

Columbia Slough
Watershed Council's

Five Year Stewardship Action Plan 2018 - 2023

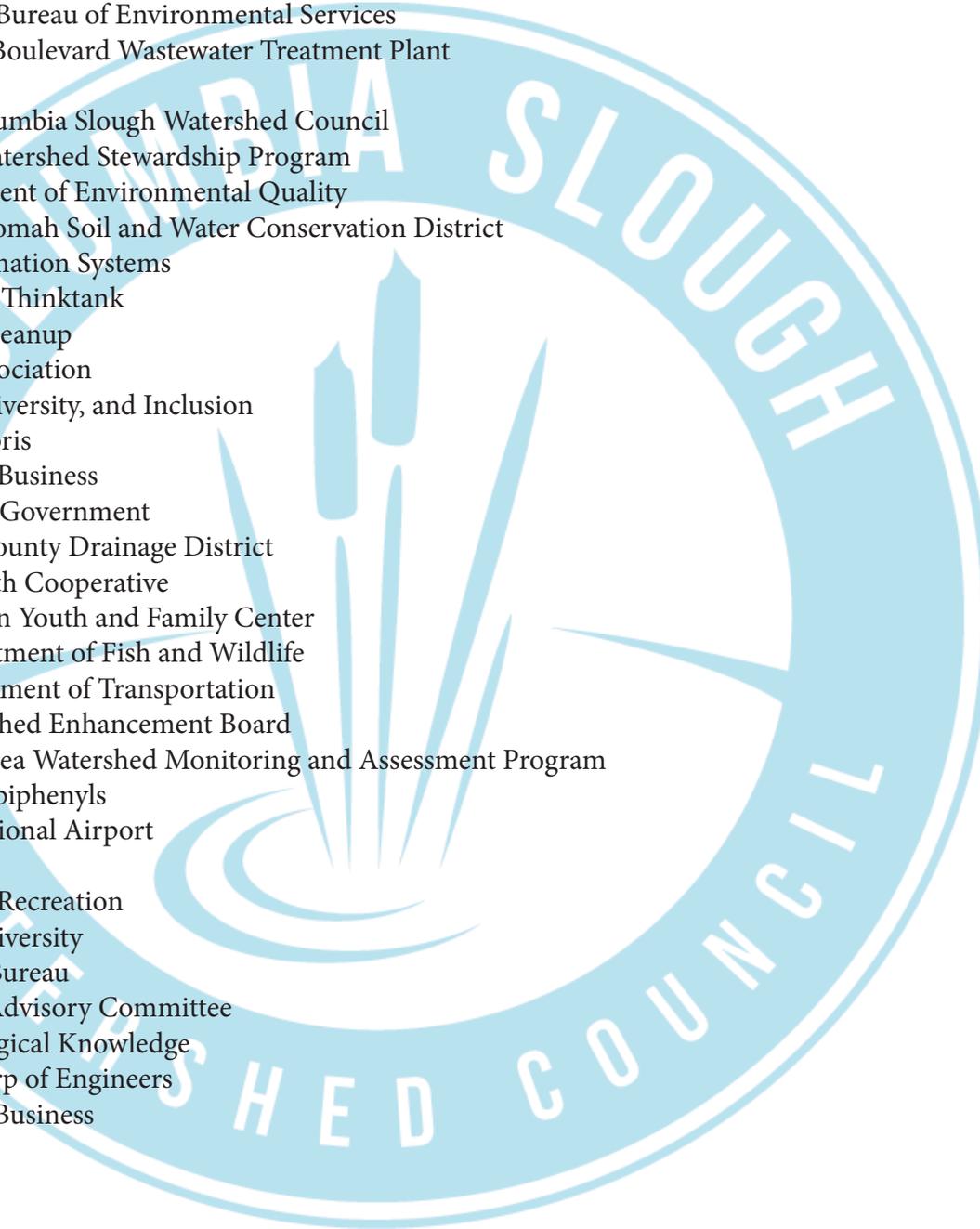




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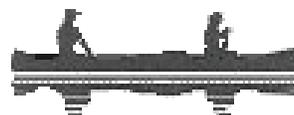
Acronyms



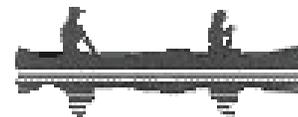
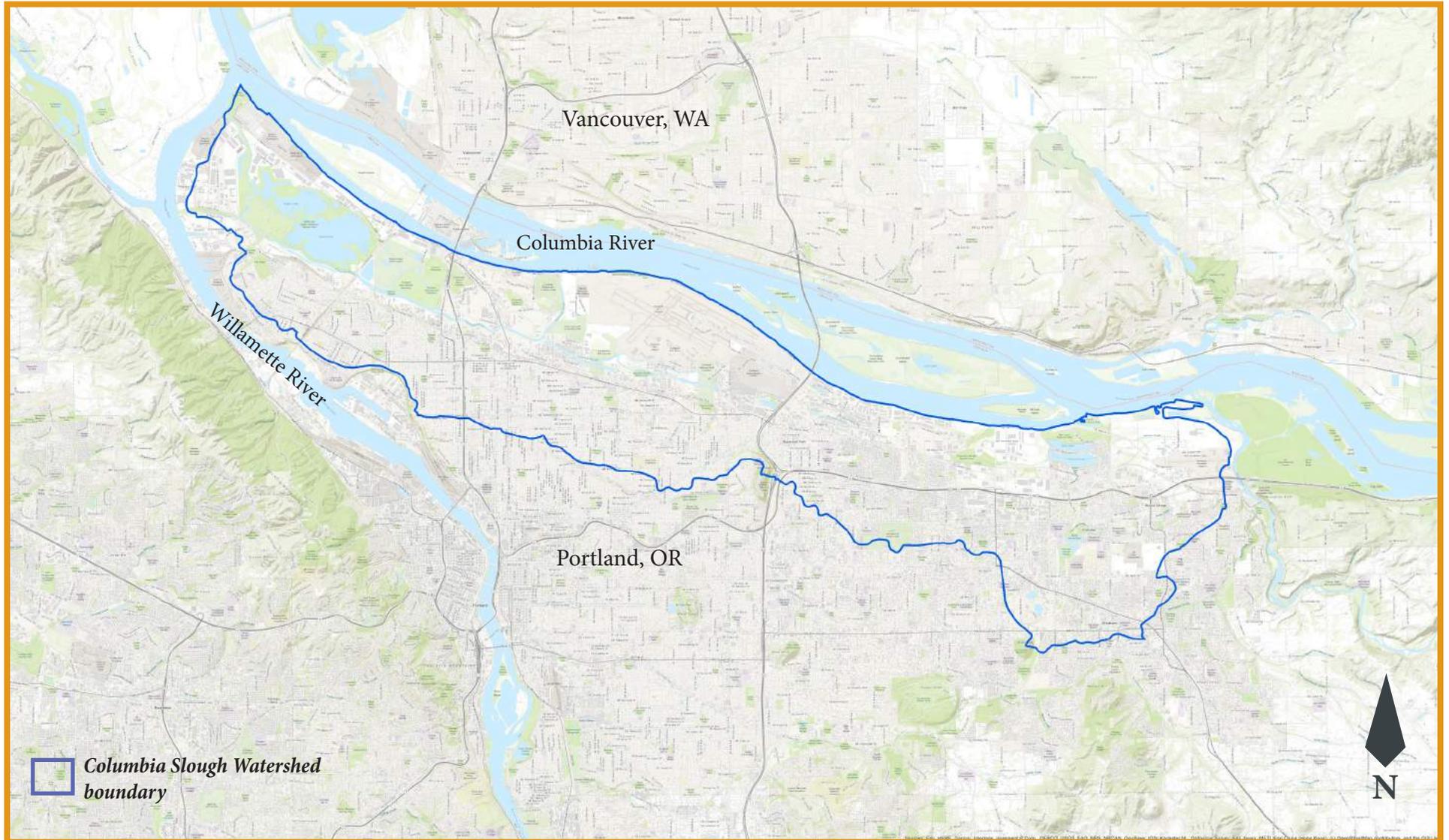
BES - City of Portland's Bureau of Environmental Services
CBWWTP - Columbia Boulevard Wastewater Treatment Plant
COG - City of Gresham
CSWC or Council - Columbia Slough Watershed Council
CWSP - Community Watershed Stewardship Program
DEQ - Oregon Department of Environmental Quality
EMSWCD - East Multnomah Soil and Water Conservation District
GIS - Geographic Information Systems
GRiT - Green Roof Info Thinktank
GSCU - Great Slough Cleanup
HOA - Homeowner Association
JEDI - Justice, Equity, Diversity, and Inclusion
LWD - Large woody debris
MBE- Minority Owned Business
Metro - Metro Regional Government
MCDD - Multnomah County Drainage District
MYC - Multnomah Youth Cooperative
NAYA - Native American Youth and Family Center
ODFW - Oregon Department of Fish and Wildlife
ODOT - Oregon Department of Transportation
OWEB - Oregon Watershed Enhancement Board
PAWMAP - Portland Area Watershed Monitoring and Assessment Program
PCBs - Polychlorinated biphenyls
PDX - Portland International Airport
Port - Port of Portland
PPR - Portland Parks & Recreation
PSU - Portland State University
PWB - Portland Water Bureau
Tech Team - Technical Advisory Committee
TEK - Traditional Ecological Knowledge
USACE - U.S. Army Corp of Engineers
WBE - Women Owned Business
WP - Work Plan

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Map of the Columbia Slough Watershed



Executive Summary

The Columbia Slough Watershed comprises approximately 37,700 acres of uplands, as well as a system of wetlands, marshes, lakes, and channels. The main channel of the Slough is approximately 19 miles long, with an additional 30 miles of smaller waterways including Fairview Creek, an important tributary which contributes to the Slough's headwaters.

The Columbia Slough and its smaller waterways act as an ecological refugium in the greater Portland metropolitan landscape. While the watershed contains Oregon's largest industrial area and is home to over 186,000 people, it also provides habitat for fish, waterfowl, mammals, amphibians and reptiles, and hundreds of birds. The Columbia Southshore Wellfield, also in the Slough watershed, is the secondary source of drinking water for the region, providing 8 million gallons of clean drinking water a day to businesses and communities from deep underground aquifers.

In 2003 the Columbia Slough Watershed Council released a ten year action plan (2003-2013) which outlined a series of projects and programs that would enhance healthy habitats and clean water. Now more than 15 years later, the Council's Stewardship Program revisited projects in collaboration with community stakeholders to prioritize for another five year plan (2018-2023). This document is a result of that planning process.

