building/Grading Permit	■		
	City/State Project Review and City Land Action	■		
	Inquiry Case (Fee In Lieu, Letter of ZC, Use Not Listed)	■		
	Mining Case (Small, Large, Rural, Extraction, Exploration)			
	Sign Approval (If more than one, fill in all applicable permit #'s)	■		
	Subdivision (Minor, Major, PUD, St. Vacation, St. Name Change)			
	Use Approval (Allowable, Conditional, Cottage Housing, Mobile Home Parks, Accessory Apartment)			
✓	Variance Case (De Minimis and all other Variance case types)	■	7/17/15	var 15-024
	Wetlands Permits			
	Zone Change Application			
	Other (Describe) _____			

***Public Notice Sign Form filled out and in the file.

Comments: Grading permit submitted

Permit Intake Initials BM

NOTE: DEVELOPMENT PERMIT APPLICATION FORMS MUST ACCOMPANY ALL OTHER COMMUNITY DEVELOPMENT DEPARTMENT APPLICATIONS

Attachment A

VARIANCE APPLICATION

Project Number	Project Name (15 characters)	Case Number	Date Received
		VAR 15-024	

TYPE OF VARIANCE REQUESTED:

- ☐ Variance to the Sign Standard (VSG)
- ☐ Variance to Dimensional Standards (VDS)
- ☑ Variance to Habitat Setbacks (VHB)
- ☐ Variance to Parking Requirements (VPK)
- ☐ Variance to Setback Requirements (VSB)

DESCRIPTION OF ACTIVITY WHICH REQUIRES A VARIANCE:
Installation of ~460ft. of barrier fence [combination of cedar split rail fence (~350ft.) and concrete barrier (~110ft).] and construction of a 20ft wide by 80ft long by 3.6ft deep rain garden on the Central Council's property within the habitat setbacks of Jordan Creek [continued on attachment].

Previous Variance Applications? ☐ YES ☑ NO Date of Filing: _____

Previous Case Number(s): _____

Was the Variance Granted? ☐ YES ☐ NO

UNIQUE CHARACTERISTICS OF LAND OR BUILDING(S):
Jordan Creek, an anadromous waterbody that is also listed as impaired due to non-attainment of Water Quality Standards for sediment, dissolved oxygen and residues, runs through the Central Council's property at 9095 Glacier Hwy. The property was developed prior to the establishment of the habitat setbacks and, therefore, development has occurred within the setbacks.

UTILITIES AVAILABLE: WATER: ☑ Public ☐ On Site SEWER: ☑ Public ☐ On Site

WHY WOULD A VARIANCE BE NEEDED FOR THIS PROPERTY REGARDLESS OF THE OWNER?
The property was developed prior to the establishment of the habitat setbacks. Disturbance has occurred within the 25 and 50ft setback limits. Placement of the fence and rain garden within the setbacks is necessary for these structures to perform their intended functions without encroaching on the parking area and driver training area on the property.

WHAT HARDSHIP WOULD RESULT IF THE VARIANCE WERE NOT GRANTED?
Without the variance, the fence would encroach on and potentially eliminate useable parking area in the back parking lot. The rain garden and a portion of the fence would encroach on the area used for the Central Council's CDL driver training school. This could reduce the area available for maneuvering the truck and trailer, and place the fence and rain garden [continued in attachment]

For more information regarding the permitting process and the submittals required for a complete application, please see the reverse side.

If you need any assistance filling out this form, please contact the Permit Center at 586-0770.

VARIANCE FEES

	Fees	Check No.	Receipt	Date
Application Fees	$400 ✓			
Adjustment	$			
Total Fee	$400.00			

NOTE: MUST BE ACCOMPANIED BY DEVELOPMENT PERMIT APPLICATION FORM

TO BE COMPLETED BY THE APPLICANT

Attachment to Variance Application

Description of activity which requires a variance. [***Cont. from application***]

The split-rail cedar fence will be constructed in areas with low potential impact from snow plows, with more robust concrete barriers in areas with higher potential of impact from snow plows. The concrete barriers may be replaced by split rail cedar fence depending on cost, but will be kept in the highest areas of potential impact from snow plows (e.g. corners). The split-rail cedar fence would stand approximately 4-feet high and the concrete barriers would be the standard 32 inches in height. The fence and concrete barriers will be placed within 20 to 40 feet from Jordan Creek along the edge of pavement and the vegetation. Breaks in the barrier fence will occur at larger trees.

The rain garden will be within 35 to 50 feet from Jordan Creek. The rain garden will require approximately 270 yards of excavation and placement of approximately 120 yards of gravel and topsoil. Rain gardens are not specifically listed in the CBJ Manual of Stormwater Best Management Practices. However, the Infiltration Basin BMP states, "the basin can be designed as ... a shallow earthen rain garden." Therefore, the rain garden was sized according to the procedure outlined in the CBJ Manual for the Infiltration Basin BMP (attached). The calculated water quality design volume is approximately 3,368 ft^3. The rain garden will be vegetated using native plants during construction and will be re-planted in the spring of2016.

This project also includes constructing a swale outside of the setbacks. This swale will be made of rock, since it will be placed where trucks would likely drive over the surface. The purpose of this swale is to stabilize the flow path of the stormwater, assist in infiltration, and to help reduce fine sediments entering the rain garden.

No trees will be removed for this project, but the riparian area is infested with reed canary grass, a highly invasive plant that can impact aquatic habitats. Impacts include displacing native riparian vegetation, promoting silt deposition, constricting waterways, altering soil hydrology. Measures to control this invasive plant will be implemented. This will likely include mechanical measures (digging, pulling, mowing), application of pesticides, and/or tarping. Disturbed areas will be revegetated. This will take place over the course of a year (through June 2016).

This project will be implemented by the Southeast Alaska Watershed Coalition (SAWC) and the Juneau Watershed Partnership (JWP) in an effort to improve the water quality on Jordan Creek, an impaired waterbody that supports anadromous habitat. SAWC and JWP has applied for and received funding through the Alaska Clean Water Action (ACWA) grant program administered by the Alaska Department of Environmental Conservation (DEC) and a grant from the National Fish and Wildlife Foundation (NFWF), totaling approximately $40,000 to complete this project.

The purpose of this project is to help improve water quality and fish habitat on Jordan Creek. Jordan Creek is an anadromous stream that is listed as impaired due to non-attainment of Water Quality Standards for sediment, dissolved oxygen and residues resulting from urban run-off. Fine sediment and other pollutants attributed to stormwater runoff occurring in the densely developed lower portion of

the watershed can adversely impact fish and fish habitat. Implementing stormwater best management practices (BMPs) would go a long way to improve water quality and fish habitat in this urban stream.

The United States Fish and Wildlife Service (USFWS) and the JWP recently completed a stormwater inventory and assessment for the Lower Jordan Creek watershed, which identifies opportunities to manage the quantity and quality of stormwater entering the stream. The Edward K. Thomas building, owned by Central Council of Tlingit and Haida (CCTHITA), as one of the sites along Jordan Creek where stormwater treatment is needed. The calculated water quality design volume is approximately 3,368 ft^3 of run-off generated from 36,000 ft^2 (0.83 acres) of parking lot circumvents the storm sewer system, flows across the CCTHITA property and discharges untreated directly into the creek (see Figure 1 and 2).

The rain garden needs to be positioned parallel to the stream and perpendicular to the stormwater flow, along the back side of the property in order to intercept the run-off, slow it down, and give space and time to allow the sediment and other pollutants to settle out of the water before it enters the creek (Figure 3). This will also place the rain garden in a location that will be protected from the truck traffic from CCTHITA's CDL driver training school and allow for snow storage during the winter.

Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA) is supporting this project solely as the land owner as described in the attached MOU. This project has support from the U.S. Fish and Wildlife Service (see attached letter of support submitted with our grant application) and the Alaska DEC, who is funding this project.

What hardship would result if the variance were not granted? [***Cont. from application***]

in a location that could result in trainees damaging the structures if they were constructed.

The Southeast Alaska Watershed Coalition (SAWC) and the Juneau Watershed Partnership (JWP), non-profit watershed councils, will implement this project. The SAWC and JWP were awarded an Alaska Clean Water Actions (ACWA) grant from the Alaska Department of Environmental Conservation (DEC) and a grant from the National Fish and Wildlife Foundation (NFWF), totaling approximately $40,000, to construct the fence and rain garden. CCTHITA is supporting this project as the land owner as outlined in the attached MOU. If the variance is not approved, CCTHITA will not approve the construction of these structures because they would have to encroach on parking areas; therefore, the SAWC and the JWP would not be able to fulfill their grant obligations and could be liable for the funds.

Variance Approval Criteria

(1) The relaxation applied for or a lesser relaxation specified by the board of adjustment would give substantial relief to the owner of the property involved and be more consistent with justice to other property owners;

The relaxation would allow installation of a barrier fence and rain garden within the habitat setbacks for Jordan Creek without encroaching on useable parking areas. Since the property was developed prior to the establishment of the setbacks, the existing parking area on the property is located within the 25 and 50 foot setback limits. With a lesser relaxation, the fence would reduce parking that is needed when the front lot is full. In addition, the rain garden and a portion of the fence would encroach on the parking area used for Central Council's CDL driver training school. This would reduce the area available for trainees to maneuver a truck and trailer.

(2) Relief can be granted in such a fashion that the intent of this title will be observed and the public safety and welfare preserved;

The intent of the habitat setbacks established in CBJ 49.70.310 is to protect anadromous streams. Jordan Creek, an anadromous stream, is also listed as impaired due to non-attainment of Water Quality Standards for sediment, dissolved oxygen and residues resulting from urban run-off. In this case, we're proposing to install a barrier fence and a rain garden to address water quality concerns resulting from discharges on Central Council's property, and to provide control of reed canary grass infestation. The barrier fence is intended to discourage plowing snow directly into the stream during winter maintenance, which is a major source of sediment in Jordan Creek. The rain garden will treat an existing storm water discharge carrying sediments and other pollutants into Jordan Creek. Measures to control reed canary grass, which may include mechanical measures (digging, pulling, mowing), application of pesticides, and/or tarping, will be implemented to improve riparian habitat. Therefore, our project is compatible with the intent of the habitat setbacks. The fence, rain garden, and control of invasive plants will not have adverse effects on public safety and welfare.

(3) The authorization of the variance will not injure nearby property;

Authorization of the variance will not injure nearby property. The project will occur entirely on Central Council property. The cedar split rail fence is an attractive structure that will blend in with the riparian vegetation. The concrete barrier sections of the fence are consistent with the commercial neighborhood, as adjacent properties have similar structures placed along their property boundary paralleling Jordan Creek. The rain garden is intended to treat an existing storm water discharge by allowing the water to infiltrate into the ground and routing the remaining treated water into the riparian area and Jordan Creek above the downstream property. The intent is to reduce the volume of storm water and, therefore, it is not anticipated to lead to flooding that could injure nearby properties.

(4) The variance does not authorize uses not allowed in the district involved;

The property is within a General Commercial (GC) district. Fencing and green infrastructure are not specifically listed as a permissible use in this district per CBJ 49.25.300. However, CBJ 19.12.120 requires storm water control structures for new development and re-development including commercial facilities. Owners of existing development are encouraged to implement green infrastructure. This rain garden was sized using the procedures in the CBJ Manual of Stormwater Best Management Practices, Infiltration Basin BMP (attached).

(5) Compliance with the existing standards would:

(A) Unreasonably prevent the owner from using the property for a permissible principal use;

The property is within a General Commercial (GC) district, and is located among other commercial properties in the Airport Mall (Glacier Mall Subdivision). Current uses include Central Council's business offices and a parking area that is used for Central Council's CDL driver training school, which are permissible principal uses in a GC district. Compliance with existing standards would reduce useable parking for the offices in the back parking lot since it is constructed within the setbacks. The back parking lot is needed when the front lot is full. Compliance with the standards would also reduce the area available for the CDL driver training school trainees to maneuver the truck and trailer, which could negatively affect adjacent commercial parking areas.

(B) Unreasonably prevent the owner from using the property in a manner which is consistent as to scale, amenities, appearance or features, with existing development in the neighborhood of the subject property;

As mentioned, land owners in the commercial neighborhood along lower Jordan Creek use fencing and concrete barriers, for a variety of reasons, along their property line bordering Jordan Creek. Installation of the barrier fence, which includes sections of cedar split rail fencing and concrete barriers, would be consistent with barriers on existing development in the neighborhood. While there are currently no rain gardens in the neighborhood, there is several sediment retention ponds located on nearby properties within the setback limits, which serve a similar purpose in treating stormwater. In addition, several bank stabilization projects have occurred on lower Jordan Creek commercial properties. The rain garden

would, therefore, be consistent with stormwater and habitat improvement features on existing development.

(C) Be unnecessarily burdensome because unique physical features of the property render compliance with the standards unreasonably expensive; or

Even though the property was developed prior to the establishment of the habitat setbacks, the property has a 25-foot easement from the edge of the property line for Jordan Creek. Even so, the property includes developed parking areas and associated disturbance within the setback limits of Jordan Creek. Compliance with the standards would be burdensome to the Central Council by reducing the available parking and the training area for the CDL driver training school. The SAWC and JWP would bare the expense associated with compliance. Central Council is unlikely to allow construction of the project if it encroaches on the parking and training area, preventing SAWC and JWP from fulfilling their grant agreements.

(D) Because of preexisting nonconforming conditions on the subject parcel, the grant of the variance would not result in a net decrease in overall compliance with the land use code, title 49, or the building code, title 19, or both; and

The property has pre-existing non-conforming conditions, as it was developed prior to the establishment of the habitat setbacks. The property includes developed parking areas and associated disturbance within the setback limits. The variance would not result in a net decrease in overall compliance of the habitat setbacks established in CBJ 49.70.310. The barrier fence would be placed along the edge of pavement of the parking areas paralleling Jordan Creek and in front of the rain garden. The rain garden would be placed along the edge of the gravel parking area used for the CDL driver training school and within the vegetated area beyond the gravel parking that consists of disturbed soils and reed canary grass (an invasive plant).

(6) A grant of the variance would result in more benefits than detriments to the neighborhood.

Granting the variance requested would result in more benefits than detriments to the neighborhood. As previously mentioned, Jordan Creek is listed as impaired waterbody due to non-attainment of Water Quality Standards for sediment, dissolved oxygen and residues resulting from urban run-off. In addition, the CCTHITA's property at 9095 Glacier Hwy. (the Edward K. Thomas building) was identified by the USFWS and JWP as a site where stormwater treatment is needed during the stormwater inventory and assessment of the Lower Jordan Creek watershed.

Central Council was approached by the Southeast Alaska Watershed Coalition (SAWC) and the Juneau Watershed Partnership (JWP), non-profit watershed councils, for support for this project as the property owner. With Central Council's support, the SAWC and JWP were awarded an ACWA grant from the DEC and a grant from NFWF to construct a barrier fence and a rain garden to address water quality concerns resulting from discharges from Central Council's property. The barrier fence is intended to discourage plowing snow directly into the stream during winter maintenance, which is a major source of sediment in Jordan Creek. The rain garden will treat an existing storm water discharge carrying sediments and

other pollutants from 36,000 ft2 (0.83 acres) of commercial development into Jordan Creek. This project is also intended to be a demonstration site to encourage other property owners along Jordan Creek to implement green infrastructure to improve storm water quality in lower Jordan Creek. In addition to improving storm water quality from Central Council's property, this provides an opportunity for Central Council to successfully partner with the SAWC and JWP on a project that has support from the DEC and USFWS.

Figure 1. The Edward K Thomas Building showing the area contributing to the stormwater discharging to Jordan Creek in yellow and the current flowpath of stormwater discharging into the creek.

Figure 2. The Edward K Thomas Building project site during a rain event with stormwater run-off draining towards Jordan Creek, which is in the background.

Attachment C

Figure 3. Property boundary and easements. There is a 25 ft. drainage easement for Jordan Creek and utility easement.

Attachment C

Figure 5. Northern most end of property, looking south. Split rail fence will be placed along the edge of pavement, in the vegetation, as shown.

Attachment C

Figure 6. North side of the Edward K Thomas Building, looking east toward back parking lot. Concrete barrier will be placed along the edge of pavement within the vegetation on the corner at this location because snow is piled here and often is pushed into the stream.

Attachment C

Figure 7. North side of the Edward K Thomas Building, looking east toward back parking lot. Concrete barrier will be placed along the edge of pavement within the vegetation (not yet emerged in this photo) due to risk of impact from plow; however, this length may be replaced with split rail fence depending on funds and land-owner preference.

Attachment C

Figure 8. Edge of driver training area where the rain garden will be located. The rain garden will encompass the area from near the tree line to just outside the vegetated area. The length of the rain garden will end just before the connex in the background.

Attachment D

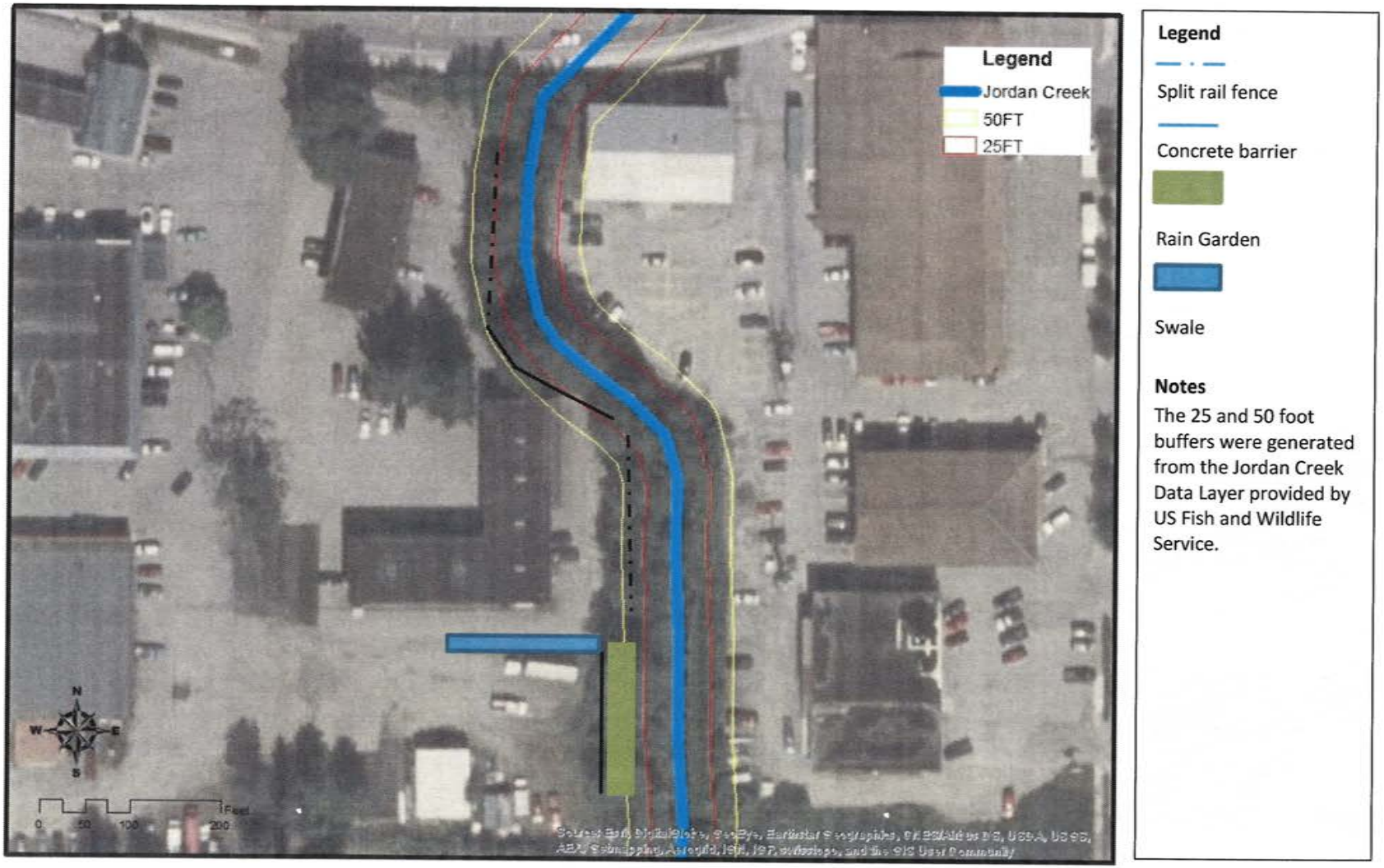


Figure 4. Plan Set showing the fence, rain garden and swale in relation to the Jordan Creek habitat setbacks.