In order to determine what projects or programs would be carried forward or added as potential new projects, the Council created a Technical Advisory Committee



22

Technical experts who contributed input



17

Agencies, nonprofits and partners participated

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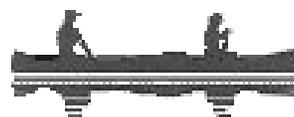
Figure-1 A snapshot of stakeholder input into the Stewardship Action Plan.

to set the objectives and priorities for the Council over the next five years. Members of the Tech Team come from city, regional, and state government, businesses, special districts, non-governmental organizations, and neighborhood associations.

Community feedback on general goal setting for the Council was gathered at several of the larger festivals in the summer of 2017. The Council Board of Directors were also consulted via an online survey and a working group session.

The information gathered from this process focused the Council's work into 5 overarching objectives:

1. Continue and expand restoration and habitat enhancement projects in the watershed.
2. Continue and expand Slough trash clean up program.



Executive Summary

3. Strengthen stormwater management program by developing green infrastructure projects and partnerships.

4. Expand and continue community partnerships in support of the Council's justice, equity, diversity and inclusion goals (JEDI).

5. Build Council capacity to engage in land use planning processes and decisions.

Each of the projects in the master list embody one or more of these goals. The list was then evaluated through a lens of different criteria to rank the projects for prioritization.

The criteria used were:



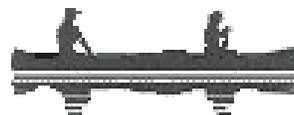
Dawn rising over Whitaker Ponds Nature Park.

- the physical environment
- habitat connectivity,
- community benefits,
- consistency with other plans,
- implementation,
- and lasting impact

In addition, the Council's potential role in a project was assigned as either a Lead/Co-Lead, Partner, or Advocate. This was an important distinction since many partners lead and invest in enhancing the slough and its waters outside of the Council. This helps define how the Council can support projects and programs without taking on a leadership role in every single one.

Project ranking and role assignment allows the Council and the Stewardship Director to focus on developing and implementing projects where we can best leverage our strengths and assets. The complete list of projects, the ranking methodology, and maps can be found in the Appendices. Several top and high priority projects are described in this document, highlighting current progress and accomplishments over the last two years.

This five year plan is meant to be a guiding document but is also meant to be a living document. The Council's Tech Team will review and update the list of projects and add new ones as the watershed and its land and water change over time.





Aerial view looking east, where the Columbia Slough, the Columbia River and the Willamette River converge at Kelley Point Park in North Portland.

Introduction

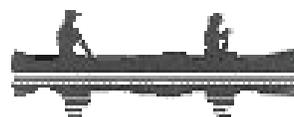
The Columbia Slough is a vital resource for our region.

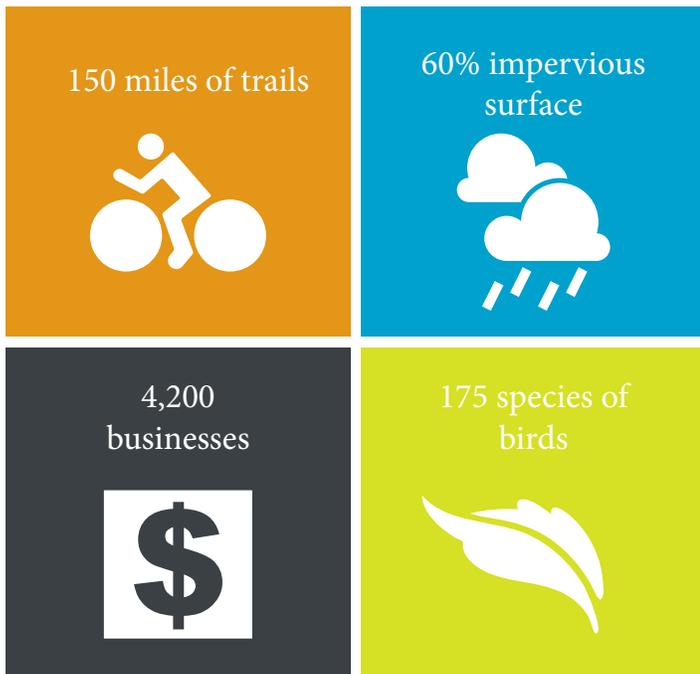
The Columbia Slough Watershed comprises approximately 37,700 acres of uplands, as well as a complex system of wetlands, marshes, lakes, and channels. The main channel of the Slough is approximately 19 miles long, with an additional 30 miles of smaller waterways including Fairview Creek, an important tributary which contributes to the Slough's headwaters. The Columbia Slough and its smaller waterways act as an ecological refugium in the greater Portland metropolitan landscape. While the watershed contains Oregon's largest industrial area and is home to over 186,000 people, it also provides

habitat for fish, waterfowl, mammals, amphibians and reptiles, and hundreds of birds. The Columbia Southshore Wellfield, also in the Slough watershed, is the secondary source of drinking water for the region, providing 8 million gallons of clean drinking water a day to businesses and communities from deep underground aquifers.

A Resource for Wildlife

The Columbia Slough is home to 175 bird species, 26 fish species, 28 mammal species, 7 amphibian and reptile species, and over 131 plant species. The Columbia Slough is an important regional floodplain habitat that supports connectivity from the Columbia River to upland habitats and is an important migratory stopover for birds traveling along the Pacific Flyway. Local government bureaus like Portland Parks





Designed by Omelapics / Freepik

Figure-2 Facts about the Columbia Slough Watershed.

& Recreation own and manage important natural areas like: Big Four Corners, Johnson Lake, Whitaker Ponds, and Kelley Point Park to name just a few. The regional government Metro, owns and manages Smith and Bybee wetlands, a 2000 acre wetland complex, the largest urban freshwater wetland in the U.S. Besides acting a refuge for biodiversity these natural areas provide physical benefits to the environment in the form of shade and cooling, water absorption and storage, reduced flooding, pollution and nutrient filtration, and reduced erosion.

A Resource for the People

The watershed is an important regional economic hub and transportation corridor. Portland International Airport (PDX) is located within the floodplain, where 17 million passengers passed through in 2015 alone. Port Marine Terminals off load into the watershed for regional distribution through highly built transportation infrastructure. Three interstates distribute goods via trucks and a regional freight network sees an estimated 250,000 rail cars

pass through each year. The watershed is home to 88,000 jobs from 4200 businesses in the Portland-Vancouver region. A 27 mile levee system protects this built environment from flooding with special drainage districts operating pump stations and maintaining levee integrity.

The Columbia Slough is also a popular destination for recreational paddlers. The waters of the slough are flat and slow moving, a perfect waterway for people learning to paddle. Public boat launches exist along the slough for recreational access; however these sites are in jeopardy of closure due to illegal dumping, camping, land use impacts, and private ownership. Multiple regional trails are located within the watershed. The 40 mile loop trail is near continuous along Marine Dr. and important connectors are being planned like the North Portland Greenway. Some sections of the Columbia Slough Trail are constructed but many remain incomplete or with no site plans or easements. Organizations like Living Cully with support from the Council are leading the effort to connect residents in Northeast Portland.

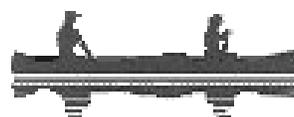
This unique urban watershed faces challenges related to intensive land use and development.

The Columbia Slough watershed is one of the



Photo credit: Laurie Bower

A butterfly visits an aster (Symphyotrichum spp.) for nectar.



most urban watersheds in the state of Oregon. The important opportunity for commerce and jobs and housing also poses natural resource challenges that affect people and wildlife.

Economic activity has shaped the landscape over the last 100+ years, altering the natural habitat and displacing indigenous and marginalized communities. Development impacts on the Slough manifest in several ways: fragmented natural areas, limited natural habitat, impervious surfaces, trash and pollution. Natural areas in the Slough watershed tend to be small and narrow. Fragmented natural areas have reduced ecological value, are vulnerable to invasive species and habitat degradation, and require significant maintenance to preserve. Only 12% of the watershed is zoned open space (BES, 2005), with much of this land in the form of golf courses. Native tree and shrub cover is limited in sections of the Slough, and invasive species like English ivy and Himalayan blackberry occur throughout. These invasive plants limit native plant diversity, reduce habitat for wildlife, and accelerate erosion of riparian areas, which further reduces water quality and in-stream habitat.

Impervious surfaces on commercial and residential properties throughout the watershed prevent water from infiltrating into the ground and the resulting runoff carries pollution and trash into the slough. Trash is direct result of a highly urbanized watershed with a series of high-traffic transportation corridors crisscrossing its length. Because the Slough is located in an area of high population density and is used by many houseless individuals for camping, illegal dumping and improper disposal of waste are significant issues. Additionally, pollution from historic and current industrial land uses and economic activity contributes to the decline in water quality and habitat of the Slough.

The Columbia Slough has a long history.

Prior to the arrival of European colonizers, the Columbia Slough was a natural, resource-rich system of flood plains and channels seasonally inundated by the Columbia River. Indigenous peoples, namely

the Upper Chinook fished, traded and traveled along the interconnecting channels of the Slough. The population of villages along the Columbia River and the Columbia Slough would swell with tens of thousands of people during peak seasons for harvesting and fishing. European colonizers displaced indigenous peoples from the region, but many tribes and community organizations are active in restoring, stewarding, and recreating in the watershed today.

The city of Portland was established in the 19th century, and much of the Columbia River floodplain was altered for use as agriculture and logging. At the turn of the 20th century, shipbuilding became a major industry in Portland. In the 1920s, The US Army Corps of Engineers and the Multnomah County Drainage District ditched and diked much of the floodplain to drain natural wetlands and ponds for

Land use in the Columbia Slough

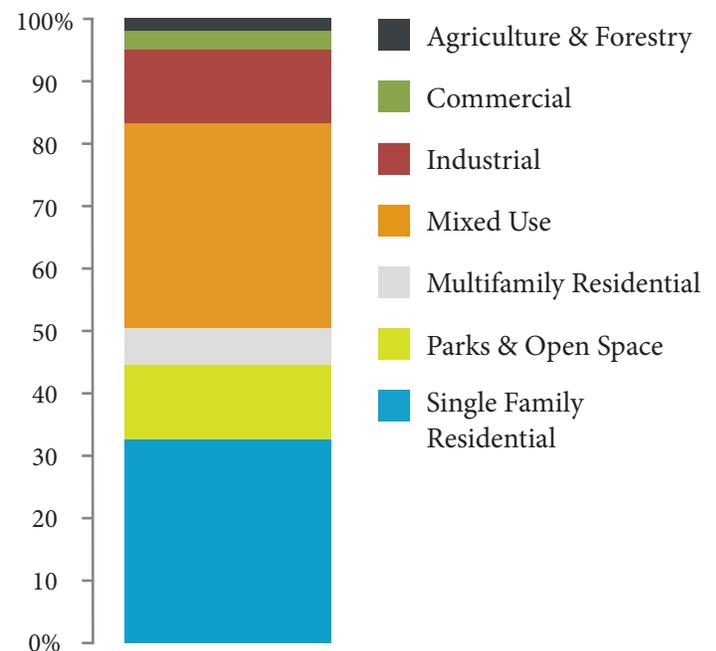
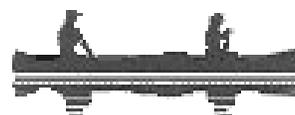


Figure-3 The Columbia Slough is one of the most urban watersheds in the state of Oregon. Land use impacts from urbanization pose unique challenges and opportunities for this watershed.

Data source: City of Portland, Columbia Slough Land Use Characterization, 2005



flood control to protect new land uses, creating the channelized form of the Slough we see today. Industry, in the form of iron works, logging mills, stockyards, and slaughterhouses sprung up along the banks of the Slough. Much of the waste discharged from these industries flowed directly into the Slough. World War II saw a revival of shipbuilding in the watershed and the City of Vanport was built to house workers. On Memorial Day in 1948, a levee broke, flooding Vanport and creating the largest mass displacement of people in the state of Oregon. The flood significantly impacted people of color who were only permitted to live in certain parts of the City of Portland due to discriminatory housing practices of the time.

In the last 50 years, the watershed has seen further development including an international airport (PDX), transportation corridors, residential housing and businesses. It wasn't until the 1990s that the city of Portland began zoning for ecological buffer zones along the Slough and managing stormwater to control combined sewer outfalls that were discharging during large storms. Many investments in stormwater infrastructure including an expanded combined sewer-stormwater piping system, bioswales, street tree plantings, downspout disconnections, and the acquisition of wetlands for flood storage, have helped to improve and reduce discharges into the Slough.

Today, many partners work together to improve the Columbia Slough and its watershed.

The Slough is cleaner than it has been in 100 years, but we still have much work to do to make it a healthy place for humans and wildlife. Each year, more and more community partners come together to help restore the Columbia Slough.

These community partners make up the nonprofit organization called the Columbia Slough Watershed Council. Composed of government agencies, nonprofits, neighborhood associations, recreationalists, and individuals, the Council's mission is to "protect and enhance the Columbia Slough and its watershed through community engagement, education, and restoration." The Council accomplishes

these goals through three core program areas: education, events, and stewardship. These three program areas are not independent from each other, rather there is significant overlap. However this action plan focuses on the Stewardship Program and its steps towards achieving the Council's mission.

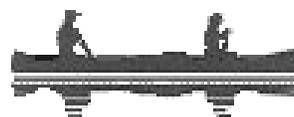
The Stewardship Program partners with many different businesses and community groups in volunteer led restoration. In fiscal year 2017-18, 28 unique businesses and community organizations came out to participate in Stewardship Saturdays, trash clean ups, or private team building events. These groups and individuals contributed 2300+ hours of on-the-ground restoration at 25 sites in the watershed. Volunteers planted 10,000 native trees, shrubs, and herbs and removed 15,000 square feet of invasive species. Clean up of garbage at sites and in-water resulted in 18 cubic yards of trash removed or diverted from the Columbia Slough.

These organizations represent a diverse group of interests and individuals. Groups that volunteer with the Council are: Apex, Blueprint Foundation, Boeing, Boy Scouts of America, College Possible, Creek College, Friends of Baltimore Woods, Friends of Smith

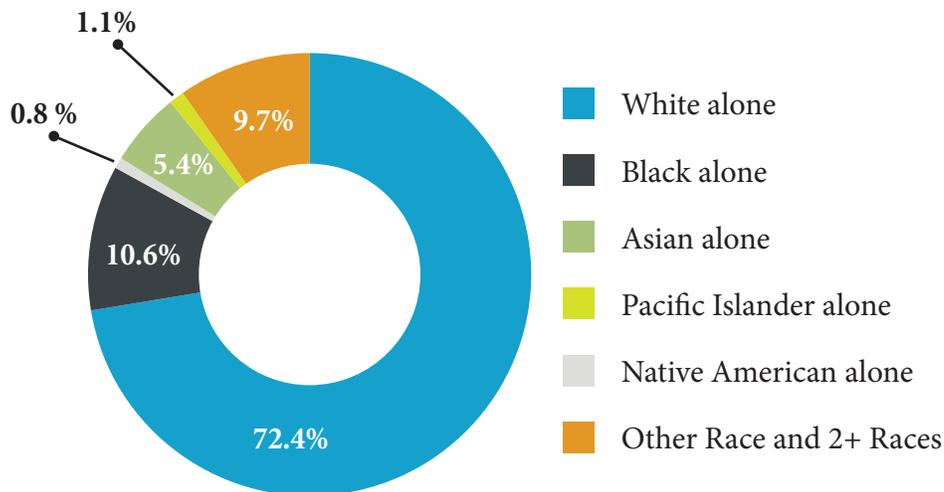


Photo credit: Port of Portland

A young volunteer pulls English ivy (Hedera helix) during a stewardship event.



Graph of Community Diversity in the Columbia Slough



Source: American Community Survey 2011 - 2015

and Bybee, Habitat 4 Humanity, Key Bank, Lever Architects, McKinstry, Murraysmith, New Seasons, Oregon Zoo ECO Team, On Semiconductor, Outside In, Purdy, Rebound, River City Environmental, The Nature Conservancy, and many more.

Many nonprofits serve minority or marginalized communities as leaders in habitat restoration in the watershed and are integral partners with the Council on our own projects. An example is Wisdom of the Elders, a indigenous led nonprofit that trains other Native Americans in traditional ecological knowledge (TEK) restoration techniques and workforce development. Wisdom of the Elders is involved throughout the region lending expertise in restoring habitat and partners with the Council at Woodland Elementary and the Parkrose Community boat launch. Verde, a Latinx led nonprofit and another strong partner of the Council's, has built a thriving landscape program providing job skill training and living wage jobs to the Cully neighborhood. Verde created a rain gardens program and invited the Council to help expand to new community partners to provide better stormwater management to low income private homeowners in Cully. These community leaders demonstrate how stewardship can be done in a social and equitable way. The Council is

Figure 4 - The Columbia Slough has more racial diversity than the City of Portland as a whole, making watershed health and environmental justice a priority for the Council.

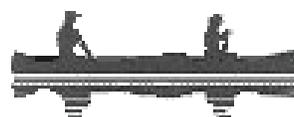


Photo credit: Nick Calabrese

Mt. Hood, an iconic Portland area volcano, seen towering in the distance from the Slough.

proud to support and elevate their work for healthier watersheds.

In addition to volunteer labor, many businesses and agencies provide in-kind support or direct funding to the Stewardship Program. This financial assistance is critical and supplements the generous funding we receive from our agency partners through grant





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Figure 5 - More facts about the Columbia Slough Watershed.

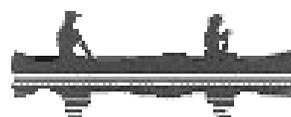
programs. Agencies who contribute as major funders to the Stewardship Program are: City of Portland’s Bureau of Environmental Services, East Multnomah Soil and Water Conservation District, Multnomah County Drainage District, Oregon Department of Environmental Quality, Oregon Watershed Enhancement Board, and the Port of Portland. Through the Council’s Tech Team, the Stewardship Director brings stakeholders and experts together to help plan and assess restoration and stewardship work in the watershed. The Tech Team includes members from the Audubon Society, Apex Companies, City of Gresham, City of Portland’s Bureau of Environmental Services, East Multnomah Soil and Water Conservation District, Fairview Neighborhood Association, Metro, Multnomah County Drainage District, Nadaka Nature Park, Native American Youth and Family Center, Oregon Department of Environmental Quality, Port of Portland, Portland Parks & Rec, and Verde.



Volunteers plant ferns at Alberta Park to create new habitat in the developed park.



Volunteers paddle recycled Christmas trees to engineered log jams to add as small woody debris for aquatic species’ habitat.



History and Accomplishments from 2003-2013

The Columbia Slough Watershed Council developed a ten year Action Plan for 2003-2013. Many of the projects and programs from that plan were implemented by the Council and its community partners; however the Council felt the plan needed revisiting to update the status of projects and determine new priorities. This led to a collaborative effort to create a new five year plan which refocuses the stewardship efforts within the watershed. Several projects were carried over from the 2003-2013 plan which were never completed due to lack of time, resources or other variables. Reviewing the old action plan also allows us to highlight past successes. Below are highlights of projects accomplished at enhancing the Columbia Slough with our many partnerships. For more information about completed projects and successes visit the old plan here.



Photo credit: Nick Calabrese

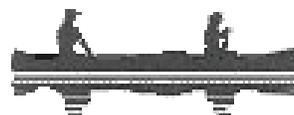
Great blue heron (Ardea herodias) feeding in Smith and Bybee Wetlands, the largest freshwater urban wetland in the U.S.



Figure 6 - Total number of projects completed in the 2003-2013 Watershed Action Plan.

Examples of completed projects:

- CSWC, PPR, and BES revegetated land around Whitaker Ponds' East Pond.
- CSWC constructed a rain garden to infiltrate runoff from the Council's buildings.
- BES improved fish habitat conditions in the Lower Slough by constructing 35 large woody debris (LWD) structures.
- BES and PPR resolved wildlife pinch point at the 142nd cross levee by purchasing 23.5 acres of forested land on adjacent properties and designating them as natural areas.
- The Port of Portland constructed Old Time Rd undercrossing in the Rivergate industrial district to allow for the safe passage of wildlife through this busy freight corridor.
- The City of Fairview preserved and enhanced land around Osbourne Creek, one of the few surface creeks that flow into Fairview Lake.
- BES and USACE replaced six culverts on the mainstem and Whitaker Slough with bridges to allow for greater fish passage and water flow.
- DEQ monitored Johnson Lake's sediment cleanup which placed a cap over contaminants on the lake's bottom.
- The City of Gresham acquired Nadaka Nature Park and supported community led stewardship.