DRAFT MINUTES
WETLANDS REVIEW BOARD
REGULAR MEETING
August 20, 2015, 5:15 p.m. City Hall room 224

Meeting Summary

Roll Call

Board Members Present: Amy Sumner, Brenda Wright, Nina Horne, Jerry Medina, Andrew Campbell, Lisa Hoferkamp; Ben Haight; Hal Geiger

Board Members Absent: Dan Miller

A quorum was present.

Staff Members Present: Teri Camery, Chrissy McNally, Laura Boyce, Allison Eddins, CBJ Planners

Public Present: Gretchen Pikul, DEC; Dave Hanna; Scott Jensen

Meeting called to order at 5:18 p.m.

II. June 25, 2015 Regular Meeting minutes approved.

III. Agenda approved with edits; Ms. Camery apologized for listing the wrong streamside setback variance case from the previous board meeting.

IV. Public Participation on Non-Agenda Items

None

V. Board Comments.

Ms. Sumner said that she would be representing the Juneau Watershed Partnership for the variance discussion.

VI. Agenda Items

1) VAR2015 0024, a Streamside Setback Variance to Jordan Creek for installation of a fence, bioswale, and raingarden

Staff Presentation

Attachment E

Ms. Camery explained that the Board is reviewing this project in its scientific advisory role. Draft minutes, a summary of board comments, and the final board motion will be included in Ms. Eddins' staff report to the Planning Commission. Ms. Camery said that she is recusing herself from the remainder of the board review due to conflict of interest, since she is on the board of the Juneau Watershed Partnership.

Ms. Eddins provided an overview of the project and the reason for the proposed streamside setback variance because of grading within the 25-foot no-disturbance zone and installation of a fence within the 50-foot no-development setback of Jordan Creek. She referred to an aerial photo of the site and noted that the lot is used for commercial driver's license training. She described how the polluted run-off and gravel from the lot settles toward Jordan Creek. The project creates a bioswale and raingarden to catch run-off and act as a natural filter, while the fence and barriers will be put in place to prevent snowplowing into the creek.

Ms. Eddins noted a correction to the application: the application stated that the bioswale would be between 20 and 40 feet, but it is actually 10-40 feet. She said this doesn't change the review because the project is just 10 feet farther into the 0-25 foot no-disturbance zone.

Applicant Presentation

Ms. Sumner referred to photos of the site and explained the boundaries of the bioswale, raingarden, and fence as they related to the 25-foot no-disturbance zone and 50-foot no-development setback. She said that the final vegetation plan for this fall has not yet been determined, but additional planting will likely be necessary in the spring.

Mr. Geiger said that he was not familiar with the raingarden term. Ms. Sumner said that a raingarden is similar to a bioswale. It slows the movement of water by utilizing vegetation in a shallow ditch. Ms. Hoferkamp requested clarification on distances, which Ms. Sumner pointed out on the photographs. Ms. Sumner explained that no trees would be removed, and the fence would be placed on the stream side of the trees.

Ms. Hoferkamp asked if there were any figures on the volume of water coming off the lot. Ms. Sumner explained that the raingarden was sized based on the CBJ Manual of Stormwater Best Management Practices, so she was confident that it would be sufficient. Ms. Hoferkamp asked why it would be necessary to re-plant in the spring. Ms. Sumner explained that it would only be necessary to re-plant whatever vegetation does not survive from this fall's planting.

Ms. Pikul noted that previous re-vegetation efforts in the area had failed because of snowplowing, so she emphasized that the fence and barriers were essential to the effort.

Mr. Hanna noted that the lot was created in 1968, before streamside setbacks were in place.

Ms. Sumner showed a slide that listed partners and financial support. She showed letters of support from Tlingit Haida Central Council and the U.S. Fish and Wildlife Service. She said that the project would be treating reed canary grass, but the method was undetermined currently

because Tlingit Haida opposed herbicide use. She asked Ms. Camery if CBJ regulated herbicides, and Ms. Camery said no.

Mr. Medina asked where the snow would be stored on site. Ms. Sumner pointed on a photograph to an area outside of the streamside setbacks where snow has been stored in the past.

Mr. Geiger asked if the Alaska Department of Fish and Game had been consulted on the project. Ms. Sumner said no. She said the project is a result of a stormwater mapping project on lower Jordan Creek.

Public Participation

Mr. Hanna said that the project is imperative, and barriers are essential to protect the stream.

Board/Staff Discussion and Motion

Mr. Geiger proposed the following motion:

> *The Wetlands Review Board supports the variance because it will greatly improve water quality in Jordan Creek.*

Ms. Wright seconded the motion. The motion was passed unanimously.

2) SMN 2015 0008 Silver Bay Planned Unit Development Subdivision

Staff presentation

Ms. Camery explained that the Board is reviewing this project in its scientific advisory role. Draft minutes, a summary of board comments, and the final board motion will be included in Ms. Boyce's staff report to the Planning Commission.

Ms. Boyce explained the details of the current approved Planned Unit Development, which allows clustered development with a common area. She said the subdivision can have up to 45 units but is currently approved for 20 units. She said that the applicant requests a 21st unit and the creation of six lots from the single existing lot, as shown in Attachment A of the packet. She said that the Juneau Wetlands Management Plan indicates that a significant section of one of the proposed lots contains high-value Category A wetlands that drain into Jordan Creek. Lot 12 is 3.4 acres in size and contains most of the wetlands on the property. These wetlands are currently in common ownership under the existing approved PUD, and would be developed under private ownership in the applicant's proposal for a single family home. She explained that this change to number of lots and the change to the common area require Planning Commission approval. The review is coming to the Board to obtain the Board's advisory opinion on removing the wetlands from common ownership to individual development.

Mr. Jensen questioned the need for the review and raised questions regarding the requirements of the existing approved PUD as they relate to the changes he has proposed. He did not believe that

review was required. Ms. Boyce explained that Mr. Jensen is amending an approved development plan, therefore it has to go back to the Planning Commission. She said that the development still meets the requirement to have 40 percent of the area within common ownership. However the proposal is going to the board because the portion of the PUD that is wetlands which is now in common ownership that isn't developable would now be available for residential development. In response to board questions, she confirmed that there is just one unit proposed on Lot 12.

Ms. Wright asked if the wetland category, Category A, had changed over time. Ms. Camery explained that the wetland categories in the Juneau Wetlands Management Plan (JWMP) have never changed since the plan was first adopted in 1992. There are later versions of the plan, but only the chapter language has changed. All versions are based on the same studies from the 1980s, with the same wetland categories. She explained that this is why there has been such a strong push to update the plan.

Ms. Boyce noted that the wetland area is within the 100 year floodplain, therefore development must be constructed above the base flood elevation. She also noted that the preliminary plat review requires a wetland delineation.

Applicant presentation

Mr. Jensen stated that he was unsure why the meeting was necessary, because wetlands can be developed with Corps approval and because a portion of the lot is uplands, not Category A wetlands. Ms. Boyce explained that the proposed lots will put the wetland area into developable status, instead of the current common-area status, therefore both Planning Commission and Wetlands Review Board review is required. Mr. Jensen said that CDD is viewing the development differently from his first Planned Unit Development, and it seemed that the rules had changed. Ms. Boyce said that the development is approved for 20 units; additional units require review.

Mr. Campbell said that in his experience, the JWMP maps have not always been accurate; they are general boundaries that may not give exact lines in relationship to individual properties. He suggested getting a wetland delineation to confirm the wetland boundary. Ms. Camery concurred with Mr. Campbell. She said that if Mr. Jensen provided a wetland delineation that showed that the proposed lot was not within wetlands, then board review would not be necessary. She said that Mr. Jensen would still need to go to the Planning Commission to amend the plat as Ms. Boyce described, but there would be no wetland review. Mr. Campbell agreed.

Ms. McNally said the common open space in a PUD has different management and maintenance standards than private lots based on the PUD's Homeowners Association agreement. The board could suggest that Lot 12 be reduced in size in order to keep more of the wetlands in common ownership if the Board deemed that was beneficial to the preservation of the wetlands.

Ms. Boyce asked if the Board could support the creation of Lot 12 if any development occurred only on the upland portion of the lot; that way, Mr. Jensen wouldn't need to return to the Board once a wetlands delineation has been completed. Mr. Geiger asked about what would happen to

the rest of lot 12 if the Board took that action. Mr. Jensen said that it would be retained as a non-common area with the potential for development. Ms. Boyce clarified that if the rest of the lot was developed, the PUD would need to be amended to allow for increased density.

Public participation

There was no public participation

Board discussion/motion

Ms. Wright offered the following motion:

> *The Wetlands Review Board approves the lot designation in the described plan provided the applicant provides a certified wetland delineation that confirms that the proposed structure is within the upland area.*

Mr. Geiger seconded the motion.

In favor: Campbell, Sumner, Haight, Wright, Horne, Geiger, Hoferkamp
Opposed: Medina

Mr. Medina explained that he voted against the decision because he does not like approving projects "on the fly." He said he would like to see the wetland delineation first. He said he is not opposed to the idea. Mr. Geiger and Ms. Horne agreed, and said that the board did not have adequate information for the review.

Mr. Jensen said that from his perspective, you should not ask a developer to go to great expense for something that may not be approved. He said this approach of getting approval first is better for him because he knows that the money will not be wasted.

Mr. Campbell said that he has seen that the JWMP maps do not always exactly delineate the wetland line. He felt that the Board's motion was a good compromise, and said that the Board has not committed itself to a violation of the wetland area. Mr. Haight noted that the Board's motion is not a final decision, because the development still has to go to the Planning Commission.

3) Juneau Wetlands Management Plan Update

Ms. Camery explained that the preliminary draft Juneau Wetlands Management Plan is due on September 15, therefore the board's regular monthly meeting must be on the fourth Thursday of the month, Thursday September 24, instead of the usual third Thursday. She said that room 224 is not available on the 4th Thursday; therefore the meeting will be in the Marine View 4th floor conference room. She said she will send the draft to the board just as soon as she receives it to allow the board as much time as possible to review the document. She said that the update has been in the works since 2009, and tonight's review of the PUD gives further evidence of why the update is needed.

Ms. Camery explained that approximately 90 percent of the plan's 360 wetland assessments are on public land rather than private, because CBJ did not receive many authorization forms to conduct assessments on private property. She said that the good news is that this gives the city the opportunity to show the public how the assessments can be used for planning efforts on public land in constructive ways, and this will ease the way for greater acceptance of the wetland assessments on private land in the future. She said that she is often asked about development of wetland policies in city code according to a category system, similar to the current plan. She said that the city may or may not develop policies with the update, because wetland categorization is sometimes a contentious political process and because it will be difficult to develop local policies that comply with new federal wetland regulations and also correlate well with the Southeast Alaska Land Trust's fee-in-lieu mitigation program. She explained that the "worst-case scenario" is still positive, because the plan provides sound scientific analysis for wetland decision-making by the Corps of Engineers, city, and other entities. This information has not been available before, which has led to wetland development and mitigation decisions that the Corps admits have been subjective and arbitrary.

Ms. Camery said that the contract timeline for the JWMP Update specifically provides time for the contractor to address comments from the WRB, from the Planning Commission, and also from the Assembly Lands Committee. CBJ revisions to the preliminary draft are due to the contractor on November 15, and the contractor has until February 15 to submit the final draft.

Ms. Camery said that Ms. McNally has done a great job with the stream mapping component of the federal grant, and CDD expects to bring the stream maps to the board for review and comment in October.

VII. Pending Permits and Updates

1) Casa Del Sol Creek streamside setback variance

Ms. Camery provided the Planning Commission Notice of Decision from the Casa Del Sol streamside setback variance that the Board reviewed at the last meeting. She apologized for not being more knowledgeable about Roberts Rules of Order at the time of the meeting, and explained that both board motions failed because the rules require five votes in the affirmative. However the NOD shows that the Planning Commission listened and responded to the board's comments and recommendations, and she was pleased with the board's work.

2) Juneau International Airport streamside setback violation and enforcement

Ms. Camery said that the CBJ Community Development Department filed an enforcement action against the Juneau International Airport (JIA) in July for extensive limbing within the 25-foot no-disturbance zone in the city-owned Jordan Creek greenbelt, directly across from the JIA long-term parking area. She said that much of the limbing was immediately next to the creek. JIA cited safety concerns as the reason for the limbing. However Ms. Camery said that JIA staff have wanted to clear the area for many months, and JIA staff had been notified in writing twice last fall that an approved streamside setback variance was required for the limbing. She said that the

enforcement letter requires JIA to develop a scientifically-supported mitigation plan to address the functions and values lost as a result of the limbing, and the letter states that the mitigation plan will be reviewed by the Wetlands Review Board, and possibly the Alaska Department of Environmental Conservation and U.S. Fish and Wildlife Service as well.

She explained that she has had several meetings with JIA, and the issue is difficult to resolve because JIA wants to do more cutting in the area rather than mitigation, citing safety issues. Many board members expressed frustration with the airport's action. Mr. Geiger said it undermines the Board's position with reviewing other streamside setback developments when the city itself violates ordinances. Mr. Campbell stated that the airport has repeatedly violated the setback ordinance and seems to flaunt city regulations. Ms. Sumner noted that there is a safety issue in the area, but she felt there were other options to address the problem. Ms. Camery noted recent articles in the Juneau Empire and the New York Times which have documented that salmon have been dying in streams in both Oregon and in Alaska, in the Anchorage area, due to warm stream temperatures. She said this serves as a tangible reminder of why stream setbacks, and in particular the 25-foot no-disturbance zone, are important to provide a cooling effect. She said that she would send these articles to the board as a reminder for those who may question the need for the city's ordinance. She said she would keep the board posted regarding the enforcement action.

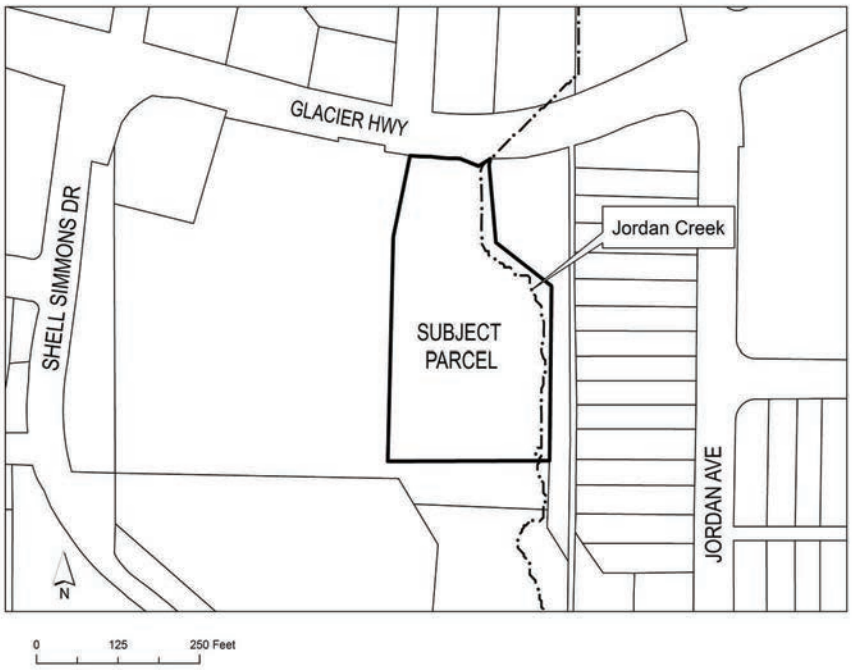
VIII. Planning Commission Liaison Update.

Mr. Haight said that he did not attend the last Planning Commission meeting and did not have an update.

IX. Next meeting: Thursday September 24, 5:15 p.m., in the Marine View 4th floor conference room.

The meeting was adjourned at approximately 7:00 p.m.

NOTICE OF PUBLIC HEARING



City & Borough of Juneau
Community Development Department
155 S Seward Street • Juneau, Alaska 99801

SHIP TO:

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

PROPOSAL: **Variance to stream setback.**

File No:	VAR2015 0024	Applicant:	Central Council of Tlingit Haida
To:	Adjacent Property Owners	Property PCN:	5-B16-0-100-002-1
Hearing Date:	September 22, 2015	Owner:	Southeast Alaska Watershed Coalition
Hearing Time:	7:00 PM	Project Length:	460 Feet
Place:	Assembly Chambers	Zoned:	General Commercial
	Municipal Building	Site Address:	9095 Glacier Highway
	155 South Seward Street	Accessed Via:	Glacier Highway
	Juneau, Alaska 99801		

PROPERTY OWNERS PLEASE NOTE:

You are invited to attend this Public Hearing and present oral testimony. The Planning Commission will also consider written testimony. You are encouraged to submit written material to the Community Development Department 15 days prior to the Public Hearing. Materials received by this deadline are included in the information packet given to the Planning Commission a week before the Public Hearing. Written material received after the deadline will be provided to the Planning Commission at the Public Hearing.

If you have questions, please contact Allison Eddins at Allison.eddins@juneau.org or at 586-0758.