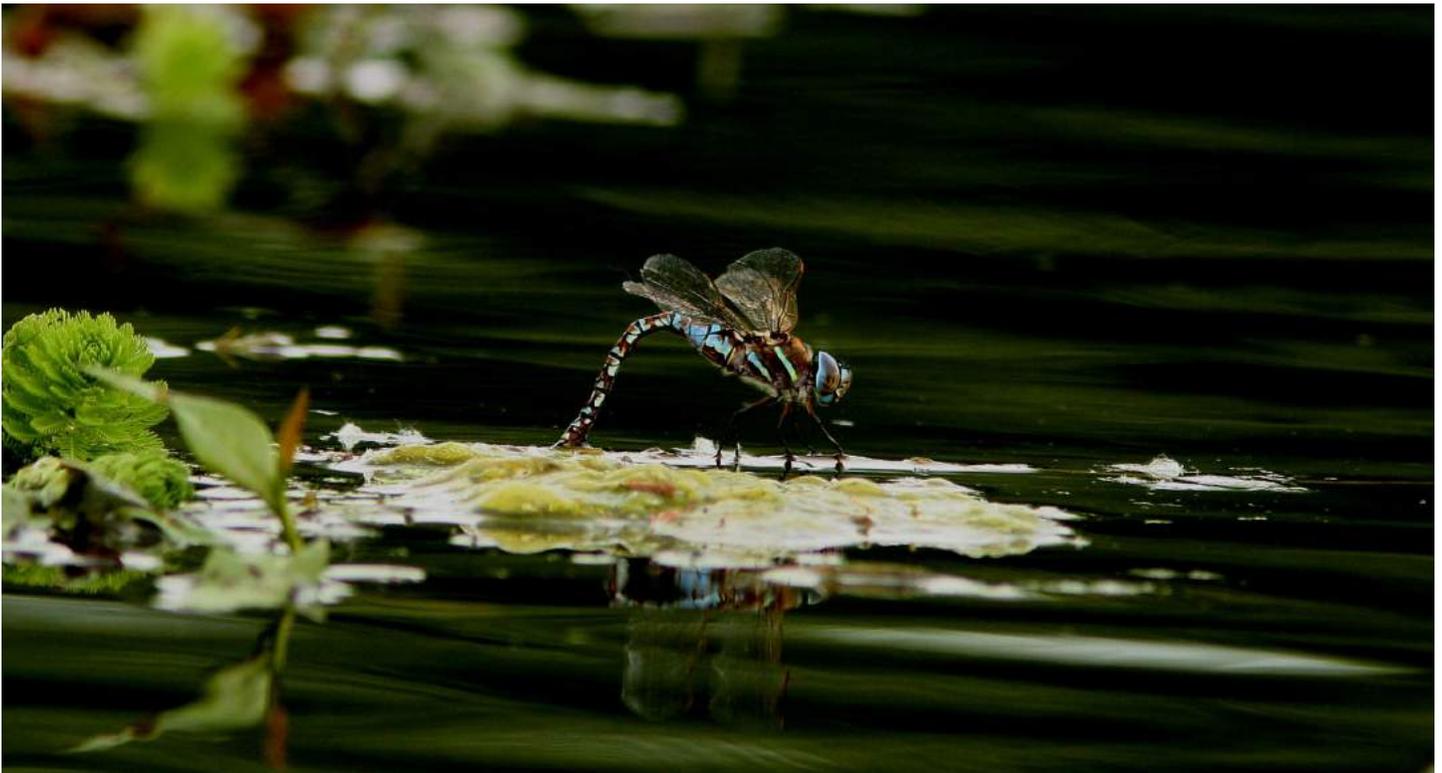


Photo credit: Nick Calabrese

A dragonfly lays its eggs in the Columbia Slough. Dragonflies in their larval stage are important aquatic predators.

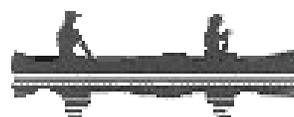
Stewardship Program Plan 2018-2023

Section 1. Overview, Objectives & Goals

The Council's vision for the next five years is one of maturation. The Council has built its stewardship program deliberately over the past ten years with numerous project successes. These include partnerships with businesses and private and public landowners in the watershed. The goal for the next five years is to solidify the Council's stewardship work in the community by strengthening and advancing our current programming.

From 2018-2023 the Council will focus on the following five objectives:

1. **Continue and expand restoration and habitat enhancement projects in the watershed.**
2. **Continue and expand Slough trash clean up program.**
3. **Strengthen stormwater management program by developing green infrastructure projects and partnerships.**
4. **Expand and continue community partnerships in support of the Council's justice, equity, diversity and inclusion goals (JEDI).**
5. **Build Council capacity to engage in land use planning processes and decisions.**



1. Continue and expand restoration and habitat enhancement projects in the watershed

The Council has built its Stewardship Program deliberately over the past ten years with numerous project successes, including restoration and enhancement partnerships with public agencies and community partners like private industrial and residential landowners. Our restoration and enhancement projects have increased and protected habitat for fish and wildlife, removed invasive species, and increased tree canopy to shade and cool the Slough's waters. As a result, the Slough is cleaner and contains better habitat than it has in the last 100 years. Moving forward into this five-year plan, the Council plans to protect our current investments in important restoration projects as well as expand our work into new sites.



Photo credit: Laurie Bower

Salmonberry (Rubus spectabilis), a native shrub found along the Columbia Slough.

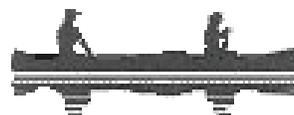
Our five-year goals in this category include:

1a) Develop a Stewardship Portfolio The Council is currently revisiting past project sites to assess conditions and develop long-term maintenance regimes and schedules as part of a Stewardship Portfolio. The organized Stewardship Portfolio will allow the Council to manage restoration and habitat enhancement sites more efficiently, reducing the investment of labor and resources needed to maintain projects over the long term. The Portfolio will also support Stewardship Saturdays by helping to facilitate better internal planning and planning with partners. The Portfolio and schedule will also be used in outreach to landowners as we seek to develop new restoration partnerships. Work on the Portfolio has already begun with an inventory of past restoration sites in 2017-2018. This inventory will be used to create a geodatabase of projects to improve strategic planning for the Stewardship Program and tracking restoration work over time at each site.



Photo credit: Nick Calabrese

Pacific chorus frog (Pseudacris regilla) on a leaf, one of several native species of Pacific Northwest amphibians found in the slough.



1b) Routinely conduct stewardship maintenance at all sites as determined necessary within the Council's existing restoration portfolio. The goal is to routinely assess the quality of previous restoration work and prioritize sites for continued enhancements.

1c) Establish the maximum number of new restoration sites possible. New sites will be determined using this plan as a guide and capitalizing on high priority opportunities as they arise. The number of new sites will depend on available Council resources and Stewardship Director capacity. Additional capacity can be reached as the Council passes off sites to partners for maintenance.

1d) Continue quarterly Tech Team meetings with local and regional partners. The CSWC Tech Team is a forum where technical experts can share information, brainstorm ideas, and provide feedback to the Council's Stewardship Program. Tech Team meetings are also an opportunity to build consensus and partnership among stakeholder groups. The Tech Team will provide a framework in which to gather and evaluate the Council's stewardship program and plan for the next five year action plan.



Photo credit: Connie Gibson

A volunteer at one of the Council's regular Stewardship Saturday work parties plants a native shrub.

2. Continue and expand slough clean up programs

The Council continues to build capacity around litter clean up in the watershed. Due to the Council's work and the work of many partners, the Slough is cleaner than it has been in 100 years. However, the long history of dumping in the Slough and industrial pollution continues to impact Slough health. The Oregon Health Authority recommends limiting consumption of fish from the Slough due to pollution in their tissues, and a large amount of garbage and litter still impacts fish and wildlife habitat and detracts from the beauty of the Slough. Over the years of Council clean up projects and events, we have removed many cubic yards of garbage. Over this five-year plan, we propose to continue our events, plan new events, add staff capacity around Slough clean ups, and

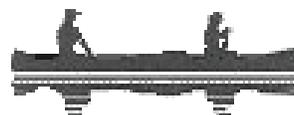
advocate for and support additional clean up efforts in the community.

Our five-year goals in this category include:

2a) Continue and expand the annual Great Slough Cleanup (GSCU) event

The Great Slough Cleanup (GSCU) is a popular summer stewardship event that just celebrated its tenth year in 2017. In past years, the cleanup was limited to one site and one cleanup; however the stewardship program is dedicated to expanding this area of programming for multiple reasons:

1) the event is popular with community members who get a chance to paddle on the water and make a



tangible impact in their community,
2) litter is a serious threat to health and safety, both for humans and wildlife, and
3) these events allow opportunity to provide education and outreach to community groups and businesses within the watershed.

In 2017, the stewardship program expanded the Great Slough Cleanup to four sites throughout the watershed: Kelley Point Park, the Multnomah County Drainage District headquarters, the boat launch at NE 112th, and the 142nd cross levee. In 2018, the GSCU was held at three sites, and was significantly easier to manage than four sites. A similar model of multiple sites will be followed for future Great Slough Cleanups. In addition, due to demand and popularity more frequent spring and autumn cleanups will begin in 2018.

2b) Increase fish consumption advisory outreach

The Council will work with the City of Portland, Multnomah County, the Oregon Health Authority, and

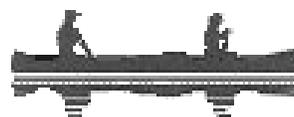
other partners to assess and update fish consumption advisories for the Slough as needed. The Council will increase the knowledge and capacity of staff to facilitate and conduct outreach to the public about fish consumption in the Slough, particularly to vulnerable populations (immigrants, refugees, houseless community, and women of childbearing age).

2c) Continue involvement in toxics reduction and clean up programs

The Council will continue its involvement in the Willamette Toxics Reduction Steering Committee (which connects to the Columbia River clean up efforts), and other community meetings as relevant to advocate for and assist in efforts to improve water quality in the Slough and adjacent connected waterways.



Volunteers pull trash out of the slough during the Great Slough Cleanup.



3. Strengthen stormwater management program

A large portion of the Columbia Slough watershed in Portland is designated as the city's industrial sanctuary, and city planners and developers are continually and actively developing vacant land within the watershed for industrial use. This heavy development pressure, coupled with already narrow riparian borders and few areas of available land for habitat improvement, is a particular challenge to the Council's ability to restore and enhance ecological health in the Slough.

As such, advocating for stormwater management, and implementing new stormwater projects and retrofit projects is an important component of the Council's holistic approach to improving water quality and habitat in the Columbia Slough. Stormwater management reduces water quality impacts of the urban environment, and also beautifies neighborhoods, engages new communities, provides for public demonstration and education, and enhances spaces that are more accessible for residents than many riparian areas.



Photo credit: Matt Lee

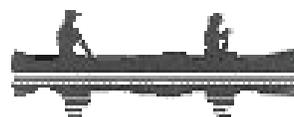
A rain garden installed in the Cully Neighborhood of NE Portland in partnership with Verde and MYC.

Stormwater projects also align with the East Portland Community Action Plan and the City of Portland's Climate Action Plan. The Council plans to expand its stewardship, outreach, and partnerships around stormwater management on private residential and commercial properties within the watershed. The Council will continue to support and partner with other nonprofits that tackle these issues in the watershed.