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

Planning Commission Agendas, Staff Reports and Meeting Results can be viewed at http://www.juneau.org/assembly/novus.php

Date notice was printed: August 21, 2015

Attachment F

Central Council
Tlingit and Haida
Indian Tribes of Alaska

CENTRAL COUNCIL
Tlingit and Haida Indian Tribes of Alaska
EDWARD K. THOMAS BUILDING
9097 Glacier Highway
Juneau, Alaska 99801 - 6922

December 10, 2014

Mr. Brad Ryan
Southeast Alaska Watershed Coalition
P.O. Box 283
Haines, AK 99827

Re: Support for Lower Jordan Creek Stormwater Management and Riparian Restoration Project

Dear Mr. Ryan:

Central Council of the Tlingit and Haida Indian Tribes of Alaska (Central Council) supports the Southeast Alaska Watershed Coalition's (SWAC) efforts to improve the water quality entering Jordan Creek, in Juneau, by treating the parking lot runoff using rain gardens and constructing attractive barrier fences that would limit snow removal directly into the stream. While Jordan Creek is in a highly urbanized area, it still supports coho, pink, and chum salmon along with dolly varden char, and cutthroat trout. By creating an "L" shaped rain-garden and limiting snow removal directly into the stream, harmful hydrocarbons and other pollutants will be filtered out before entering the stream and impacting a valuable resource.

Central Council not only supports SAWC's efforts, but is committed to the health of Jordan Creek and will therefore commit Central Council's property for the construction of the rain garden and barrier fence. We are the stewards of this property and will continue to support the efforts of SAWC for the health of Jordan Creek after the project is complete.

Sincerely,

Richard J. Peterson
President

Gmail **Juneau Watersheds <juneauwatersheds@gmail.com>**

FW: Wetlands Review Board June 25th Meeting

3 messages

Pikul, Gretchen M (DEC) <gretchen.pikul@alaska.gov> Fri, Jun 19, 2015 at 9:33 AM
To: Brad Ryan <brad.ryan@sawcak.org>, "juneauwatersheds@gmail.com" <juneauwatersheds@gmail.com>

Below is the waiver email. I didn't even get to send a summary - William reviewed the Juneau Wetlands Review Board package and approvedJ.

Gretchen Pikul

DEC Division of Water

465-5023

From: Ashton, William S (DEC)
Sent: Thursday, June 18, 2015 3:02 PM
To: Pikul, Gretchen M (DEC)
Subject: RE: Wetlands Review Board June 25th Meeting

Gretchen,

The green Infrastructure project you described is waived from needing Permanent Storm Water Control Plan Review.

William Ashton

Storm Water & Wetlands

Wastewater Discharge Authorization Program, Division of Water

Alaska Dept. of Environmental Conservation

555 Cordova St

Anchorage, AK 99501

ph 907-269-6283

william.ashton@alaska.gov

From: Pikul, Gretchen M (DEC)
Sent: Thursday, June 18, 2015 2:10 PM
To: Ashton, William S (DEC)
Subject: FW: Wetlands Review Board June 25th Meeting

I have a question on this…

Gretchen Pikul

DEC Division of Water

465-5023

From: Sumner, Amy L (DOT)
Sent: Thursday, June 18, 2015 1:49 PM
To: Pikul, Gretchen M (DEC)
Cc: Brad Ryan
Subject: RE: Wetlands Review Board June 25th Meeting

This is the DEC Engineering Plan review I was referring to…I believe it applies to our project

https://dec.alaska.gov/water/wnpspc/stormwater/sw_planreviews.htm

---

From: Pikul, Gretchen M (DEC)
Sent: Thursday, June 18, 2015 1:43 PM
To: Sumner, Amy L (DOT)
Subject: RE: Wetlands Review Board June 25th Meeting

Thanks so much! Working on the stormwater system permit question…

Gretchen Pikul

DEC Division of Water

465-5023

From: Sumner, Amy L (DOT)
Sent: Thursday, June 18, 2015 1:37 PM
To: Pikul, Gretchen M (DEC)
Subject: FW: Wetlands Review Board June 25th Meeting

FYI

From: Megan Daniels [mailto:Megan.Daniels@juneau.org]
Sent: Thursday, June 18, 2015 10:10 AM
To: Sumner, Amy L (DOT); 'admiralty@alaska.net'; 'geiger@alaska.com'; 'nina.k.horne@gmail.com'; 'jmedina@myipec.org'; 'bewright@gci.net'; 'lahoferkamp@uas.alaska.edu'; Dan Miller; Ben Haight
Cc: Teri Camery
Subject: Wetlands Review Board June 25th Meeting

Good Morning Wetlands Review Board,

Attached please find the agenda packet for the June 25th Meeting to be held in City Hall Room 224 at 5:15 PM. Printed copies will be sent out via regular mail this afternoon. If you have any questions, please contact Teri Camery at 586-0755 or Teri.Camery@juneau.org

Thank you,

Megan Daniels

Administrative Assistant

Community Development Department

City and Borough of Juneau

155 S. Seward Street

Juneau, Alaska 99801

P: 907-586-0789

Juneau Watersheds <juneauwatersheds@gmail.com> Fri, Jun 19, 2015 at 10:01 AM
To: "Pikul, Gretchen M (DEC)" <gretchen.pikul@alaska.gov>
Cc: Brad Ryan <brad.ryan@sawcak.org>

Fantastic! One of our Board members works with William, and I will have to have him thank William for such a quick review :)

Thank you too, Gretchen, for spearheading this task!

Amy
[Quoted text hidden]

Pikul, Gretchen M (DEC) <gretchen.pikul@alaska.gov> Fri, Jun 19, 2015 at 10:04 AM
To: Juneau Watersheds <juneauwatersheds@gmail.com>
Cc: Brad Ryan <brad.ryan@sawcak.org>

Glad to help! I like working with other sections and learning their processes. It's something I think is sometimes lacking in state/local governmentJ.

Gretchen Pikul

DEC Division of Water

465-5023

From: Juneau Watersheds [mailto:juneauwatersheds@gmail.com]
Sent: Friday, June 19, 2015 10:02 AM
To: Pikul, Gretchen M (DEC)
Cc: Brad Ryan
Subject: Re: FW: Wetlands Review Board June 25th Meeting

[Quoted text hidden]

Appendix D.

Re-Vegetation and Maintenance Plan

In order to function properly over long periods of time, rain gardens must be maintained properly and regularly. The SAWC, JWP and CCTHITA will share in the responsibilities of maintaining the rain garden as outlined in this section.

Post-construction Re-Vegetation

The vegetation planted during construction will be inspected by JWP and SAWC the following spring after the plants have started to leaf (~April 2016) to determine survival. Survival of the plants will be documented and plants that failed to survive will be re-placed with the same species, to the extent practicable, or another suitable species. SAWC and JWP will be responsible for obtaining replacement plant materials, through purchasing or donations, and will coordinate with CCTHITA to schedule a re-planting in May or early June 2016. SAWC and JWP will solicit volunteers to assist with this task.

Inspection and Maintenance

Wet Season (July – April)

CCTHITA will inspect the rain garden and rock swale following large rain events during the wet season to monitor infiltration/flow through rates. All structural components must be checked for slow, even treatment of stormwater.

If CCTHITA notices that ponded water persists for more than 48 hours after a rain event, they will contact SAWC and JWP to discuss maintenance. This is an indication that the first six inches of soil may need to be removed and replaced. SAWC and JWP will hire a contractor or solicit donated services to maintain drainage. Maintenance should be conducted during the dry season to the extent practicable.

Dry Season (May - June)

CCTHITA will inspect the rain garden and rock during the dry season to monitor the need for structural repairs and general maintenance according to the check list below. If structural repairs or maintenance is needed, CCTHITA will contact SAWC and JWP to discuss and schedule maintenance. SAWC and JWP will hire a contractor or solicit donated services to maintain the rain garden.

CHECKLIST FOR INSPECTION AND MAINTENANCE		
Problem	Conditions to check for	Recommended Maintenance
Structural Components		
Sediment accumulation	Sediment depth exceeds 1 inch or inhibits vegetation growth	Remove sediment build-up to allow for infiltration. This may require removal and replacement of top soil.
Inlet/Outlet	Inlet and outlet areas are clogged with sediment and/or debris	Remove material so that there is no clogging or blockage in the inlet and outlet area
Vegetation		
Poor vegetation coverage	Vegetation is sparse or bare	Determine why vegetation growth is poor and correct that condition. Replant or reseed the basin.
Vegetation	Weeds and other vegetation are taking over	Remove nuisance vegetation so that flow is not impeded
Growing/Filter Medium		
Standing water in basin	Accumulation of sediment and poor growth of plants due to saturated soil. Stormwater does not infiltrate within 48 hours	Excavate and replace filter medium

Watering

During the first 2 to 3 years, watering will be required during periods of dry weather to nurture the young plants. Watering will generally not be required after the plants are well established, except for during prolonged dry conditions. CCTHITA and JWP will inspect the rain garden during periods of dry weather from April – June, and will coordinate to schedule watering plants as needed.

Vegetation

Periodic weeding will be necessary for the first 2 to 3 years, until the plants are well established. Weeding must be done by hand and only the plants that are known to be weeds should be removed. All the roots and any plant fragments of the weeds must be removed to prevent the weeds from re-growing. In the third year, the species planted should begin to mature and will out compete the weeds. However, occasional weeding will be required throughout the life of the garden.

As the garden matures, it may also be necessary to occasionally prune, thin, or split plants to avoid an overgrown appearance and maintain plant health. Dead stems should be removed in the fall, but no later than early March, to allow for new growth in the spring. Vegetation or seeding may be required if vegetation becomes sparse.

SAWC and JWP will coordinate with CCTHITA to schedule weeding, pruning and removal of dead plants and any necessary re-vegetation at least once in the spring after plants have leafed out, and once in the fall. SAWC and JWP will be responsible for obtaining replacement plant materials, through purchasing or donations, as needed. SAWC and JWP will solicit volunteers to assist with this task.

Trash Removal

Trash removal will occur concurrently with weeding events at least once in the spring and once in the fall. CCTHITA will remove trash as they deem necessary for their property maintenance.

Mulch

If mulch is used in the rain garden, it should be replaced annually if heavy metal deposition or heavy sedimentation is likely (e.g., if runoff comes from parking lots and roads). If heavy metal deposition and/or sedimentation are not a major concern, the mulch should be amended at least once every 2 years to maintain a 2 to 3–inch depth. If mulch is used, allow for additional depth to account for the thickness of the mulch layer.

SAWC and JWP will secure funding and materials as needed to conduct this task, and will coordinate with CCTHITA to schedule replacement of mulch as needed. SAWC and JWP will solicit volunteers to assist with this task.

Soil

In rain gardens where heavy metals deposition is likely (e.g., if runoff comes from parking lots and roads), it is recommended that the soil be removed and replaced once every 20 years. Replacing soil in rain gardens will provide a prolonged service life. For the Edward K. Thomas Building rain garden, this will not be necessary until 2035. The removed soil will have to be disposed of according to DEC regulations. This may require shipping the soil to an approved off-site waste treatment and disposal facility or use of an approved portable soil treatment facility. SAWC and JWP will secure funding and materials as needed to conduct this task, and will coordinate with CCTHITA to schedule replacement of the soil and plant materials at that time. SAWC and JWP will likely solicit volunteers to assist with this task.

Sources

Alaska Department of Environmental Conservation, Spill Prevention and Response Division. 2009. *Environmental Cleanup Methods*. https://dec.alaska.gov/spar/csp/guidance/cleanup_methods.pdf

City and Borough of Juneau (CBJ). 2010. *Manual of Stormwater Best Management Practices*. http://www.juneau.org/engineering/SW_BMP/documents/Aug_2010_Manual_Stormwater_BMPs_000.pdf

Fairbanks Green Infrastructure Group. *Green Infrastructure Project: Rain Garden*. http://www.fairbankssoilwater.org/user-files/pdfs/Rain%20Garden%20Guide.pdf

Municipality of Anchorage (MOA). *Rain Gardens: A How To Manual for Homeowners in the Municipality of Anchorage*. http://www.anchorageraingardens.com/RGmanualWEB.pdf

MOA Watershed Management Services. 2008. *Low Impact Development Design Guidance Manual*. http://www.muni.org/Departments/works/project_management/Publications/LID_Design_Guidance_1208.pdf

Appendix E.

EDUCATIONAL MATERIALS

- Press Release
- Brochure
- Wetland Review Board Meeting PowerPoint
- CBJ Meeting PowerPoint
- Land-Owner Meeting PowerPoint

Calling on Jordan Creek Landowners

Are you a landowner within the lower Jordan Creek watershed (shown below) interested in green infrastructure? If so, we would like to hear from you!

It is likely we have some recommendations for your property and can seek grant funding to implement a project on your property at little to no cost to you.

Please see our contact information on the back panel.

Alaska Green Infrastructure Resources

City and Borough of Juneau (CBJ). 2010. Manual of Stormwater Best Management Practices. http://www.juneau.org/engineering/SW_BMP/documents/Aug_2010_Manual_Stormwater_BMPs_000.pdf

Fairbanks Green Infrastructure Group. http://www.fairbankssoilwater.org/resources-green-infrastructure.htm

MOA Watershed Management Services. 2008. Low Impact Development Design Guidance Manual. http://www.muni.org/Departments/works/project_manage-ment/Publications/LID_Design_Guidance_1208.pdf

For more information, contact:
Amy Sumner
Project Coordinator
Southeast Alaska Watershed Coalition/
Juneau Watershed Partnership

Phone: 907-723-4969
E-mail: juneauwatersheds@gmail.com

Get your water out of the Gutter: Jordan Creek Stormwater Information For Landowners

Working together for healthy watersheds

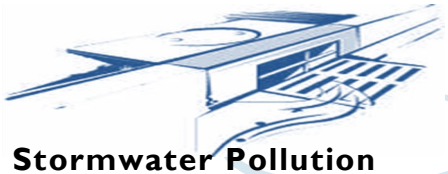
JUNEAU WATERSHED PARTNERSHIP

SOUTHEAST ALASKA WATERSHED COALITION

Jordan Creek: An Impaired Fish Stream

Jordan Creek is an anadromous stream that supports coho, pink, and chum salmon along with Dolly Varden char, and cutthroat trout. However, Jordan Creek is also listed by the Alaska Dept. of Environmental Conservation as an impaired waterbody due to sediment, high turbidity, low dissolved oxygen and debris attributed to urban run-off. Fine sediment and other pollutants attributed to stormwater runoff occurring in the densely developed lower portion of the watershed can adversely impact fish and fish habitat.

Photo: Stormwater outfall on Jordan Creek at Glacier Highway.



Stormwater Pollution and Green Infrastructure

Stormwater is the water that flows across our yards, streets, and parking lots after rainfall and snowmelt. In developed areas, stormwater picks up a variety of pollutants such as petroleum hydrocarbons, heavy metals, fertilizers, pesticides, fine sediment, and fecal matter, which it eventually discharges into our streams.

Stormwater flow is traditionally managed using ditches and storm sewer systems designed to concentrate and quickly move water. Traditional stormwater infrastructure discharges directly into our streams with little time for pollutants to settle out.

Green infrastructure uses vegetation and natural processes to manage and treat stormwater to minimize impacts on the environment. Examples of green infrastructure include rain gardens, bioswales, planter boxes, and constructed wetlands. Green infrastructure options can be selected and designed to fit site-specific conditions.

The Juneau Watershed Partnership (JWP) and United States Fish and Wildlife Service (USFWS) recently completed a stormwater inventory and assessment for the Lower Jordan Creek watershed to identify opportunities to manage the quantity and quality of stormwater entering the stream.

Upcoming Project

The Juneau Watershed Partnership, Southeast Alaska Watershed Council and Central Council of Tlingit and Haida have partnered to construct a rain garden at the Edward K. Thomas Building in the Airport Shopping Center. The rain garden will treat stormwater from ~36,000 sq. ft. of parking lot. Construction is anticipated in late September 2015.

Funding for this project was provided by the Alaska Dept. of Environmental Conservation Alaska Clean Water Actions Grant Program and the National Fish and Wildlife Foundation Wells Fargo Environmental Solutions for Communities Grant Program.

Landowners within the lower Jordan Creek watershed are encouraged to contact us if they are interested in viewing the rain garden during or after construction.

Implementing green infrastructure throughout lower Jordan Creek can improve water quality and habitat conditions in this anadromous stream.

Edward K Thomas Building Jordan Creek Rain Garden

Partners and Supporters

- Partners
  - Southeast Alaska Watershed Coalition (SAWC)
  - Juneau Watershed Partnership (JWP)
  - Central Council of Tlingit and Haida
  - U.S. Fish and Wildlife Service
- Financial Support
  - Alaska Clean Water Actions Grant
  - NFWF Wells Fargo Environmental Solutions for Communities Grant

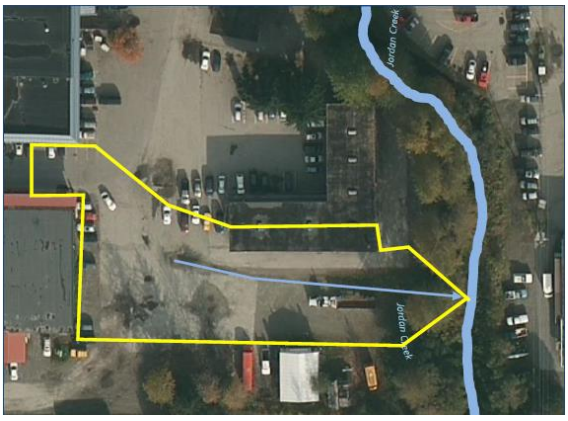


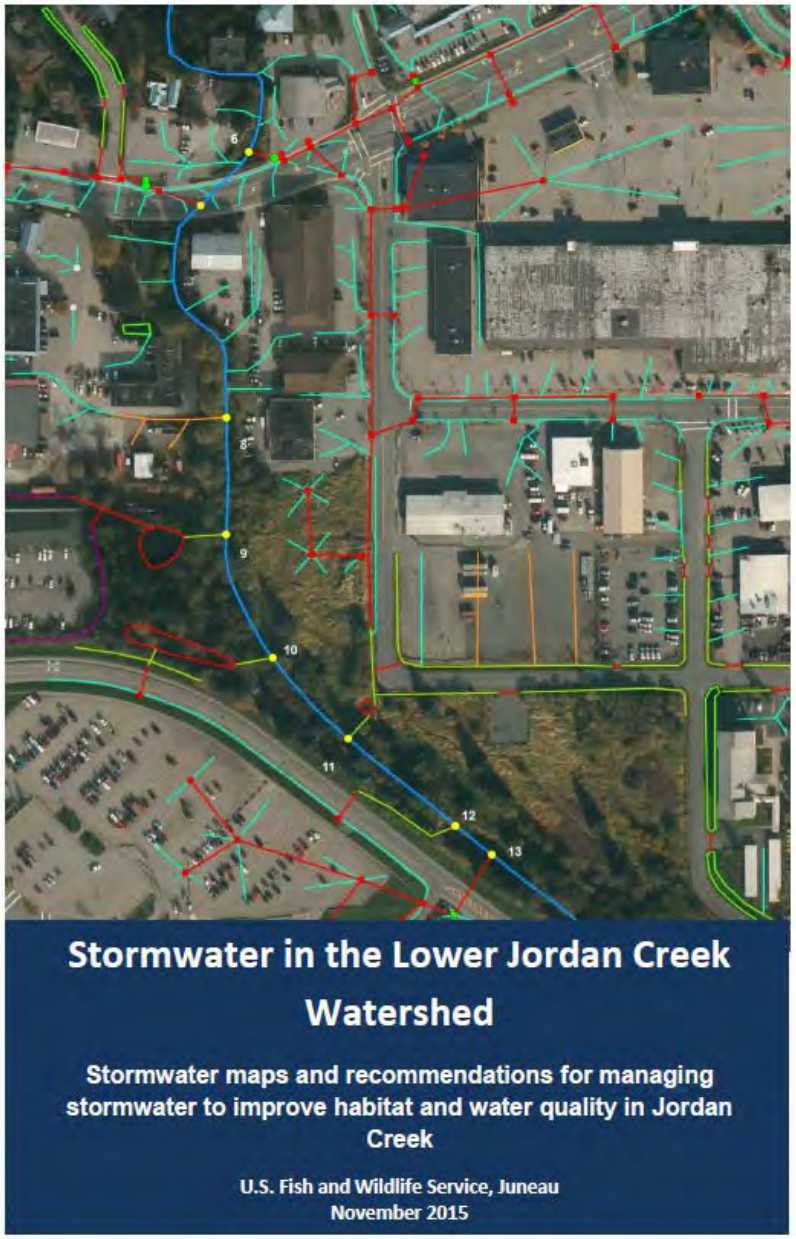
Figure 4. Plan Set showing the fence, rain garden and swale in relation to the Jordan Creek habitat setbacks.

Stormwater in the Lower Jordan Creek Watershed

John Hudson

Amy Sumner

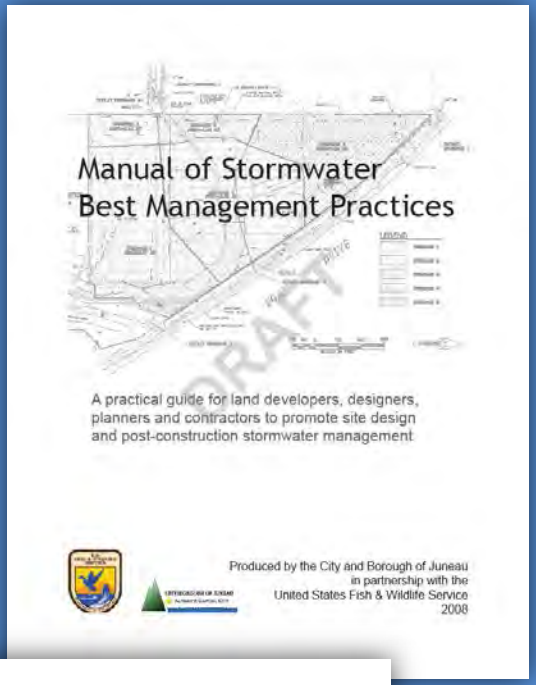
Lower Jordan Creek Stormwater Report (2015)

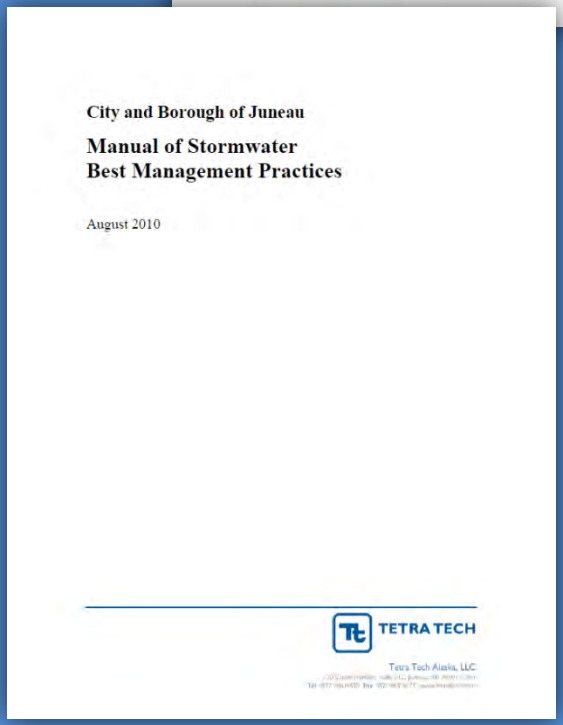


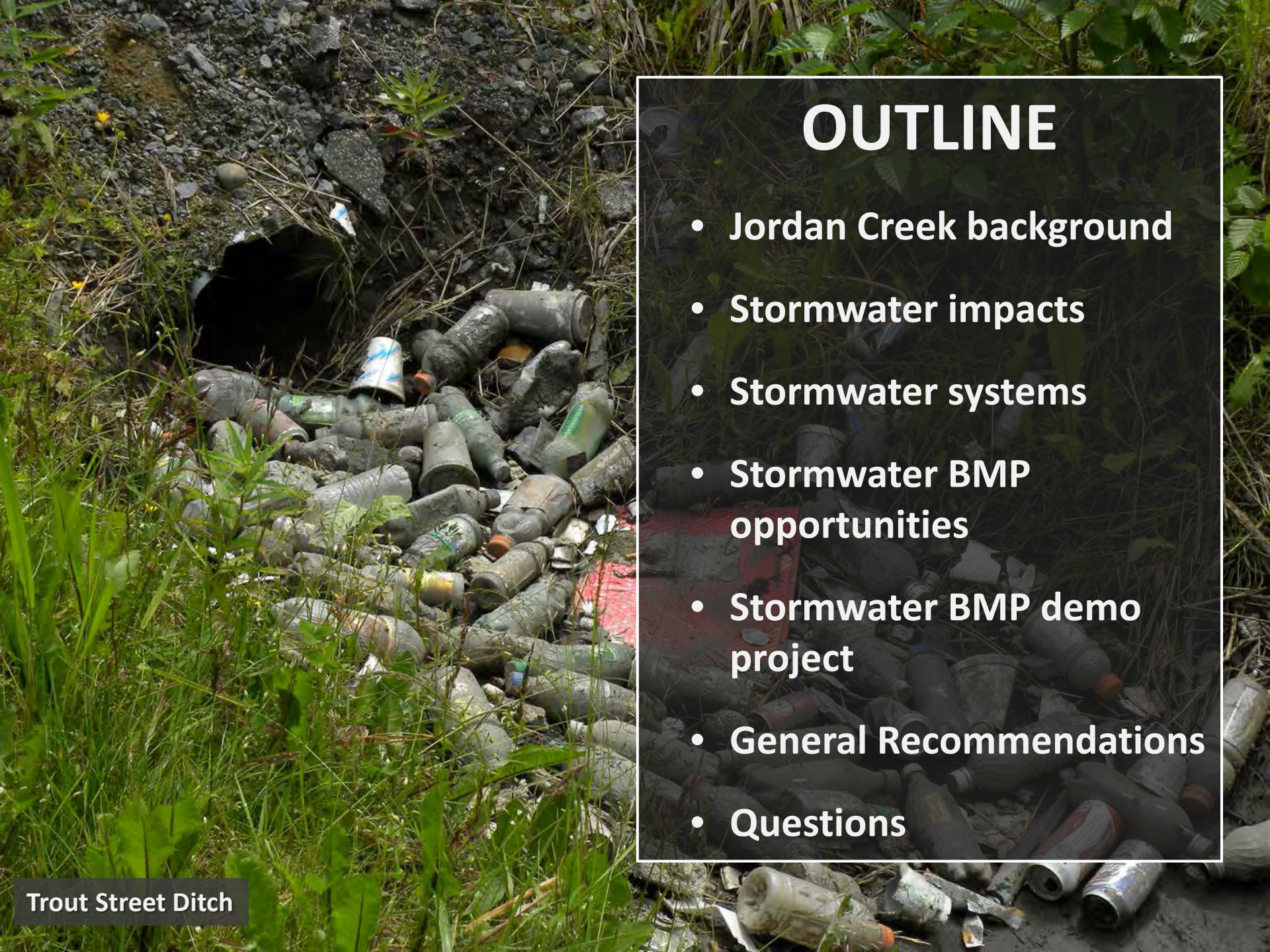
Project Context

FWS – CBJ Partnerships

- Shared stormwater mapping intern
- Stormwater BMP Manual – a practical guide (2008)
- Stormwater BMP Manual – full manual (2009, 2010)



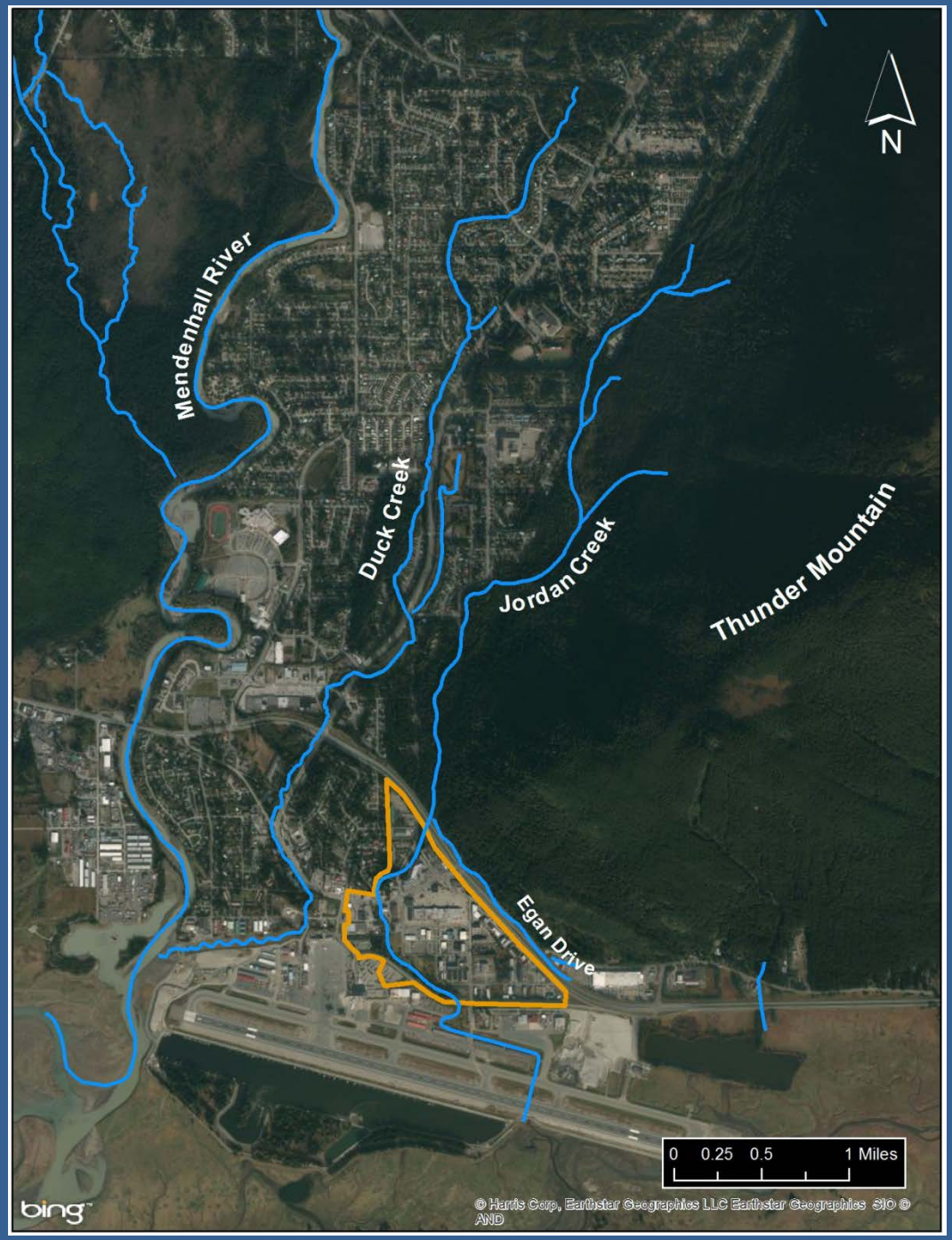




OUTLINE

- Jordan Creek background
- Stormwater impacts
- Stormwater systems
- Stormwater BMP opportunities
- Stormwater BMP demo project
- General Recommendations
- Questions

Trout Street Ditch



Jordan Creek

- length: 3.8 miles
- watershed: 3 sq. miles

Fish

- 4 species of salmon
- steelhead
- Dolly Varden char
- coastal cutthroat trout
- sculpin, stickleback & flounder

Jordan Creek

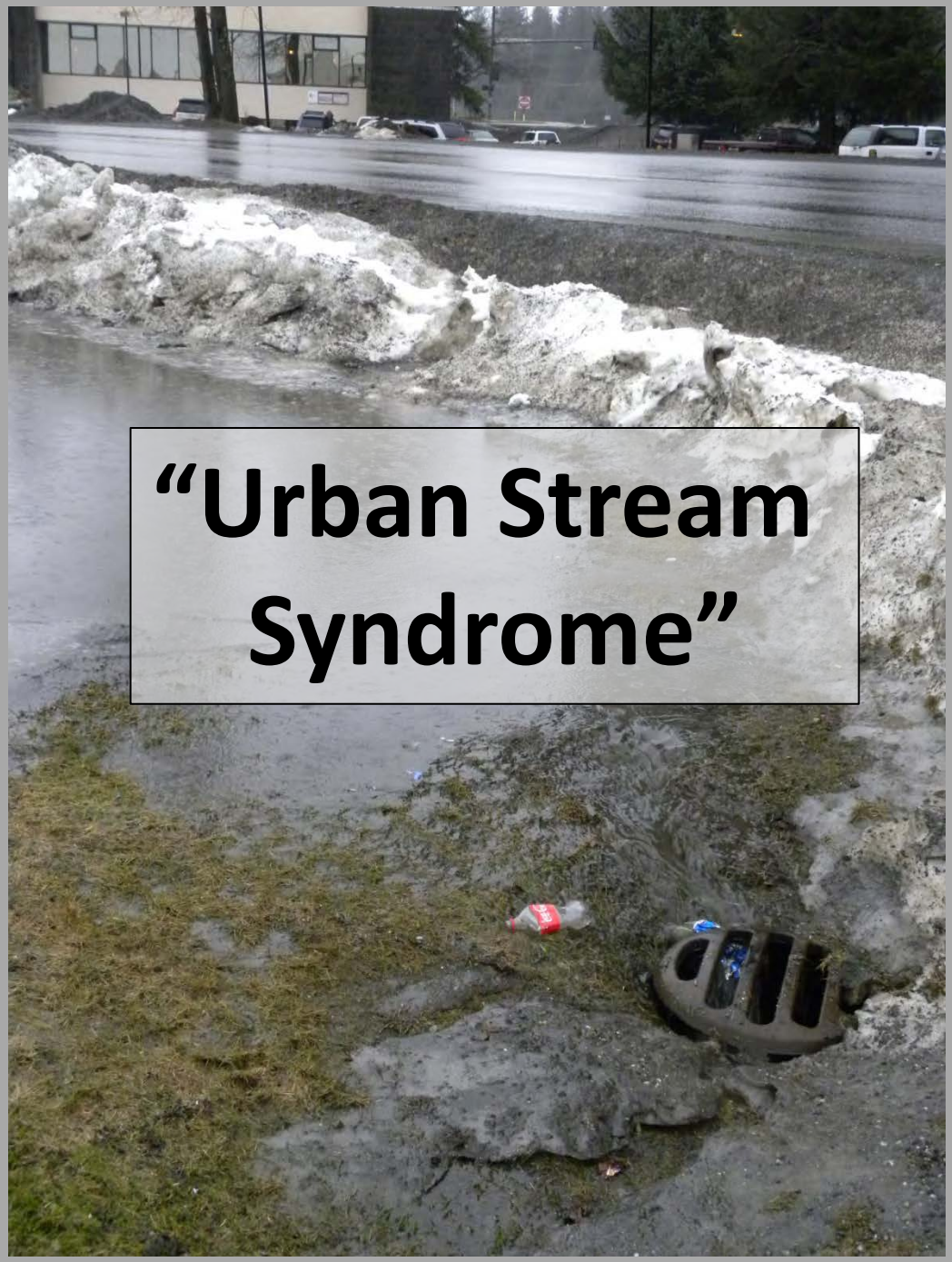
State of Alaska impaired water body (1998)

- Excess sediment & debris
- Low dissolved oxygen

Jordan Cr. Downstream of Glacier Hwy.

Pollutants found in stormwater:

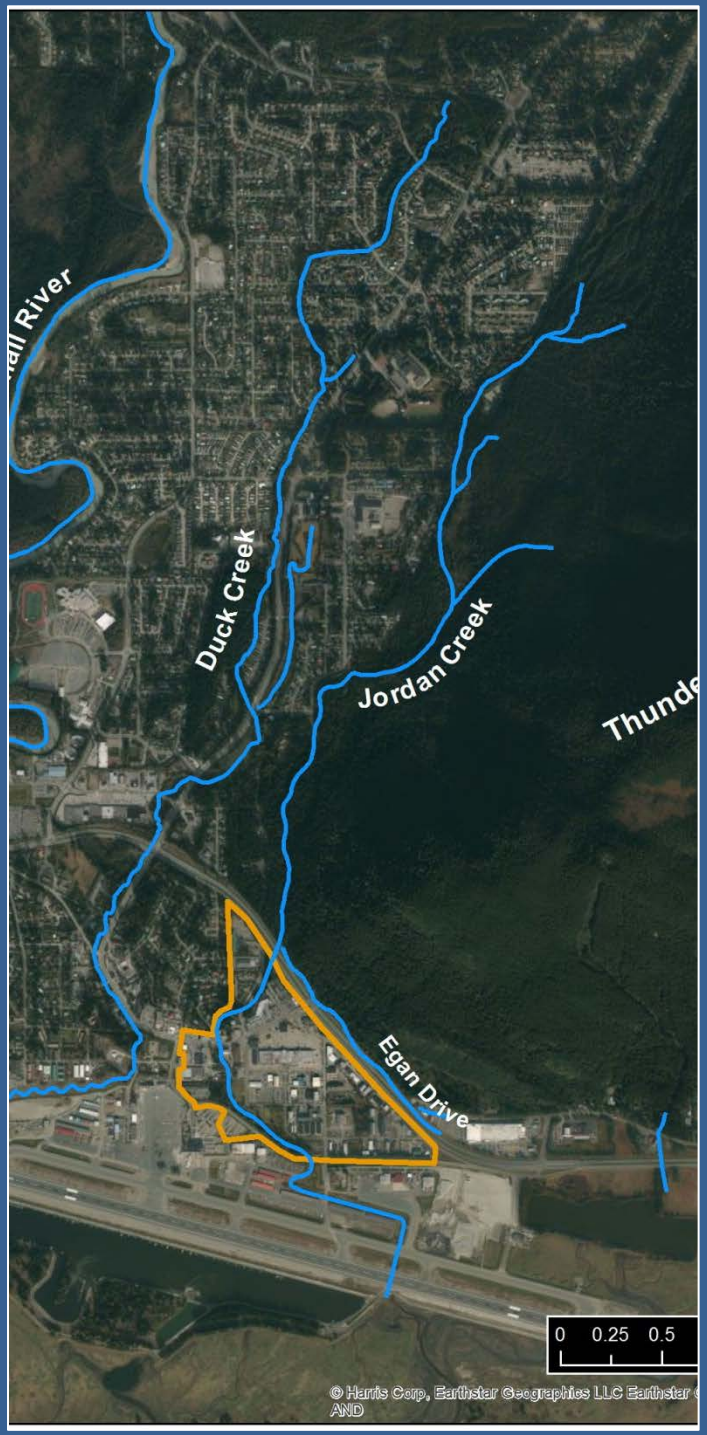
- Sediment
- Heavy metals (copper, chromium, zinc, lead, etc)
- Pesticides
- Petroleum hydrocarbons
- De-icing chemicals
- Fecal coliform bacteria



Storm drain at North Crest St.