Our five-year goals in this category include:

3a) Continue and expand Cully rain garden projects
The Council partnered with Verde, a local Latinx led nonprofit based in the Cully Neighborhood, and the Multnomah Youth Cooperative, a youth environmental workforce training program, and installed six rain gardens in the winter of 2018 using funds from CWSP and DEQ's 319 grant program. Looking forward, Verde has already secured funding through the Gray Family Foundation and CWSP to install nine rain gardens on low income private residential properties in the winter and spring of 2019.

3b) Pursue additional stormwater management projects as capacity allows and opportunity arises.
Potential community partners for stormwater projects under this five-year plan include: Depave, Audubon Society, East Multnomah Soil and Water Conservation District, Friends of Trees, Portland Parks & Recreation's Ecologically Sustainable Landscape Initiative, and Green Roof Info Think Tank (GRiT). The Council will research and explore viable options with these partners and the CSWC Tech Team to determine which projects are feasible in the Slough. As new technologies and funding sources materialize this area of watershed health has potential.



4. Expand and continue community partnerships in support of Council’s Justice, Equity, Diversity, and Inclusion goals (JEDI)

The Columbia Slough watershed is one of the most racially and ethnically diverse watersheds in Oregon. The Council highly values social and environmental equity and is focused on developing partnerships with communities of color, working with community partners to plan and implement projects, bringing multicultural perspectives into our restoration work, and following their leadership in project identification, planning, and implementation. Our current community partners include: Verde, Wisdom of the Elders, Native American Family and Youth Center (NAYA), Multnomah Youth Cooperative (MYC), Blueprint Foundation, Outside In, and others. The Council will continue and expand its important community work and partnerships under this five-year plan.

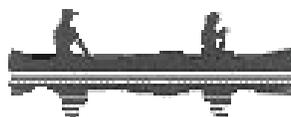
Our five-year goals in this category include:

4a) Partner with the Green Workforce Initiative coalition members to plan projects, secure funding sources to reimburse them for participating, and share our work with more community members.

4b) Continue to seek partnership opportunities with and hire local organizations lead by people of color as restoration contractors and procure supplies and equipment from Minority-owned and Women-owned businesses (MBE WBE). Current partners in this capacity include Verde, Wisdom of the Elders, Blueprint Foundation, and Bosky Dell native plant nursery.



“Ribbon of Agua” mural painted on an old foundation at Whitaker Ponds Natural Area during a previous Explorando el Columbia Slough festival.



4c) Continue to work with Multnomah Youth Cooperative, Summerworks, and Pacific International Academy, to support their interns and provide field learning opportunities and stipends for next generation environmental professionals.

4d) Continue to work with Wisdom of the Elders and Native American Youth and Family Center (NAYA), both Native American lead organizations, to expand partnership and co-plan future projects, bringing in Traditional Ecological Knowledge (TEK) and diversifying cultural perspectives on the relationship to land and water.

4e) Acknowledge at stewardship restoration events native peoples connection to this land and their history living, trading, and managing it for countless generations.

4f) Continue to work with Living Cully on local and regional planning that may involve access to nature and recreation and connect to restoration priorities.

4g) Diversify our volunteer base that participate in Stewardship Programming. Connect with and co-lead restoration with partners to engage new audiences into our programming.

4h) Partner with organizations that do outreach to the houseless community that live in the watershed. The Slough is home to many people who live at the margins. While camping impacts the natural areas of the Slough, the Stewardship Program recognizes the right and need for people to sleep and feel safe. Approaching and engaging with people in a compassionate way and through a lens of trauma informed care can make the difference in the lives of those who have nowhere else to go.

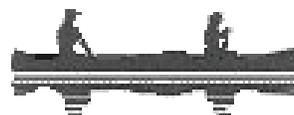
4i) Seek more public involvement and feedback in Stewardship Program planning.



*Photo credit: Jennifer Starkey
A group of students assist on a habitat restoration project through Slough School.*



*Photo credit: Jennifer Starkey
Wisdom of the Elders, an indigenous led environmental nonprofit helps run a restoration event with the Council. Their workforce crews practice traditional ecological knowledge when managing sites.*



5. Build Council capacity to engage in land use planning and decisions

The Council plans to add capacity and focus around our involvement in land use planning for land uses which contribute to poor habitat and water quality. This highly urban watershed provides many opportunities for coalition building around important urban land use issues, namely brownfield restoration and redevelopment. While the Council's stewardship program is not currently setup to lead on this important issue in the short-term, there are steps we can take within this five-year plan to add capacity.

Our five-year goals in this category include:

5a) Our staff will increase their technical understanding of land use planning in the watershed, and will work to build connections with technical experts in the field.

We will have conversations with businesses in the watershed about best practices around restoration and stewardship and how the Council can facilitate this work around businesses' operations, security, and safety.

5b) The Council is also now on the list for review of land use applications in the watershed for the City of Portland, the City of Gresham, and for state agencies. Staff will begin to plug into this review process to increase capacity and understanding of land use issues in the watershed and provide public comment and review.

5c) Another natural role for the Council is to educate the public on local land use issues affecting water quality and increase local knowledge of historical land use impacts and current conditions. This is one example where the Stewardship Program's goals intersect with the Council's Education and Outreach & Events Programs. A prime example of this is Cycle the Wellfield where the Council partners with the Portland Water Bureau to educate the community around the Columbia Southshore Wellfield, a regional secondary

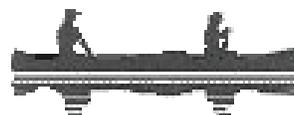
drinking water source, that is actively managed and protected from contamination by the city.

5d) Coalition building and coalescing community interest are long-term steps the Council can take to help address land uses that negatively impact watershed health. The Council's Board of Directors, Executive leadership, and outreach can advocate for these issues and coordinate with interested stakeholder groups. Already the Council provides letters of support, testimony, and meets with local and state officials to advocate for the health of the watershed and future decisions around policy. The Council also participates in local and regional committees by providing technical expertise on watershed issues.



Photo credit: Port of Portland

Council staff lead a planting demo for volunteers during a regular Stewardship Saturday program.





A thin layer of ice and leaves form over the surface of Whitaker Ponds during the winter.

Section 2: Action Plan Projects

2a) Selection & Prioritization Methods

A primary purpose of this five-year plan is to prioritize stewardship projects for development, maintenance, expansion or continuation. To this end, we developed a project evaluation and ranking process and applied it to each potential stewardship project currently identified in the Columbia Slough watershed.

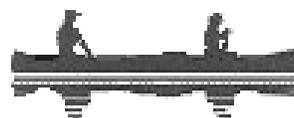
Additionally project types were reviewed by the Council’s Technical Advisory Team and Board of Directors. Both of these forums represent stakeholder interests in the watershed and bring many years of expertise and knowledge about the Slough. Community perspectives on watershed issues were also collected in the summer of 2017 at several of the Council’s large festivals. Please see the Appendix for the full Project Evaluation Methodology, Master Project List, and Project Site Maps.

Project Types

There are two types of projects evaluated by this plan, which we have named:

- 1) “sites” with specific locations and site-specific enhancement goals, and
- 2) “general projects” that describe general or programmatic work such as collating information resources, scientific monitoring, master planning, education and outreach, etc.

The full project list can be sorted by these project types allowing each group to be prioritized separately where necessary.



Evaluation Criteria

Each identified project was given a score for each of the following criteria:

- the physical environment (physical attributes of the site like flood connectivity, temperature, channel morphology, etc.),
- habitat connectivity,
- community benefits,
- consistency with other plans,
- implementation,
- and lasting impact

The better a project met a criterion, the higher the score for the criterion. Scores for the six criteria were added together to give a total score for each project. Projects were then sorted into Top Priority, High Priority, and Low Priority groups based on their total scores, and were sorted by the role deemed most appropriate for the CSWC in implementing each project (Lead, Partner, Advocate).

In order to focus on projects likely to have the greatest impact on watershed health, only Top Priority and High Priority projects were selected for inclusion in this five-year plan. See the Appendix for a full description of the Ranking Criteria and Scoring Procedures used in this plan.

CSWC Roles

After scoring, projects and programs were further sorted into implementation roles most appropriate for the Council (advocate, partner, or lead). Council roles were determined by the Stewardship Director and Tech Team based on ecological and community need for the project, Council capacity, and Council expertise. Roles considered the expertise and missions of our partners who also contribute to the health and success of restoring the Slough.

Identified roles for CSWC include:

Lead/Co-lead: In this role the Council will initiate projects with partners, seek funds, and be active in leading project implementation.

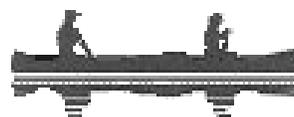
Partner: As a partner, the Council will provide resources (in-kind, labor, etc.) to support community based stewardship events that meet our goals and objectives. The Council is an active stakeholder in the outcomes of the project.

Advocate: The Council will take on the role of sharing information and highlighting partner programming aligned with our mission and core values. The Council will provide support and resources as able.



Photo credit: Nick Calabrese

Canadian geese (*Branta canadensis*) lead and protect goslings in the waters of the Columbia Slough.



Community & Expert input on the five-year plan

The Council solicited expert and stakeholder opinions to validate its initial findings, finalize the main objectives for the Stewardship Program, and update the project lists from the 2003-2013 Action Plan. This involved gathering feedback from the Council's Technical Advisory Committee (or Tech Team for short) and the Council's Board of Directors at regularly convened meetings.

From summer 2016 to winter 2018, the Council hosted quarterly committee meetings focused on developing this five-year plan with an array of technical experts from key partners and stakeholder organizations. The Council's Tech Team represents experts and activists from city, regional, and state governments, special districts, neighborhood associations, non-profits, businesses, and the Council's Board of Directors. These individuals reviewed the Council's 2003-2013 Action Plan, updated the list of projects, and created new projects in the process.

Quarterly Tech Team meetings resulted in a list of high priority project ideas that were supplemented with ideas carried over from the Council's previous action plan. The Tech Team meetings will continue on a quarterly basis, giving space for sharing information,

generating new ideas, and assisting Council staff with technical advice to increase the efficacy of projects. This feedback is used annually in the development of the Stewardship Director's annual Work Plan (WP).

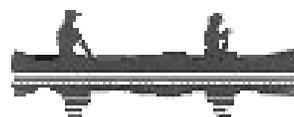
The Tech Team not only provides the Council a valuable resource, but it also helps foster communication between the Council and community partners, with Tech Team members relaying information back to their agencies and organizations on watershed issues or new developments in science and research.

In addition to the Tech Team, the Council solicited its Board members' input into the plan. The Columbia Slough Watershed Council Board members represent various stakeholder groups and interests within the watershed, many with years of experience related to the Slough and knowledge of past accomplishments. The board's input was documented during several monthly board meetings as well as brainstorming sessions that coincided with the early stages of development of the Council's General Strategic Plan.

The Council Board also helped define the stewardship program through a survey where



The Council Board has monthly public meetings to gather feedback on the successes and challenges the watershed still faces.



members ranked the program's objectives they would like to see the plan focus. The board strongly favored trash cleanups, habitat restoration, and community stewardship events as focus points. This input is aligned with much of the the Council's current core Stewardship programming and reinforces areas where great work is happening. The board will be informed of the plan's progress at monthly meetings and during the annual stewardship tour where board members visit active restoration sites.

To explore a broader range of perspectives the CSWC also collected community feedback at our major summer festival events. A CSWC staff person engaged the public using a map board to discuss the General Strategic Plan and the Five-Year Stewardship Action Plan. Written comments from participants were submitted or stuck on the map, highlighting issues community members felt were important in the watershed. These comments were digitally compiled and reviewed for patterns around specific issues.

Informal conversations with partners about the plan provided more information and detailed some community concerns. Gathering data and input from community leaders fell short during the development of this plan due to lack of resources and time. However further feedback will be solicited from the community over time as the plan is shared with neighborhood associations, non-profits, friends' groups, businesses and individuals. Comments will recorded and saved

for the next five year plan, in which a greater effort will be made to engage the public around watershed health.

A complete list of participating Tech Team partners:

- Apex Companies
- Audubon Society
- City of Gresham
- City of Portland's Bureau of Environmental Services
- East Multnomah Soil and Water Conservation District
- Fairview Homeowners Association
- Metro
- Mosaic Ecology
- Multnomah County Drainage District
- Nadaka Nature Park & Garden
- Native American Youth and Family Center
- Oregon Dept. of Environmental Quality
- Oregon Dept. of Fish and Wildlife
- Port of Portland
- Portland Parks & Recreation
- Portland Water Bureau
- Verde



A fleet of kayaks stand ready for the Council's Annual Regatta Festival where hundreds of people paddle on the Slough and explore this hidden waterway.

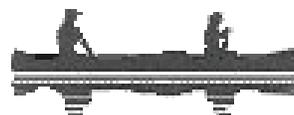




Photo credit: Matt Lee

This photo is an example of the Tech Team partners enhancing multiple habitats in proximity. An artificial island (photo center) was created for emergent wetland habitat in the slough. MCDD with funding from the Port is restoring the islands with native vegetation. The Council is restoring the riparian banks of the Hydro industrial property (photo left) through funding from City of Portland's Bureau of Environmental Service's Neighborhood to River program.

2b) Project examples for 2018 - 2023

This section highlights many of the projects that scored highly during the evaluation method described previously. Projects were further sorted into roles most appropriate for the council in implementation (as advocate, partner, or lead). In the following pages only some of the projects that the Council is actively involved in at the moment are called out, along with the current status of implementation. A list of projects that scored highly are listed in Appendix B.

The Council envisions these lists to be changed and updated over time as projects and the watershed evolve (see Section 3 Timeline for an outline of this process). This means the lists are not absolute, with new projects integrated as new information and ideas are brought forth to the Council's attention.

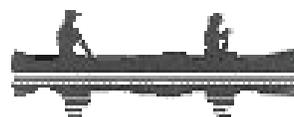
Examples of Top Priority Projects

Project: Develop a comprehensive list of revegetation sites

Description: Portland's revegetation program maintains a list of its restoration sites. Metro, Port of Portland, Gresham, and CSWC maintain lists; however a master list does not currently exist.

Status: **Completed**

Created a geodatabase and inventory of all completed restoration sites the Council has managed. This portfolio will inform annual planning and what sites the Council will maintain through stewardship.



Examples of Top Priority Projects continued

Project: Develop Riparian Tree Protection Plan to address beaver predation

Description: Various projects have been undertaken by CSWC, BES, MCDD, Gresham, Friends of Force Lake, and Reynolds Learning Academy. Funding is limited and not programmatic. Project sites are designated by predation pressure and tree risk on an ad hoc basis.

Status: Ongoing

In 2017 CSWC wrapped up caging trees on private and public lands. A tree cage inventory for tracking species, size and location, as well as installation year was created. CSWC is discussing with partners on best management practices for caging trees in riparian areas on a watershed scale.

Project: Continue to integrate Slough School and other education programs offered through CSWC into stewardship projects

Description: Slough School serves over 6000 student contacts every year. Greater coordination and project based learning with the stewardship program can add value to both programs.

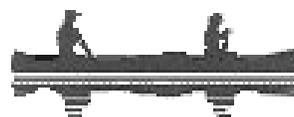
Status: Ongoing

CSWC will continue to intersect stewardship and education opportunities whenever possible. An example of Slough School and the Stewardship Program combining forces is through a partnership with Woodland Elementary in Fairview, Oregon. CSWC converted unused areas of the schoolyard into microhabitats. The combined efforts of these two CSWC programs got every 3rd, 4th, and 5th grader out to help plant in 2018 and 2019. Recently the Council received a generous grant to create a learning garden with a local school in the Columbia Children's Arboretum. The Council will continue to seek out these kinds of opportunities to maximize our programs impacts.



Photo credit: Nick Calabrese

*Great egrets (*Ardea alba*) are flocking and feeding in the shallows.*



Examples of Top Priority Projects continued

Project: Expand for a Bigger Great Slough Clean Up

Description: Slough wide cleanup event at multiple sites in the watershed. Volunteers come together for a bbq celebration and awards.

Status: Ongoing

Hold annual watershed wide trash clean up event. The Great Slough Clean Up (GSCU) began in 2007 cleaning up trash at a single site in the watershed. CSWC coordinated four site clean ups in 2017 for the tenth annual GSCU. GSCU event cleaned up three sites simultaneously in 2018 and 2019.

Project: Continue to build Smith and Bybee volunteer efforts

Description: Recruit and engage with volunteers at this unique wetland complex in the watershed.

Status: Ongoing

The Council is strengthening an existing partnership with natural resource staff at Metro and at Smith and Bybee Wetlands. The Council partners at least once a year at Smith and Bybee and will seek more opportunities for volunteers to steward this unique urban habitat within the watershed.

Project: PWB Main Pumpstation Riparian Restoration

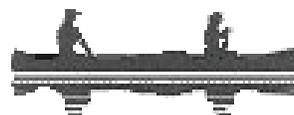
Description: Control invasive species and plant native shrubs along the banks of the slough at the Portland Water Bureau's Main Groundwater Pumpstation site.

Status: In progress

CSWC secured an OWEB small grant for restoration work at PWB Main Pumpstation site on NE Airport Way and NE 165th. Treatments began in the spring of 2018 with a community planting event held in spring 2019. Additional stewardship events with volunteers will continue through the end of 2019.



The Council's annual regatta draws over 500 people to learn, paddle, and explore the Columbia Slough.



High Priority Projects and Programs

Project: Nadaka Master Natural Resources Plan

Description: Master park planning for the Nadaka Park site to reconcile various impacts (camping, social trails, laminated root rot, invasive species, etc.) and prioritize natural area functions and restoration activities.

Status: **Completed**

The Nadaka Master Natural Resources Plan was completed by a PSU's Master student as part of a capstone project. CSWC participated in initial discussions on the site and reviewed draft materials.

Project: Private residential rain gardens for low income homeowners

Description: Verde led stormwater management effort in the Cully Neighborhood. CSWC to support building and expanding capacity and funding sources to other areas of watershed.

Status: **Ongoing**

CSWC installed six rain gardens in the winter of 2018 and 2019 with Verde and MYC. CSWC and Verde are pursuing additional funding sources in partnership with youth workforce crews to continue this project.

Reaching out to residential and business landowners who own priority property to begin restoration work

Description: Continue outreach efforts to private landowners for access and recruitment into restoration and stewardship of the watershed.

Status: **Completed** (brochure); **Ongoing** (outreach).

The Habitat Restoration Program for Commercial Landowners brochure was created and printed in January 2018. Outreach to commercial and industrial landowners will continue over the next five years.

Holiday tree tossing party

Bring christmas trees to toss in for large wood material into lower slough engineered log jams.

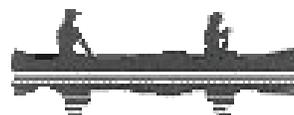
Status: **Ongoing**

CSWC's first Annual Holiday Tree Toss Party was a big success with great community support. The first annual event was held in January of 2018 with a second one successfully completed in 2019.



Photo credit: Nick Calabrese

*A bufflehead (*Bucephala albeola*) runs on the surface of the water for take off.*



High Priority Projects and Programs continued...

Project: Improve the wetland next to Heron Pointe Estates with woody vegetation

Description: This is a commonly owned space with a creek running through it. It is the last stretch before Fairview Creek enters Fairview Lake. Currently the site is dominated by reed canary grass and could support higher functioning habitat such as a forested wetland.

Status: **Completed** (phase 1); **Ongoing** (phase 2)

CSWC completed a section of this large urban wetland site for restoration in September 2017. A second phase of wetland restoration work is being planned and CSWC is seeking sources of funding.

Project: NE 33rd riparian ditch restoration

Description: Remove non-native vegetation and replace with native trees and shrubs.

Status: **Completed** (phase 1); **Ongoing** (site maintenance)

CSWC secured funding from the Port of Portland. Site treatment work began in spring 2018, with a community restoration planting event held in fall 2018 in partnership with the Oregon Food Bank, Mudbone Grown, and the Oregon Intertribal Breastfeeding Coalition. Mudbone Grown supported spring planting in 2019.

Project: Volunteer trash monitoring program

Description: Building upon the data collected during the EPA Region 10 Trash Free Waters pilot study in 2017, continue to collect trash data in the slough for monitoring and future clean ups.

Status: **Ongoing**

CSWC plans to revive this project with an emphasis on monitoring for trash and other dumped items.

Current Examples of Partner Projects

The Council's work is further supported by partners efforts to enhance the slough. Below are a few projects the Council is involved with as a community partner that advance our mission. A complete list of top projects the Council can support as a partner are listed in Appendix A.

Project: Columbia Children's Arboretum: Restoration projects

Description: Natural area restoration projects found throughout the park.

Status: **In progress**

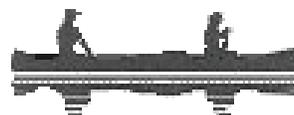
MCDD recieved funding from DEQ to manage restoration across the site in partnership with PPR (landowner) and Mosaic Ecology. CSWC partners and supports PPR's natural stewardship coordinator to host volunteer events with the community over the next five years. CSWC will create a Children's Learning Garden on site.

Project: Fujitsu Ponds area improvements

Description: Gresham is conducting site investigations and project concept scoping for this 59-acre site.