Project Goals

1. Inventory and map the stormwater network
2. Identify opportunities to manage stormwater
3. Recommend projects and practices



Project Area

Methods

Inventory & mapping

- On-the-ground mapping
- As-built & design drawings
- Local expertise

Stormwater systems

- Photographs
- Physical description
- Problems & Opportunities
- Recommendations

Stormwater System Components

- Curbs and gutters
- Catch basins
- Pipes and culverts
- Ditches
- Outfalls

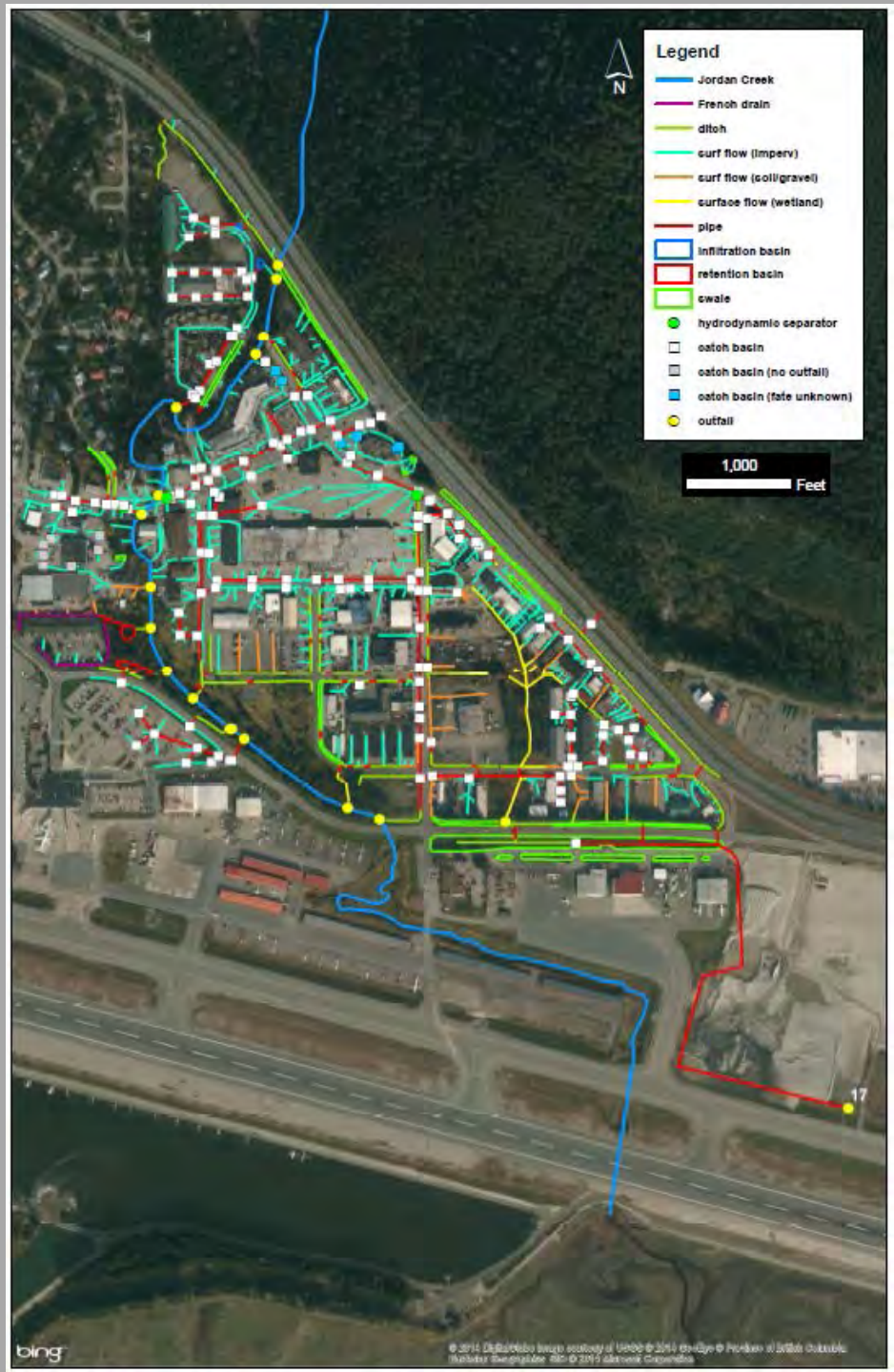
BMPs

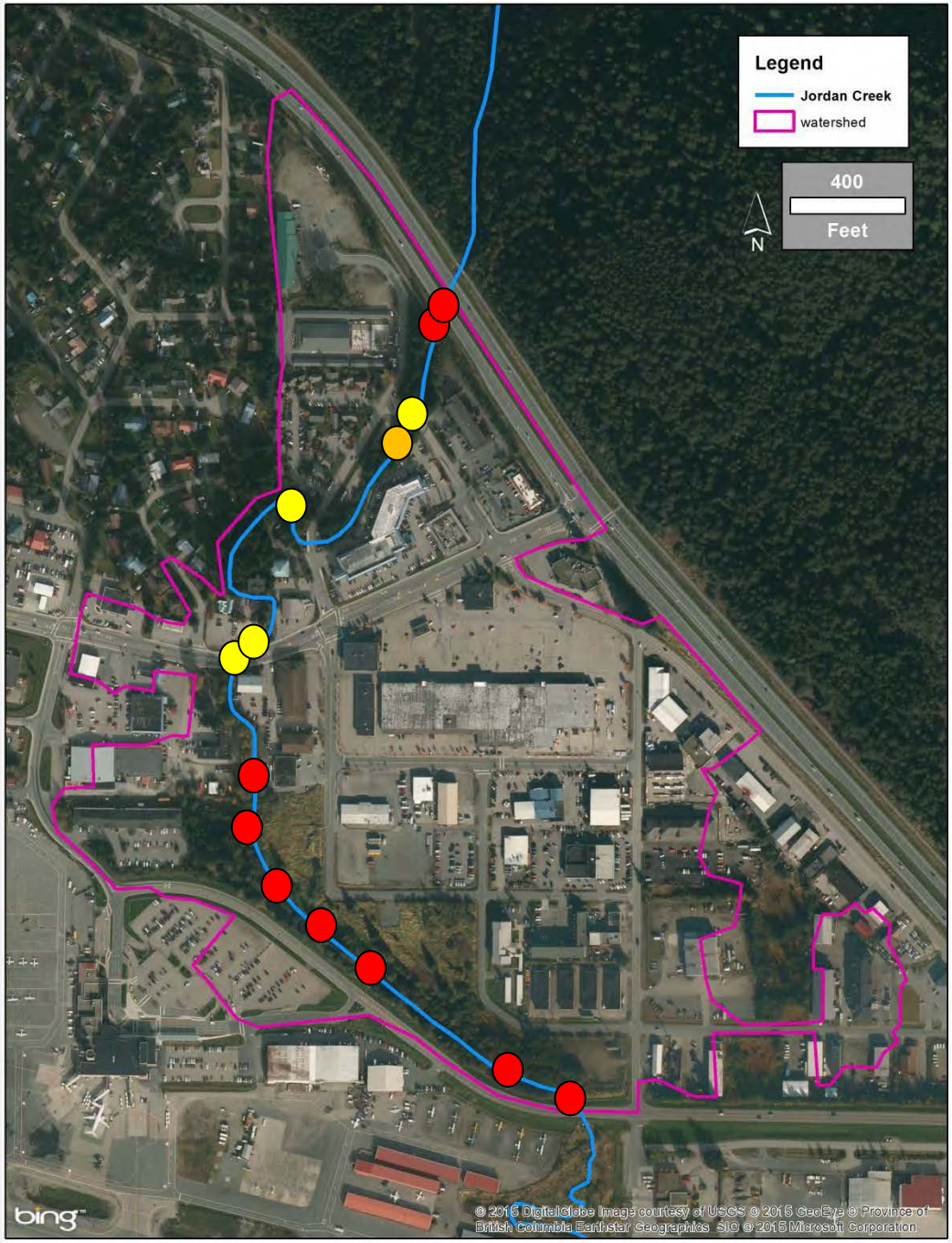
- Hydrodynamic separators
- Retention basins
- Infiltration basins
- French drains
- Swales

Findings

17 stormwater systems

- discharge to ground (3)
- discharge to the Mendenhall Wetlands (1)
- discharge to Jordan Creek (13)





Findings

Where does stormwater enter Jordan Creek?

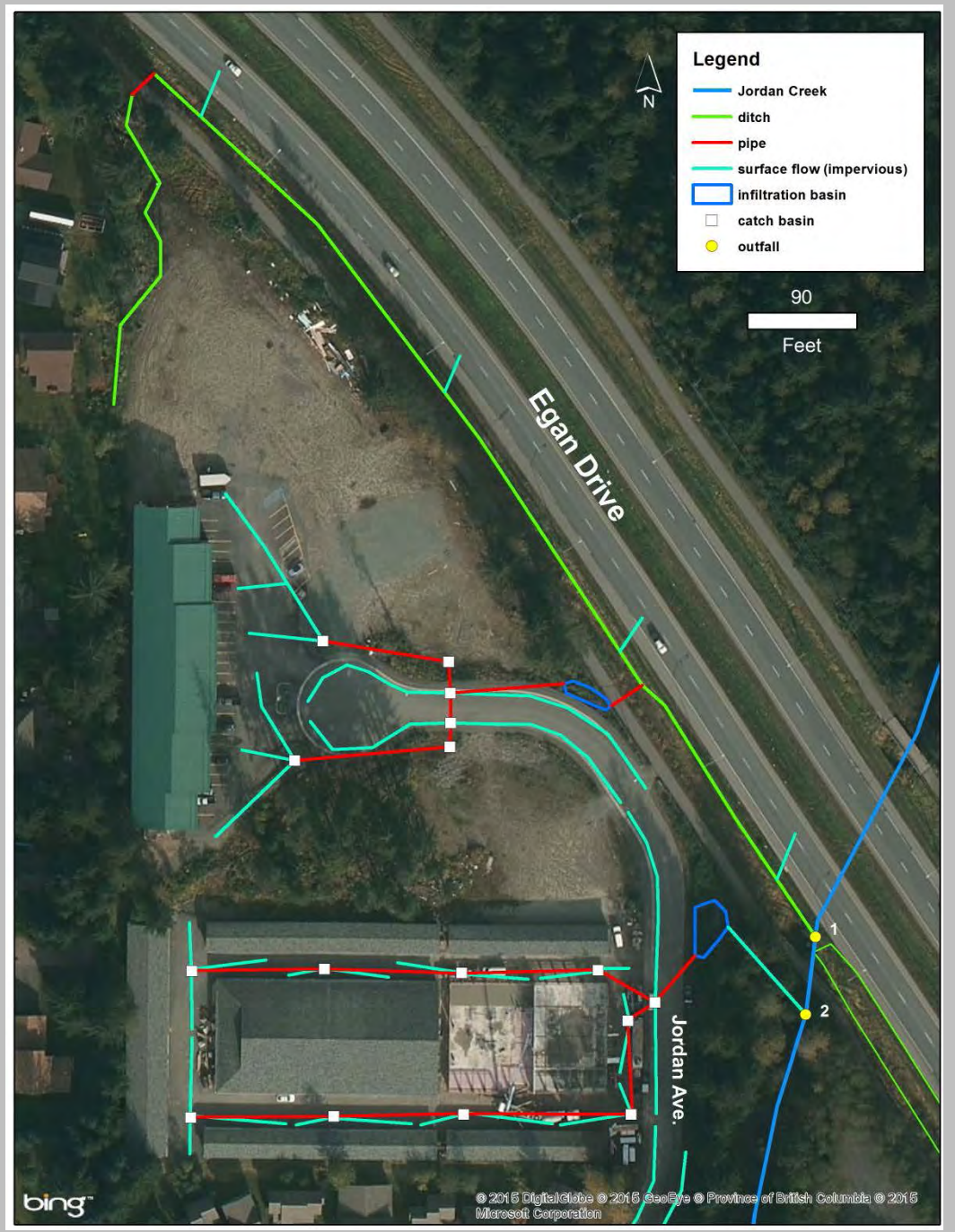
Outfalls

- 4 Pipes
- 9 Ditches

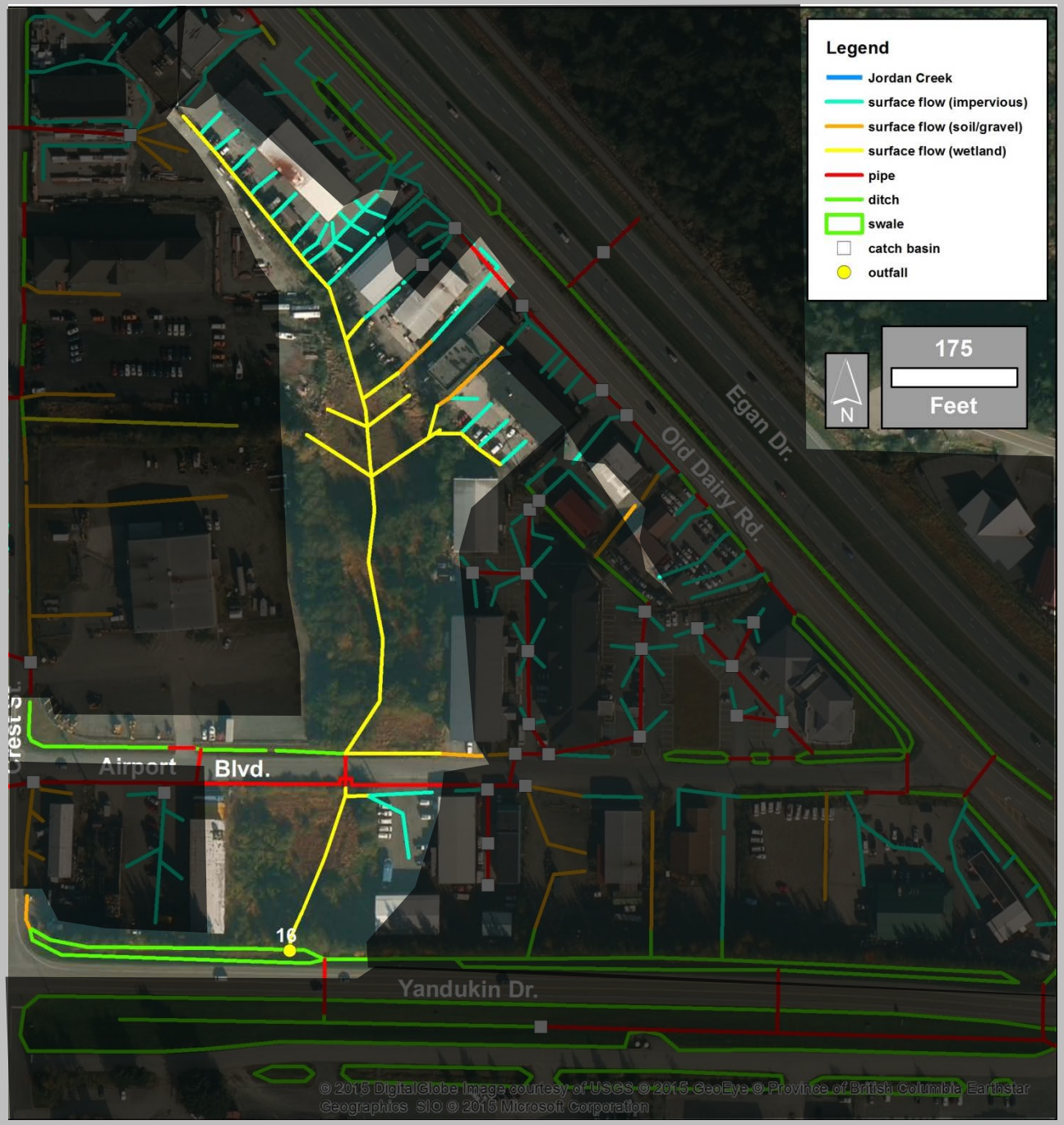
Jordan Creek Center outfall pipe (inactive)