Status: **Ongoing**

CSWC supports stewardship in natural areas both upstream and downstream of this site. Collaboration between the Council and the City of Gresham can be explored further.



Current Examples of Advocate Projects

The Council also takes on the role as a community advocate for the watershed. Partner projects that support the Council's mission, but do not necessarily require the Council to be directly involved, the Council can and will advocate their success. This can take the form of participating in committee meetings, working groups, outreach, education, letters of support, etc. to advance partner goals. Below are a few highlighted examples with a list of other high priority projects listed in Appendix A.

Project: Blue Heron Wetlands Ludwigia control

Description: EMSWCD funds field study and scientific field trials for removal of invasive Ludwigia at this site. The work includes volunteer education and coordination. BES, Metro, and the East Columbia Neighborhood Association provide assistance. Treat non-native invasive Ludwigia (water primrose) in 3 acre Blue Heron Wetlands

Status: **In progress**

MCDD received funding from DEQ to manage restoration of this HOA wetland site in partnership with BES, the East Columbia Neighborhood Association, and Mosaic Ecology. The Council participates in quarterly meeting updates on the project.

Project: McBride Slough remediation and restoration

Description: Clean up and capping of contaminated sediments in this section of the slough. Native tree and shrub plantings of the site after remediation efforts are complete.

Status: **In progress**

The Port of Portland and DEQ are cleaning up soil contamination in the McBride Slough off of NE Alderwood with native plantings planned post construction. The Council receives regular project status updates from the Port's environmental team at the quarterly Tech Team meetings.

Project: Smith and Bybee Wetlands Restoration Projects

Description: A variety of habitat restoration projects at Smith and Bybee Wetlands. Habitat types include: Sedge meadow restorations, ash forest habitat plantings, and willow shrublands.

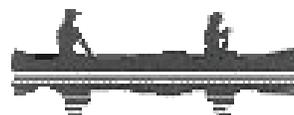
Status: **In progress**

CSWC is a voting member on the Smith and Bybee Wetlands Advisory Committee which manages the Smith and Bybee fund for conservation and capital projects at Smith and Bybee Lakes Natural Area managed and owned by Metro. Metro through guidance and input from the stakeholder committee has completed or in progress of enhancing this valuable and high priority site through various management strategies.



Photo credit: Nick Calabrese

A river otter (Lontra canadensis) swims in the Columbia Slough.



Section 3: Timeline and Implementation

How do we get there?

A five year timeline was created that outlined milestones and steps for reviewing the plan, updating projects' progress, and adaptatively managing for new opportunities or challenges. This method of revisiting the plan periodically over the course of the five years makes sure the stewardship program is consulting and updating the plan in partnership with the Tech Team. It also allows the five year plan to be incorporated into the Stewardship program's annual work plan. Highlights of the timeline can be seen to the right with a full scope of the five year timeline represented in Figure-7.

This action plan is already being implemented, with some projects already in progress or completed by partners. The implementation of projects will be done in good faith by the Council and as capacity allows.



Photo credit: Nick Calabrese

A Northern flicker (Colaptes auratus) perches on a tree.

Milestones

Annually

Update and review project list with Tech Team partners.
Incorporate objectives and projects into annual work plan.

End of Year 3

Reassess stewardship progress on projects in 2018-2023 Plan.

Beginning of Year 4

Adjust strategy and tactics based on programmatic evaluation.

Beginning of Year 5

Develop progress report of completed actions.
Start the early stages of planning for next five year plan 2024-2029.

Carryover uncompleted projects as appropriate.



A volunteer helps plant native shrubs at the Oregon Food Bank for the Harvest Service Day 2018.

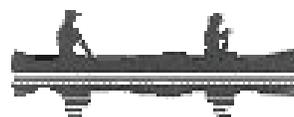
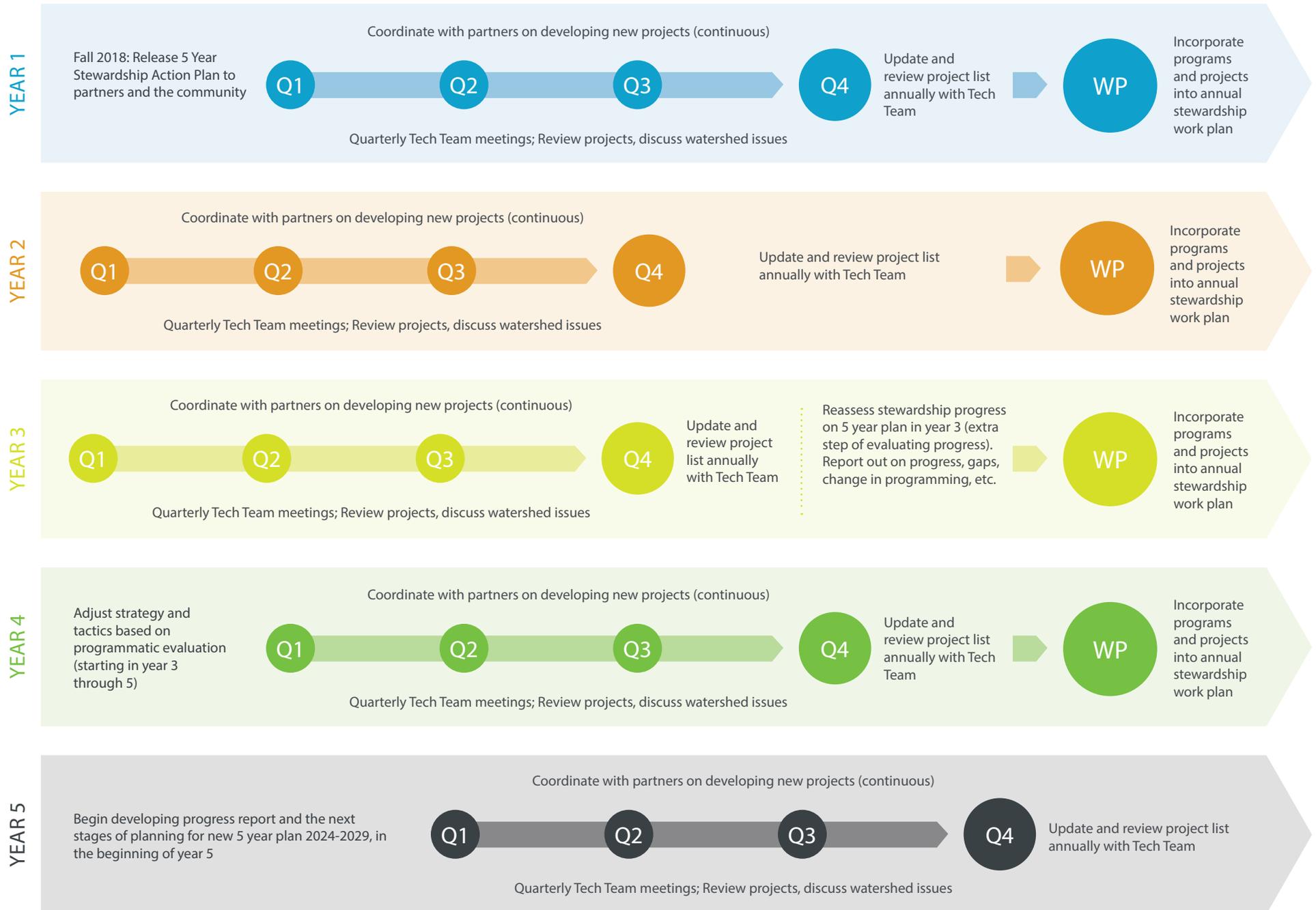


Figure 7 - A timeline outlining milestones and ongoing activities of the 2018-2023 Stewardship Action Plan.



Contributions & Acknowledgments

A big thank you to the people who contributed time, knowledge, and expertise to the Columbia Slough Watershed Council's Technical Advisory Committee (Tech Team).

Whitney Bailey - Urban Conservationist, East Multnomah Soil and Water Conservation District

Susan Barnes - Wildlife Manager, Oregon Department of Fish and Wildlife

Corrina Chase - Executive Director (former) Columbia Slough Watershed Council

Troy Clark - Board Member, Columbia Slough Watershed Council

Bob Dolphin - Board Member, Columbia Slough Watershed Council

Brian Erhardt - Project Manager, Multnomah County Drainage District

Laura Guderyahn - Ecologist, Portland Parks & Recreation

Kevin Huniu - Environmental Technician 2, Portland Bureau of Environmental Services

Julie Matney - Watershed Hydrologist, Bureau of Environmental Services

Monica McAllister - Park Manager, Nadaka Nature Park

Jeff Merrill - Natural Resources Planner, Metro

Micah Meskel - Activist Program Manager, Portland Audubon Society

Sarah Miller - Cleanup Program Natural Resource Specialist, Oregon Department of Environmental Quality

Maureen Minister - Natural Resources Manager, Port of Portland

Ricardo Moreno - Landscape Program Manager, Verde

Toby Query - Ecologist, Bureau of Environmental Services

Adam Reese - Division Manager, Apex Companies

Adele Rife - Stewardship Director (former), Columbia Slough Watershed Council

Yoko Silk - Stewardship Coordinator Columbia Slough, Portland Parks & Recreation

Sunny Simpkins - Planning Director, Multnomah County Drainage District

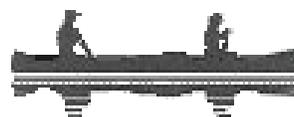
Jamie Stamberger - Consultant, Stamberger Outreach Consulting

Elaine Stewart - Senior Natural Resources Scientist, Metro

Mike Wallace - Ecologist, City of Gresham

Cary Watters - Resource Manager, Native American Youth and Family Association

Doug Wise - Groundwater Protection Program Manager, Portland Water Bureau



Appendix A: Guiding Local and Regional Conservation Plans

City of Gresham, 2010, Natural Resources Master Plan

City of Portland, 2011, Portland Plan Watershed Health

City of Portland, Bureau of Environmental Services, 2005, Portland Watershed Management Plan

City of Portland, Bureau of Environmental Services, undated, Columbia Slough Long-Term Monitoring Plan

City of Portland, Bureau of Environmental Services, June 2005, Columbia Slough Watershed Characterization

City of Portland Bureau of Planning and Sustainability, Adopted Feb. 18, 2009, East Portland Action Plan, A guide for improving livability in outer East Portland

City of Portland Bureau of Planning and Sustainability, Nov. 28, 2011, Natural Resources Inventory GIS model

City of Portland Bureau of Planning and Sustainability, Nov. 2009, Natural Resource Inventory Update Appendix E: Riparian Corridors and Wildlife Habitat

City of Portland and Multnomah County, June 2015, Climate Action Plan

Metro, 2012, Smith and Bybee Wetlands Natural Area Comprehensive Natural Resource Plan

Oregon Department of Environmental Quality, Sept. 2006, Willamette Basin Total Maximum Daily Load (TMDL) Chapter 5: Lower Willamette Subbasin TMDL

Rosenberg, D. & Gervais, J., 2012, "Conservation Plan for Native Turtles in the Columbia Slough, Portland, Oregon", Oregon Wildlife Institute

Port of Portland, updated 2009, Portland International Airport Wildlife Hazard Management Plan

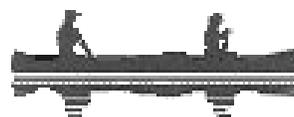
Portland Parks & Recreation, June 2015, Ecologically Sustainable Landscape Initiative

Portland Parks & Recreation, updated: March 2015, Natural Areas Restoration Plan

Statewide Strategic Plan Working Group of the Oregon Invasive Species Council, undated, Oregon Statewide Strategic Plan for Invasive Species

The Intertwine Alliance, 2012, Regional Conservation Strategy for the Greater Portland-Vancouver Region

U.S. Fish and Wildlife Service. 2017. Willamette Valley Conservation Study. Pacific Region, Portland, Oregon



Appendix B: Ranking Criteria and Scoring Procedures

Criteria 1: Physical environment

The following benefits were considered when evaluating this criterion:

- Number and importance of beneficial environmental impacts and
- Whether benefits are localized or broad (i.e. watershed scale or local scale).