Systems discharging to ground

North Jordan Ave. Systems



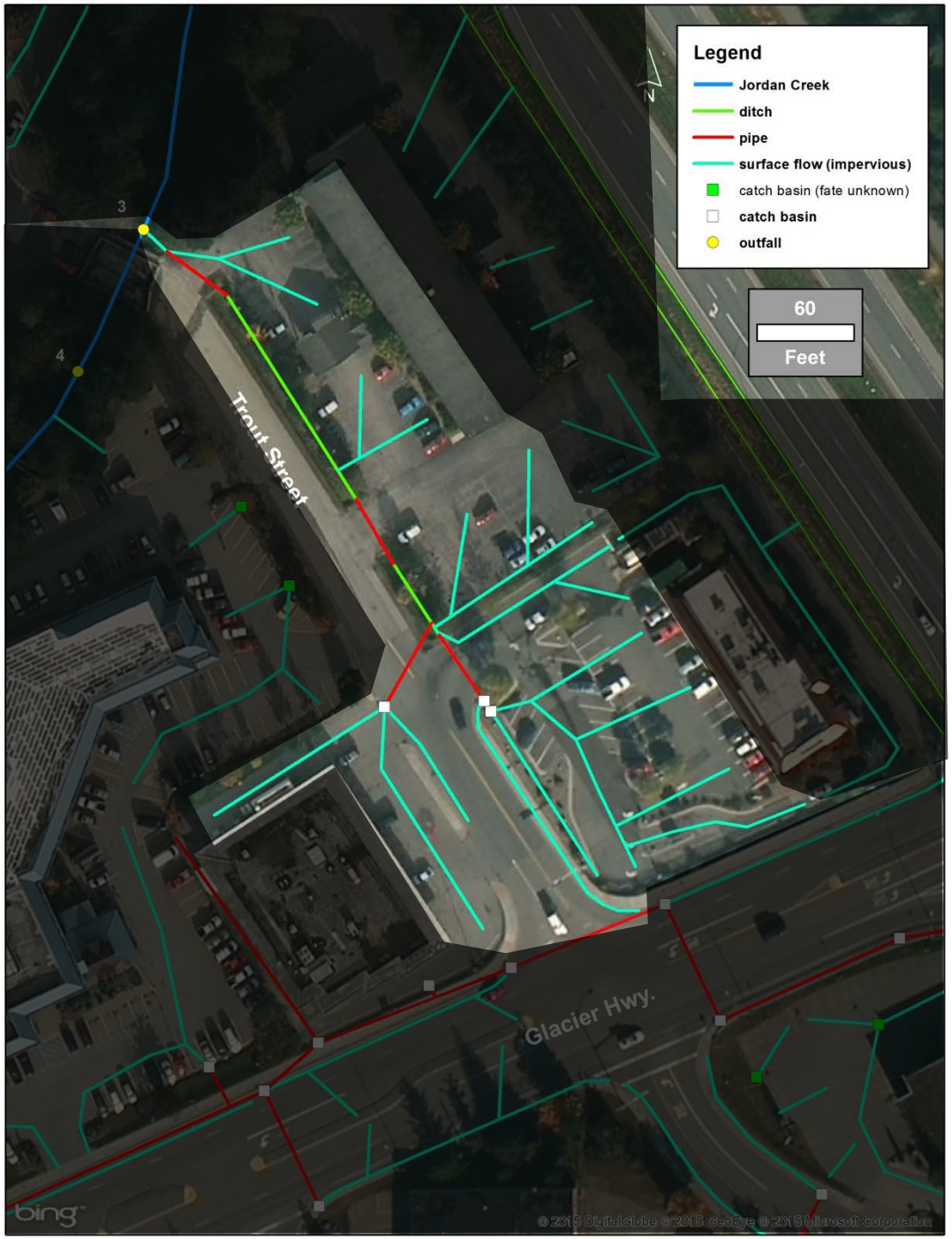
Systems discharging to ground



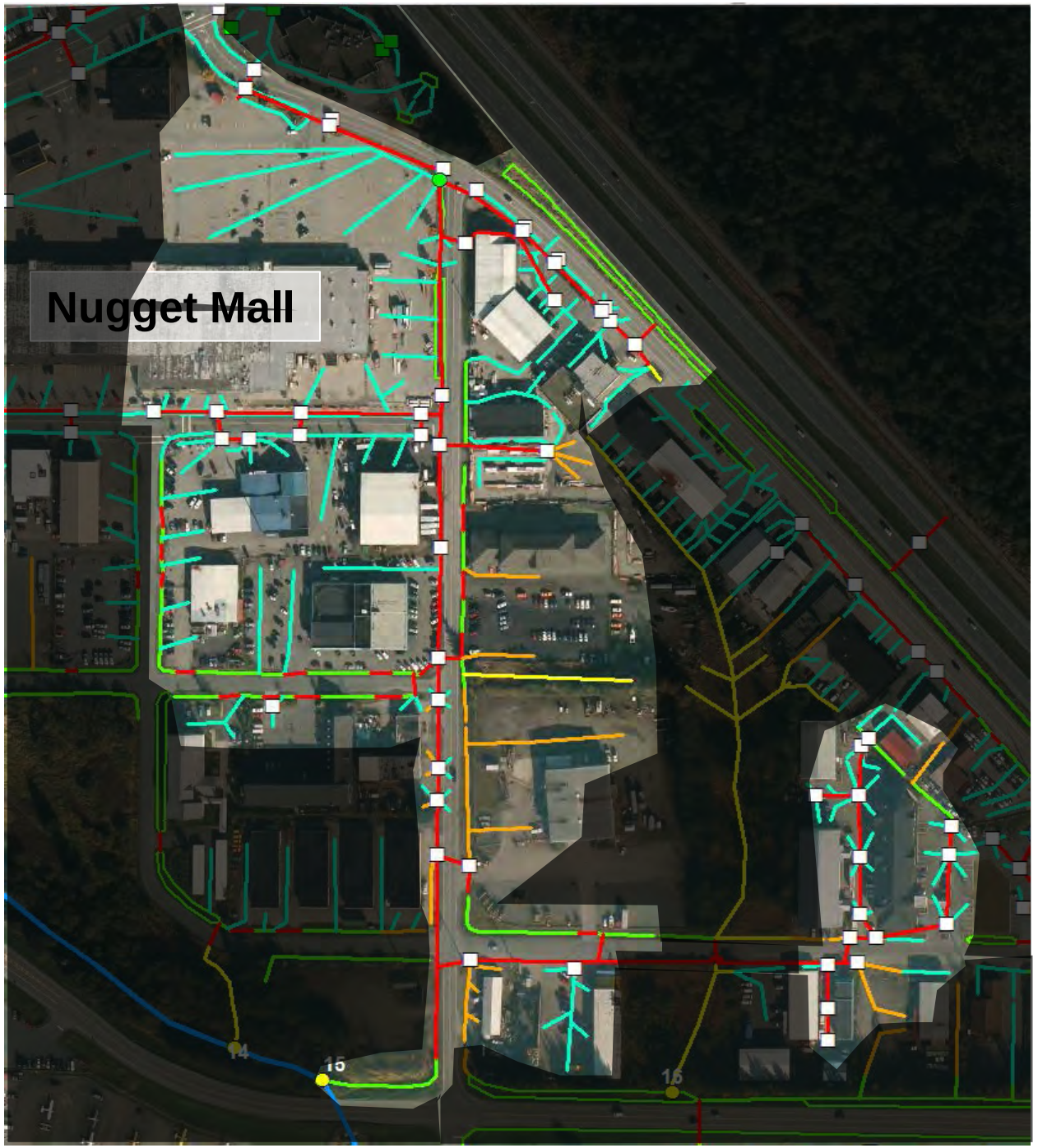
Airport Blvd. Wetland Complex

Systems discharging to Jordan Creek

Trout Street System



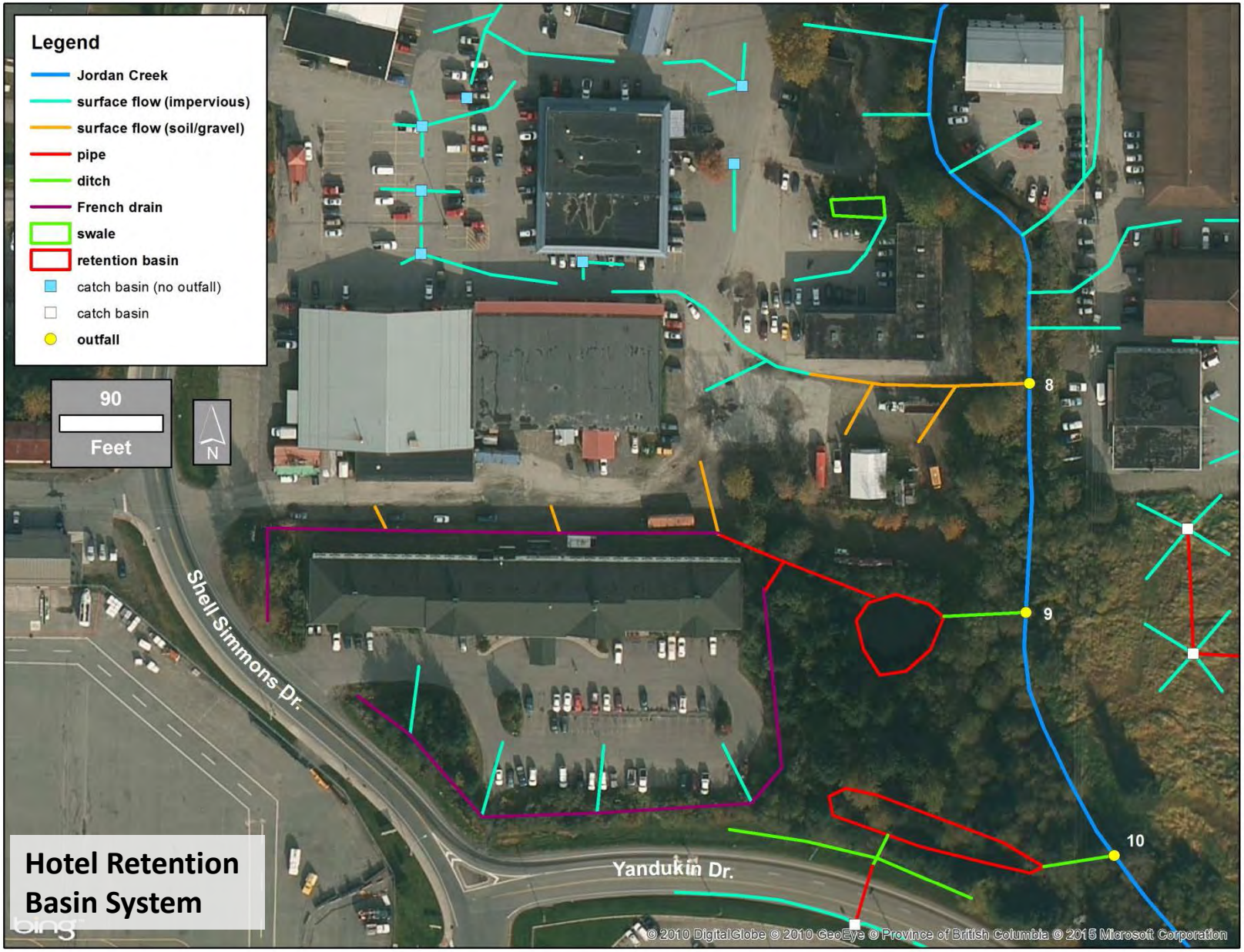
Systems discharging to Jordan Creek



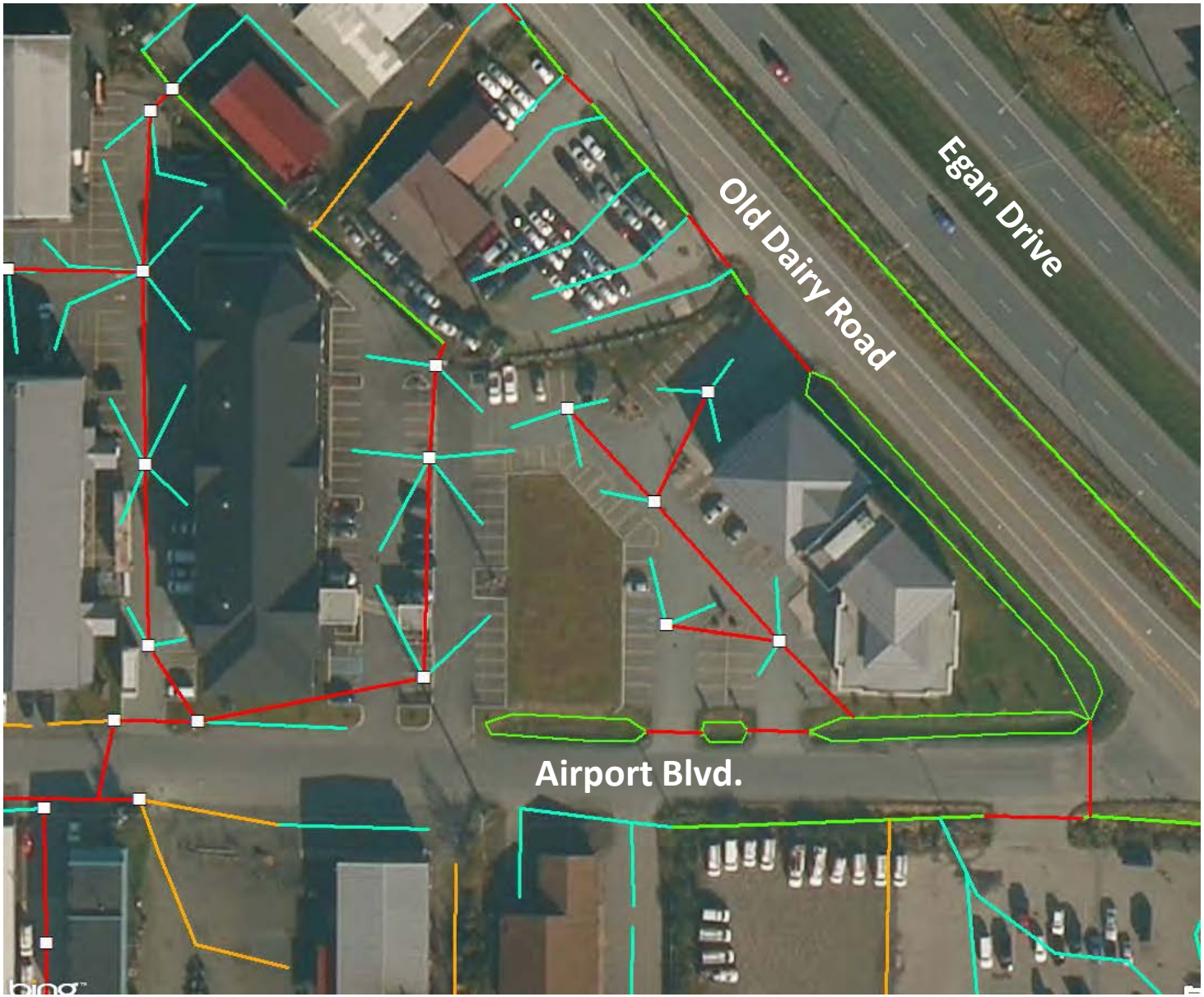
Crest Street System

Crest Street System

Existing Stormwater BMPs – French drains



Existing Stormwater BMPs – vegetated swales



Old Dairy Road System


SPEED LIMIT 20
4G LTE IS HERE

City and Borough of Juneau

Manual of Stormwater Best Management Practices

June 2009

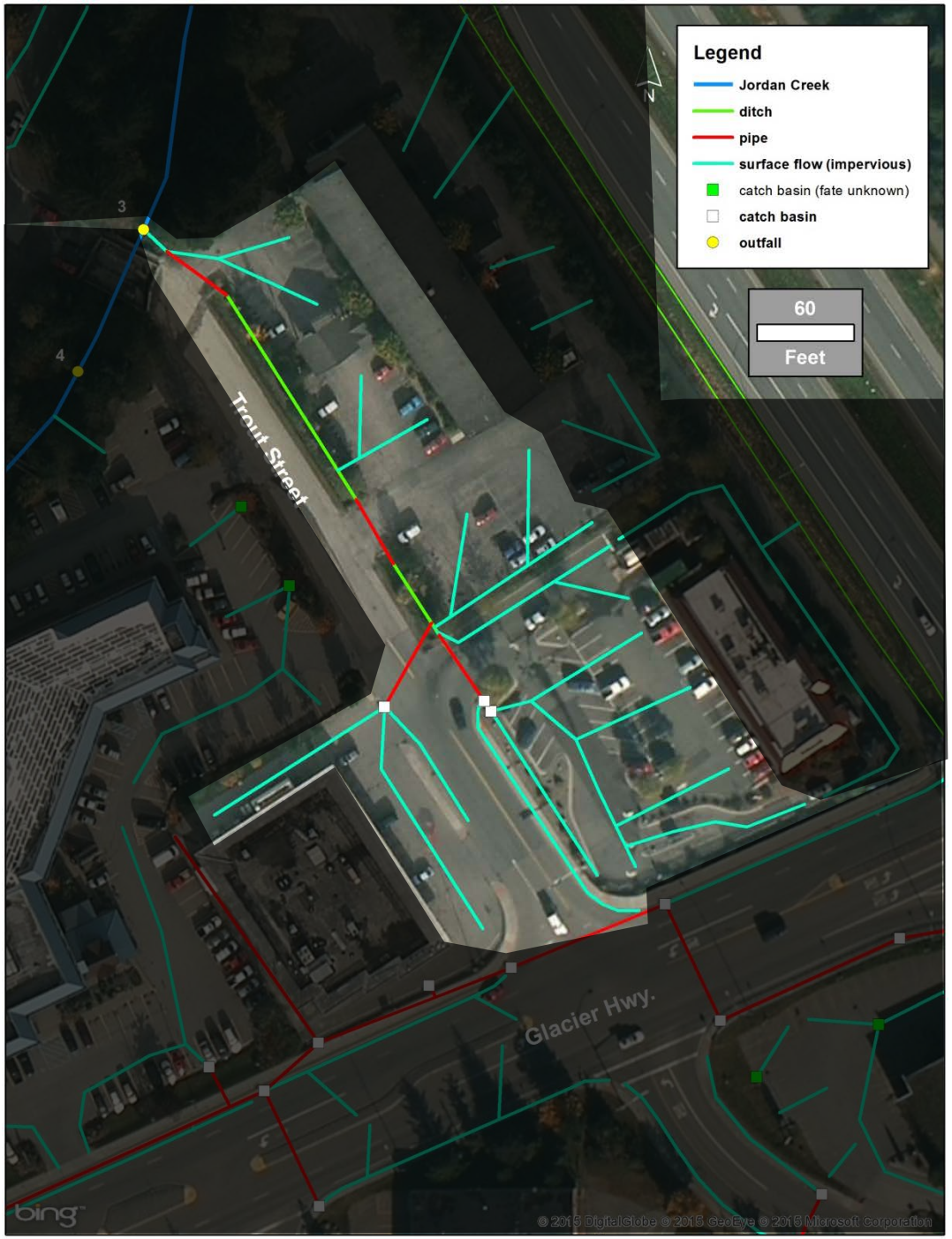
TETRA TECH

Tetra Tech Alaska, LLC

BMP Recommendations

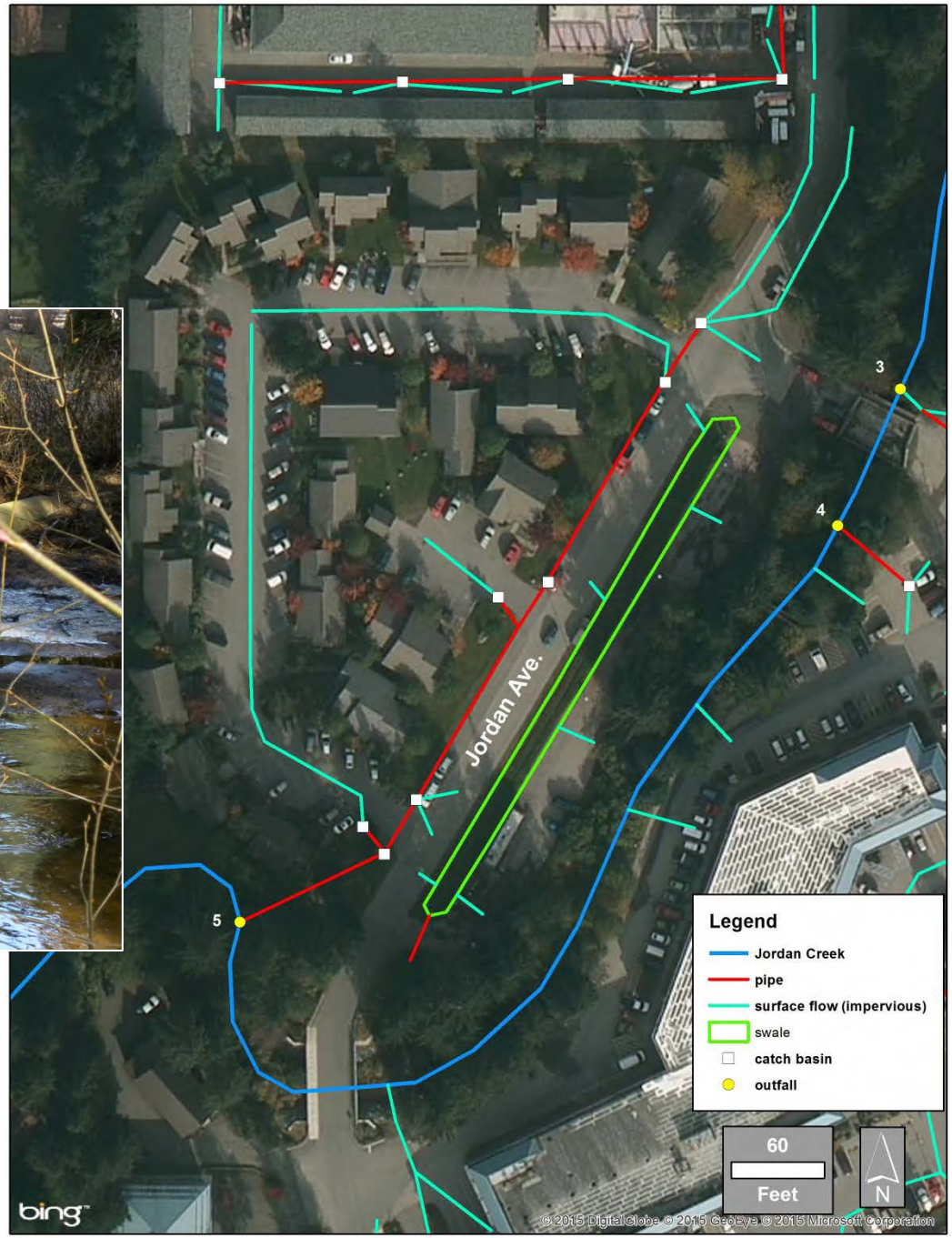
- Bioretention beds
- Hyrdodynamic separater
- Improve practices

Trout Street System



BMP Recommendations

- Stormwater wetland
- Replace system with swales

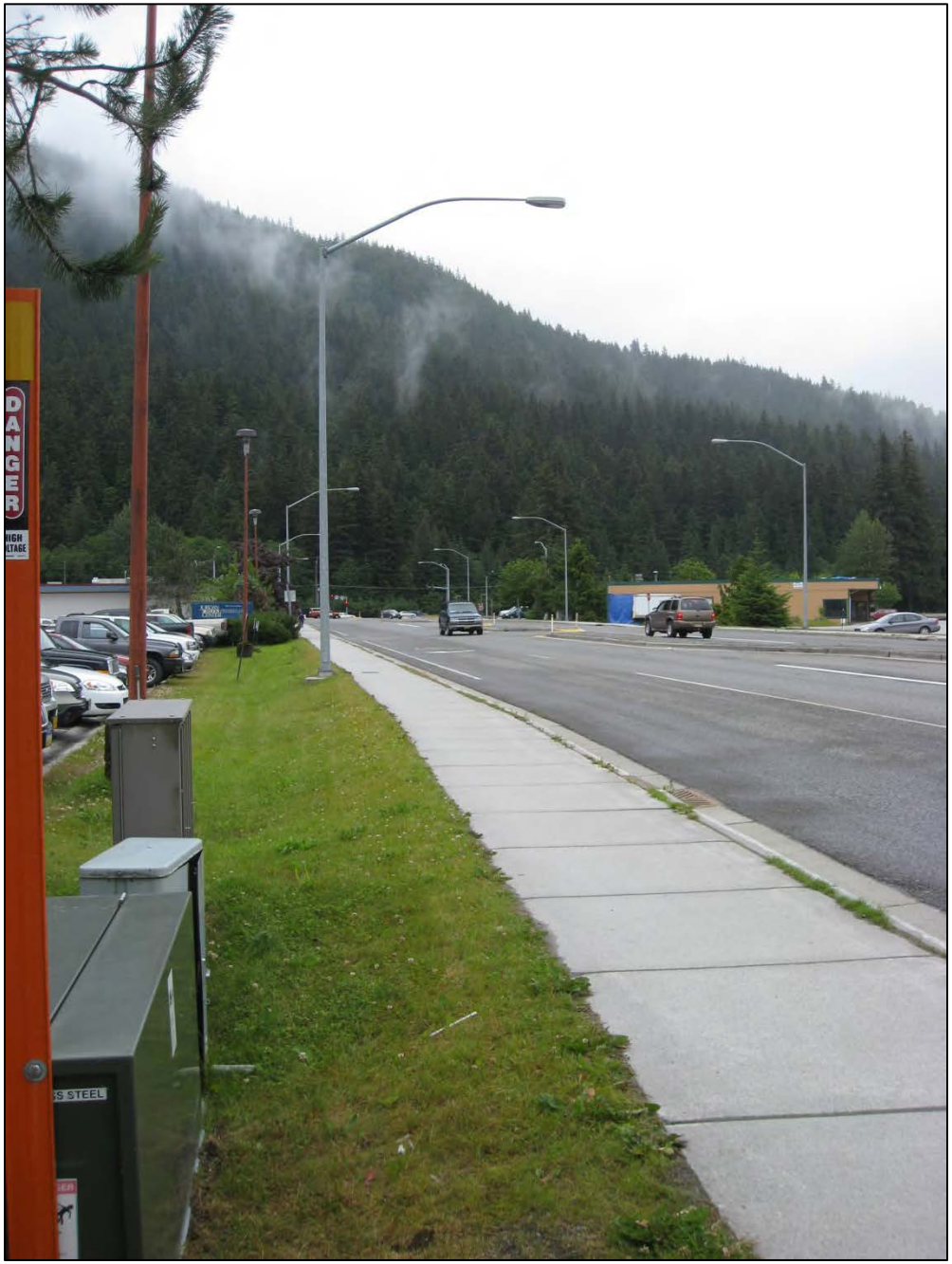


N. Jordan Ave. #3 System


Legend
Jordan Creek
pipe
surface flow (impervious)
ditch
catch basin
catch basin (fate unknown)
hydrodynamic separator
outfall
swale
110
Feet
N
Trout Street
Egan Drive
Glacier Hwy.
Old Dairy Rd.
Jordan Ave.
4
6
7
East Glacier Hwy. System
© 2015 DigitalGlobe © 2015 GeoEye © Province of British Columbia © 2015 Microsoft Corporation

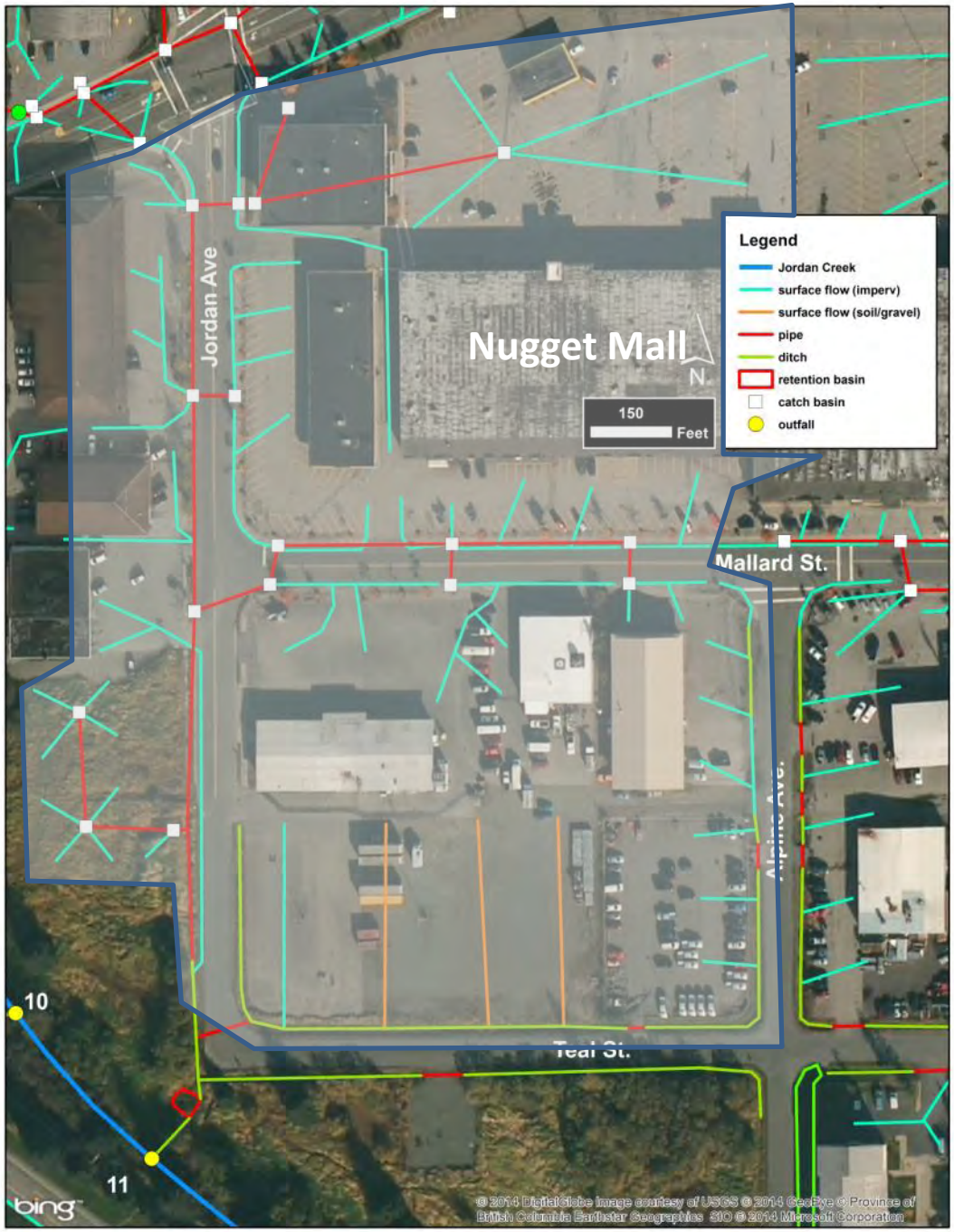
BMP Recommendations

- Curb inlets to swale



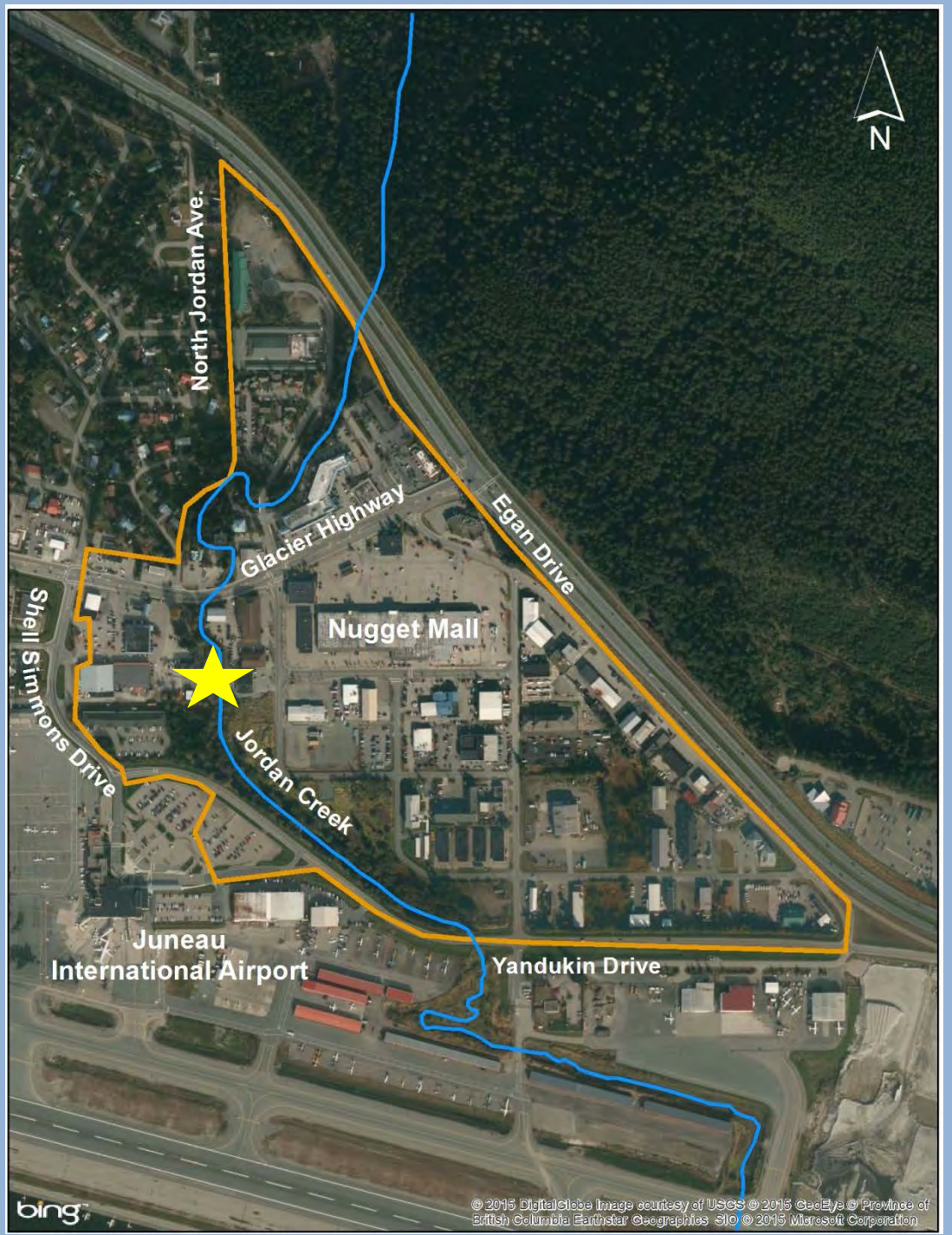
BMP Recommendations

- Stormwater wetland

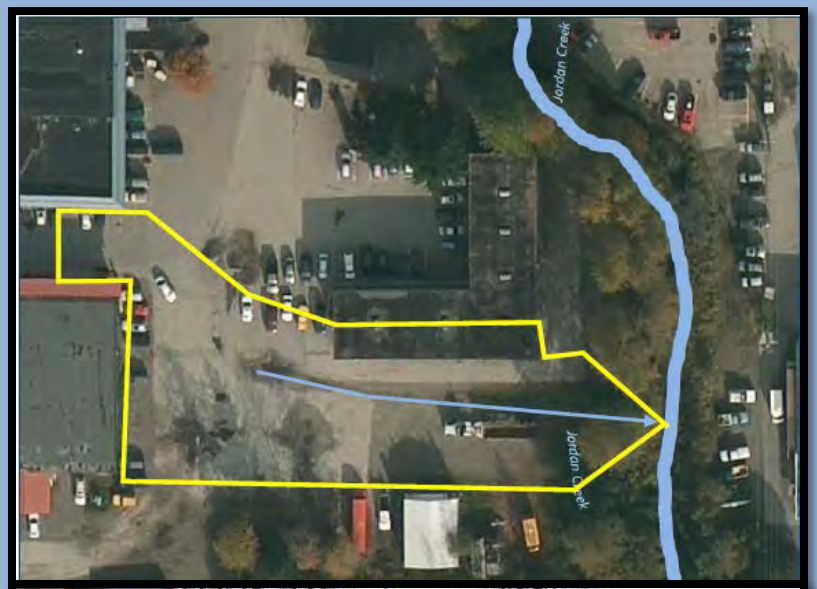


South Jordan Ave. ditch

Jordan Creek Stormwater BMP Demonstration Project (CCTHITA)



Project Background



- Discharge point identified during stormwater mapping project
- Able to move forward due to:
  - Willing landowner
  - Available funding
- Construct rain garden and rock swale to treat stormwater discharge
- Construct fencing to discourage plowing snow into riparian area and stream
- Plant native vegetation to enhance riparian area
- Educate the public and lower Jordan Creek landowners about Green Infrastructure

Project Progress

Sept. 25 & 26 – cedar fence and planting

Oct. 24 – some excavation

Dec. 15 – concrete barriers

Project Progress, cont.

Saving Jordan Creek

Volunteers, organizations hope small project leads to bigger

Posted: November 13, 2015 - 12:01am

Back | Next

Photo by Angie Flickinger -
Volunteers work to install a split rail cedar fence along Jordan Creek. They hope the fence will prevent plowed snow, and its accompanying contaminants, from entering the creek.

By MARY CATHARINE MARTIN

JUNEAU EMPIRE

In certain places, it's easy to forget about Jordan Creek: its lower reaches run between parking lots, shopping complexes, and the airport.

It's also easy to forget the area around a large part of it is the Jordan Creek Greenbelt, managed by the city's Parks and Recreation department.

"You walk along some of that habitat and you're like 'How is anything living?'" said Southeast Alaska Watershed Coalition program director Angie Flickinger. "It's pretty cool to get some green infrastructure going. There's a lot of potential."

Parts of it are choked with reed canary grass, an invasive species that edges out lupine, ferns and other indigenous plants. Contaminants from parking lots drain directly into much of the lower creek. Snow plows push snow directly onto it, and when that snow melts, parking lot rocks and other contaminants sift down into the stream.

Jordan Creek has also seen some good news in recent years, however. A team of agencies and volunteers have long worked to restore it to health; it's been on the Department of Environmental Conservation's impaired water body list since 1998. And in 2013, it met all the state's water quality guidelines.

It's improving, but it still has problems – and its problems are the problems of the 10,000 coho smolt it produces every year, as well as the chum and pink salmon, steelhead, cutthroat trout and

- **Project website**

http://www.juneauwatersheds.org/programs/stormwater/raingarden.html

- **Juneau Empire article**
- **Future:**
  - **Complete rain garden in spring**
  - **Install educational sign**
  - **Hold lower Jordan Creek landowner meeting**

General Recommendations

- Use snow management practices that protect water quality and habitat
- Clean roads, streets, and parking lots in early spring
- Clean and maintain catch basins and separators
- Use BMPs when cleaning ditches
- Raise inlets of catch basins in swales

Are BMPs Effective?

Journal of Applied Ecology

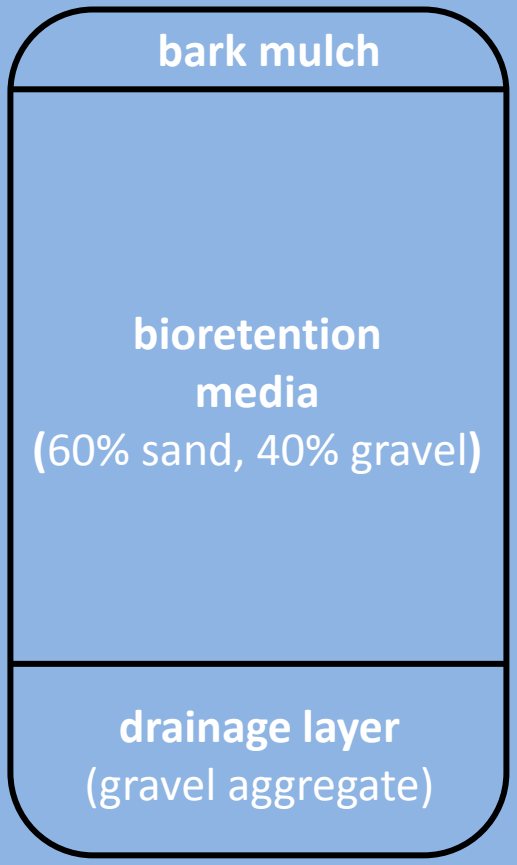
British Ecological Society

Journal of Applied Ecology 2015 doi: 10.1111/1365-2664.12534

Coho salmon spawner mortality in western US urban watersheds: bioinfiltration prevents lethal storm water impacts

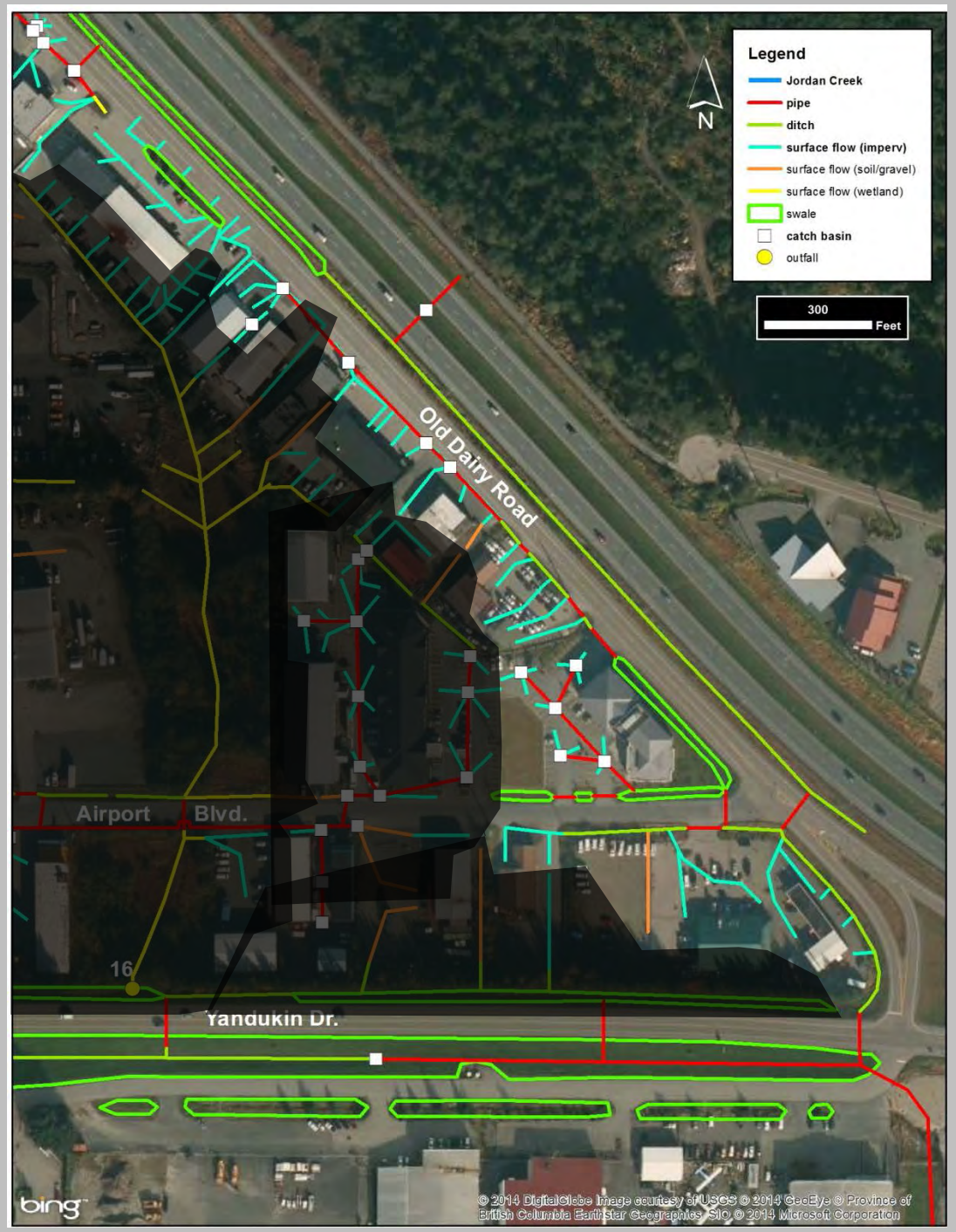
Julann A. Spromberg[1], David H. Baldwin[2], Steven E. Damm[3], Jenifer K. McIntyre[4], Michael Huff[5], Catherine A. Sloan[2], Bernadita F. Anulacion[2], Jay W. Davis[3] and Nathaniel L. Scholz[2]*

	Clean well water	Unfiltered highway runoff	Filtered highway runoff
% Mortality	0%	100%	0%



Bioretention column

System Discharging Outside the Study Area



Old Dairy Road System

QUESTIONS

You are invited to attend a Jordan Creek Landowner Meeting

Please join the JWP to learn more about how we can help you improve your property at no cost to you!

Jordan Creek Landowner Meeting
Mendenhall Valley Public Library

Large Conference Room

March 4th, 4:00PM—5:30PM

Working together for healthy watersheds

JUNEAU WATERSHED PARTNERSHIP

Juneau Watershed Partnership (JWP)

PO BOX 35132
Juneau, AK 99803-5132

Phone: 907-723-4969
E-mail: juneauwatersheds@gmail.com
Learn more @
www.juneauwatersheds.org

Lower Jordan Creek Landowners Meeting

Improving Jordan Creek through mutually beneficial partnerships

Presented by:

Juneau Watershed Partnership

1

Working together for healthy watersheds

Meeting outline

- Introductions
- Why lower Jordan Creek?
- What can be done?
- How does this benefit me?
- Successful projects

2

Working together for healthy watersheds

Juneau Watershed Partnership

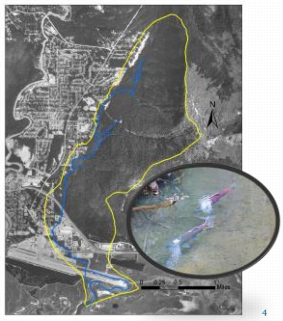
- Local non-profit watershed council, est. 1998
- Originally "Mendenhall Watershed Partnership"
- **Our Mission** is to promote community stewardship and sustainable use of our local watersheds
- **Our Work** includes education/communication, planning and research

3

Working together for healthy watersheds

Why lower Jordan Creek?

- Listed as an impaired waterbody since 1998
  - Debris
  - Low Dissolved Oxygen
  - Sediment
- Fish species:
  - Pink, coho, chum, sockeye salmon
  - Cutthroat and steelhead trout
  - Dolly Varden char
- Good fish and wildlife habitat remain in the watershed



4

Working together for healthy watersheds

Why lower Jordan Creek?

- Lower watershed heavily developed
  - Stormwater discharges
  - Riparian encroachment
- We can make a difference – with your help!

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What can be done?

Improve stormwater discharges

- Green Infrastructure
- Snow management

Improve riparian habitat

- Planting vegetation
- Manage invasives
- Bank stabilization

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Working together for healthy watersheds

Green Infrastructure (GI)

Approach to managing stormwater by infiltrating it into the ground where it is generated using vegetation or porous surfaces, or by capturing it for later reuse.


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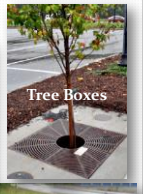
Working together for healthy watersheds

Green Infrastructure (GI)



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Snow Management

Managing snow plowing and storage to minimize pollutant discharges into a stream or storm sewer system


9

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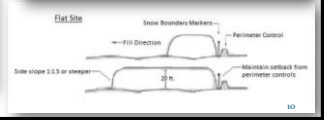
Snow Management

Snow Barrier Fencing

Snow Storage Site
Best Management Practices (BMPs)



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Working together for healthy watersheds

Riparian Habitat Improvements

Managing riparian areas to regain beneficial functions

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Working together for healthy watersheds

Riparian Habitat Improvements

Managing Invasive Species

Planting Native
Riparian Vegetation

Stabilizing Streambanks
With Bioengineering

Working together for healthy watersheds

How does this benefit me?

- ✓ Increased rent and property value
- ✓ Increased retail sales
- ✓ Energy savings
- ✓ Reduced infrastructure costs
- ✓ Reduced flooding
- ✓ Increased worker productivity and health
- ✓ Public relations and education opportunity

*based on studies by McGraw Hill Construction and the Natural Resource Defense Council. Actual benefits for your project will vary.

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How does this benefit me?

As a partner, JWP will:

- Seek funding for design & construction costs
- Obtain necessary permits
- Identify partners and leverage volunteers
- Manage construction
- Conduct PR for project

All we need from you is a letter of support

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Successful projects

Jordan Creek Rain Garden and Snow Barrier Fence (currently in progress)

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Successful projects

Jordan Creek Riparian Enhancement @ Jordan Ave. and Trout St. Bridges


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Successful projects

Jordan Creek Bank Stabilization, Snow Barrier, and Riparian Enhancement

17

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More Information

- JWP's website: www.juneauwatersheds.org
- Green Infrastructure Resources for Alaska:
  - City and Borough of Juneau (CBJ). 2010. Manual of Stormwater Best Management Practices. http://www.juneau.org/engineering/SW_BMP/documents/Aug_2010_Manual_Stormwater_BMPs_000.pdf
  - Fairbanks Green Infrastructure Group http://www.fairbankssoilwater.org/resources-green-infrastructure.htm
  - MOA Watershed Management Services. 2008. Low Impact Development Design Guidance Manual. http://www.muni.org/Departments/works/project_management/Publications/LID_Design_Guidance_1208.pdf

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Working together for healthy watersheds

Questions? Interested in a project?

- Please don't hesitate to contact us:

Amy Sumner, JWP Project Coordinator
907-723-4969
juneauwatersheds@gmail.com

Angie Flickenger, SAWC Program Director
907-231-1710
angie@sawcak.org

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Thank you!

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Appendix F.

PHOTO LOG

EDWARD K. THOMAS BUILDING
JORDAN CREEK
GREEN INFRASTRUCTURE PROJECT
PHOTO LOG

JUNEAU WATERSHED PARTNERSHIP

SOUTHEAST ALASKA WATERSHED COALITION

CONNECT - INFORM - PARTICIPATE

JUNEAU WATERSHED PARTNERSHIP

Our mission is to promote watershed integrity in the City and Borough of Juneau through education, research and communication while encouraging sustainable use and development.

Organization Name: Southeast Alaska Watershed Coalition/
Juneau Watershed Partnership

Contact: Amy Sumner, Project Coordinator

Mailing Address: PO Box 35132
Juneau, AK 99803-5132

Email: juneauwatersheds@gmail.com

Acknowledgements:
The JWP and SAWC would like to acknowledge the support of: the Central Council of Tlingit and Haida, for their overall project support; SOURCE, LLC for donation of staff and equipment time in construction; U.S. Fish and Wildlife Service for their for continued project advice; the Trout Unlimited and Wells Fargo, for their help in recruiting volunteers; and all volunteers who participated in the project.

The Jordan Creek Green Infrastructure Interpretive Sign was fabricated by Wilderness Graphics, Inc. and the frame was designed and constructed by Icy Straits Lumber and Milling, Inc. The sign content was developed in-house, with graphic design help from Kristy Sumner.

Cover Photo: Completed Rain Garden on Jordan Creek, June 11, 2016.

This project has been funded in part by the U.S. Environmental Protection Agency (EPA) under assistance agreement number (BG-00J84602) to the Department of Environmental Conservation (DEC) through the Alaska Clean Water Actions (ACWA) Program, and in part by a National Fish and Wildlife Foundation (NFWF) Wells Fargo Environmental Solutions for Communities Grant. The content of this document does not necessarily reflect the view and policies of the funders, nor do the funders endorse trade names or recommend the use of commercial products mentioned in this document.

Pre- and Post-Construction PhotoLog

This photo log contains photographs of:

- The Edward K. Thomas Building Green Infrastructure project site prior to construction (Figures 1 – 6);
- The volunteer work on September 25 and 26, 2016 installing the cedar split rail fence and planting riparian vegetation (Figures 7 – 17);
- The cedar split-rail fence and riparian plants post-construction/post-planting (Figures 18 – 21);
- Start of excavation of the rain garden (Figures 22 – 23);
- Snow plowed into the riparian area prior to placement of concrete barriers (Figures 24 – 25);
- The concrete barriers (post-construction photos only, Figures 26 – 27);
- The temporary diversion ditch (Figure 28);
- The Spring site assessment (Figures 29 – 33);
- Final construction and planting activities (Figures 34 – 37)
- Finished rain garden and rock swale (Figures 38– 39)
- Interpretive sign (Figure 40)

Additional photos by SAWC can be accessed online at https://flic.kr/s/aHskkEynfz

Figure 1. Northern most end of property, looking south. Photo taken June 2015.

Figure 2. North side of the Edward K Thomas Building, looking east toward back parking lot. Photo taken June 2015.

Figure 3. North side of the Edward K Thomas Building, looking east toward back parking lot. Note the sediment from melted snow. Vegetation not yet emerged. Photo taken April 2014.

Figure 4. Edge of back parking lot, behind the Edward K Thomas Building. Photo taken June 2015.

Figure 5. Edge of driver training area where the rain garden will be located. Photo taken June 2015.

Figure 6. The Edward K Thomas Building project site during a rain event with stormwater run-off draining towards Jordan Creek, which is in the background.

Figure 7. Volunteers unloading lumber for the cedar splitrail fence. Photo taken September 2015.

Figure 8. Lumber placed for cedar fence. Photos taken September 2015.

Figure 9. A potted willow waiting to be planted. John Hudson, getting ready to plant another willow. Photos taken September 2015.

Figure 10. Installing the first length of fence. Photos taken September 2015.

Figure 11. Installing the first length of fence. Photos taken September 2015.

Figure 12. Post-hole digging with an auger. Photos taken September 2015.

Figure 13. More action with the auger. Photos taken September 2015.

Figure 14. Volunteers hard at work. Photos taken September 2015.

Figure 15. Plants waiting to go into the ground. Photos taken September 2015.

Figure 16. Volunteer planting near the streambank of Jordan Creek. Photos taken September 2015.

Figure 17. Our youngest volunteer, Seamus, with his mom, Maura, who is also on the JWP Board. Photos taken September 2015.

Figure 18. The final product. Photos taken September 2015.

Figure 19. The finsihed fence along the back of the Edward K Thomas Building. Photos taken September 2015.

Figure 20. Riparian plantings a few days after being put in the ground. Photos taken September 2015.

Figure 21. Riparian plantings a few days after being put in the ground. Photo taken September 2015.

Figure 22. Start of rain garden excavation. Photo taken November 2015.

Figure 23. Close-up of the rain garden excavation. Photo taken November 2015.

Figure 24. Snow plowed into area with new riparian plantings. Photo taken November 2015 by DEC.

Figure 25. Snow plowed into area with new riparian plantings. Photo taken November 2015 by DEC.

Figure 26. Concrete barriers protecting riparian area. Photo taken December 2015.

Figure 27. Concrete barriers protecting rain garden. Photo taken December 2015.

Figure 28. Diversion ditch to divert run off into the excavated hole that will eventually become the rain garden. Photo taken April 2016.

Figure 29. Spring assessment of riparian plantings along the back edge of the property, with a close up to show leafing. All plantings in this location appear to be successful, as this is the most protected location. Photos taken by JWP on April 15, 2016.

Figure 30. Spring assessment of riparian plantings at the back corner of property looking downstream (left) and upstream (right). Winter plowing caused the leaf and sediment deposits prior to placement of the concrete barriers. This location is the most impacted from last winter. Photos taken by JWP on April 15, 2015.

Figure 31. Spring assessment of riparian plantings at the back corner of property with examples of plants that were damaged (left) and plants that are thriving (right). This location is the most impacted from last winter. Photos taken by JWP on April 15, 2016.

FIgure 32. Spring assessment of riparian plantings at the front corner of the property. Winter plowing caused the leaf and sediment deposits prior to placement of the concrete barriers. However, this location was not as impacted as the back corner from last winter. Photos taken by JWP on April 15, 2016.

Figure 33. Spring assessment of riparian plantings at the front corner of property with examples of plants that were damaged (left) and plants that are thriving (right). This location was mildly impacted from last winter. Photos taken by JWP on April 15, 2016.

Figure 34. Start of the final construction of the rain garden on May 28, 2016. Photos taken by JWP.

Figure 35. Construction of the rain garden and rock swale continues. The rock swale excavation (left) and placement of drain rock and top soil in the rain garden (right). Photos taken by Dave Hanna, SOURCE, LLC., on June 9, 2016.

Figure 36. Another view of the drain rock and top soil in the rain garden, at various stages of placement. Photo on left taken by Dave Hanna, SOURCE, LLc., on June 9, 2016. Photo on right taken by JWP on June 11, 2016 prior to planting.

Figure 37. Volunteers working in the rain garden. Photos taken by Gretchen Pikul, DEC Project Manager on June 11, 2016.

Figure 38. Photos of the completed rain garden from different angles. Photos taken by JWP on June 11, 2016.

Figure 39. Photos of the completed rock swale. Photos taken June 17, 2016 by Dave Hanna with SOURCE, LLC.

Figure 40. Views of the Jordan Creek Green Infrastructure Interpretive Sign. The content of the sign was created in-house. Wilderness Graphics, Inc fabricated the sign and Icy Straits Lumber and Milling, Inc designed and constructed the mounting frame. Photos taken June 29, 2016 by JWP.