Beneficial impacts considered included:

- Invasive species removal and reduction
- Addition/establishment of native plants
- Increased Slough bank stability (reduced erosion)
- Improved channel morphology (more curves in the Slough)
- Increased floodplain connectivity (ability for Slough to overflow safely into some areas and soak into the soil during large storm events)
- Cooler water temperatures (i.e. adding plants to provide shade)
- Improved water quality (for example through stormwater infiltration projects or reduced water pollution sources)
- Increased wildlife habitat
- Benefit to threatened or endangered wildlife species
- Long term project stability (i.e. has support for long-term maintenance)

Scoring: Projects were given a score of 1, 5, or 10 based on if the criteria provided:

- no improvement (1)
- some improvement (5)
- significant improvement (10)

Projects that better met this criteria received a higher score in the range. The scoring system is based on the system presented in the City of Gresham's Natural Resource Management Plan and modified to fit the specific needs of the Council (COG, 2011).

Criteria 2: Community benefits

The Community Benefits scoring criteria assigned higher values to projects whose benefits extend further into the community, i.e. projects in public parks or projects that enhance trail systems. Projects occurring on private property or otherwise isolated from the public and directly benefiting only a small area received lower scores for this criteria.

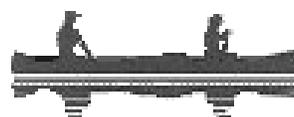
Scoring:

- if they were determined to have low or no community benefits (1)
- if determined to have significant community benefits (5)

This system was based on the City of Gresham's Natural Resource Management Plan (COG, 2011).



Volunteers help nature scape Alberta Park, a new program initiated by Portland Parks & Rec



Appendix B: Ranking Criteria and Scoring Procedures

Criteria 3: Habitat Connectivity

This criterion considered the degree to which a project promoted connections between habitats and other project sites. This criterion looks at projects through a spatial and landscape lens, acknowledging that nature does not follow socio-political boundaries.

The following habitat connectivity values were considered in order to create an aggregate habitat connectivity score:

a) Proximity to other natural area sites

When natural areas are close to one another, they have a greater benefit in terms of movement of wildlife, fish, water, seeds, and nutrients across the landscape. Prioritizing projects that are close to existing “anchor habitats” in the watershed (some examples include: Smith and Bybee Wetlands, Whitaker Ponds, and Johnson Lake) will increase habitat connectivity by increasing wildlife access to habitat and migration areas. Anchor habitats are large, fairly stable, mature, and highly valuable habitats, often publicly owned.

b) Designation as a Metro Special Habitat Area (SHA)

Some habitat types are more rare in our watershed (and regionally) or host greater species richness. These are designated by Metro as Special Habitat

Areas (SHAs) through a regional natural inventory assessment (BPS, 2011). The enhancement of these sites prioritizes and protects these habitats as refugia for species that would otherwise be displaced. Projects within or creates benefits to SHA scores higher.

c) Greater Combined Relative Resource Value (CRRV)

Using the CRRV maps and assessment created by the City of Portland Bureau of Planning and Sustainability, we examined each site for resource value, in terms of ecological and environmental benefits, with higher values given to waterways, wetlands, and large tracts of natural areas through Portland’s Natural Resources Inventory (BPS, 2009). Resource values are based on multiple environmental functions in terms of flood storage, nutrient recycling, resources and sheltering for wildlife.

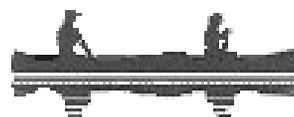
Each project can score up to 5 points total by adding the individual value scores together.

- a) Proximity - 1 point if in proximity to another project or natural area, 0 points if no
- b) Metro SHA - 1 point if yes, 0 points if no
- c) CRRV value

- “high” = 3 points
- “medium” = 2 points
- “low” = 1 point,
- none = 0 points



Aerial view over Whitaker Ponds Nature Park. Natural areas like this one provide important habitat and connectivity for wildlife across the urban landscape.



Appendix B: Ranking Criteria and Scoring Procedures

Criteria 4: Consistency with other plans

The Council compiled and reviewed existing similar plans from partner and community organizations to help identify best practices for inclusion in this five-year plan.

Some examples of plans reviewed included:

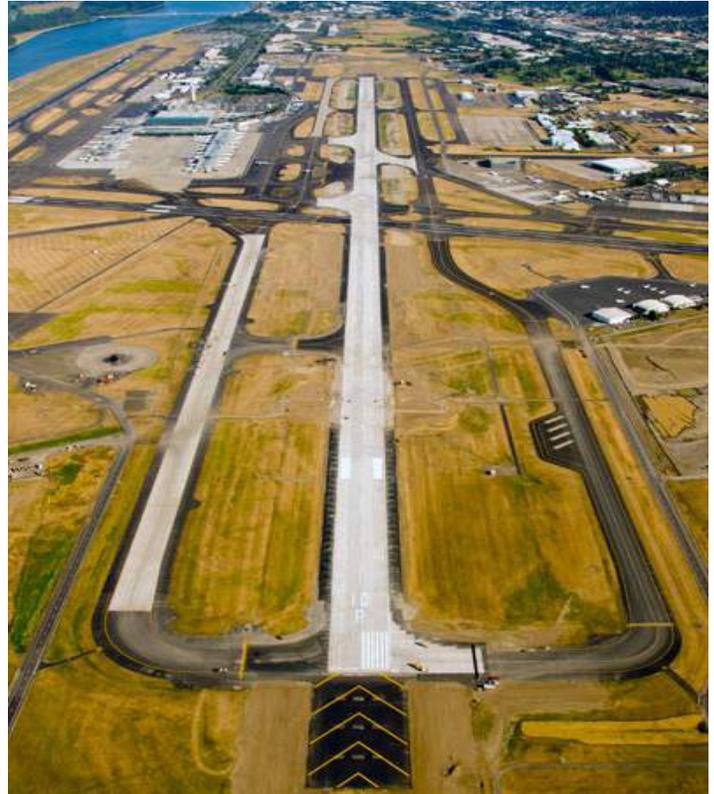
- *Regional Conservation Strategy for the Greater Portland-Vancouver Region*
- *Smith and Bybee Wetlands Natural Area Comprehensive Natural resources Plan*
- *East Portland Action Plan*

The criteria of consistency with other plans considers whether the project was identified through prior assessments and its compatibility with an existing plan. For example, some of the natural areas in the watershed have conservation management plans that are used by local and regional agencies to set priorities and targets for restoration. Other local plans are used as a regulatory guide when the Council plans and designs new projects for compatibility within the landscape. If a project was aligned with a plan on either the local, regional or state level, it was given a higher score in the ranking process. A complete list of plans that influenced this action plan are listed in Appendix A.

Scoring: Projects were given a score if:

- if the project or site is not referenced by any plan (0)
- if referenced in an existing regional or state plan (1)
- if referenced in a local plan or a site plan (2)
- if the project or site is consistent with 2 or more plans (at any level) (3)

Each project can score up to a maximum total of 3 points as allows.

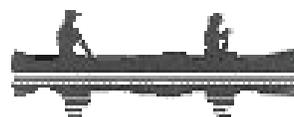


Portland International Airport (PDX) is part of a regional transportation hub located in the slough's watershed. The Council references PDX's Wildlife Hazard Plan to make sure projects are compatible with airport operations.

Criteria 5: Lasting Impact

This criterion considered the longevity of each project's anticipated outcomes. Projects with longer term benefits received higher scores. To help determine anticipated longevity, we considered the following:

- Current and proposed zoning, anticipated zoning changes
- Current land use
- Likelihood of land ownership change (public or



Appendix B: Ranking Criteria and Scoring Procedures

- private ownership)
- Council program continuity (likelihood of long term Council resources available)
- Presence of conservation legal tools including easements, overlays, and mitigation sites

Each project can score up to 6 points by described below:

- Conservation easement (1)
- Designated open space (1)
- Environmental mitigation site (1)
- Publicly owned land (1)
- Falls within the Environmental overlay (1)
- Program continuity (1)
- Potential for change in ownership Yes (-1); No (0)

Criteria 6: Implementability

This criterion considered “shovel-readiness” of projects, or how easily or likely they are to be implemented. Projects that are likely to be easier to implement were given higher scores. Factors considered included:

- Permitting needs (how many and with whom, difficulty of permitting process)
- Availability or potential funds and staff resources
- Compatibility of timeline required for project development
- Willing partners and landowners
- Level of background research, technical studies, required for project development

Scoring: Each project was given a score for both Support and Cost as described below. Support and Cost values were multiplied together to give a final

score for this criterion. (Example: Support = Few barriers (yes 1) + Agency support (yes 1) + Landowner support (yes 1) = 3; Cost= Medium (2); $3 * 2 = 6$ Total score.) The maximum score possible is 12.

Support: 4 total points possible

- Few or No Barriers (0 No, 1 Yes)
- Landowner support (0 No, 1 Yes)
- Agency Support (0 No, 1 Yes)
- Fundability (0 No, 1 Yes)

Cost: 3 total points available

- High - more than \$500,000 (1)
- Medium - \$100,000 to \$500,000 (2)
- Low - less than \$100,000 (3)

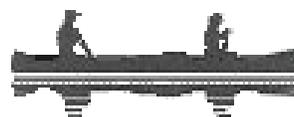
Final Step

After all individual criteria scores were determined, all scores for a specific project were added together to give a final score.



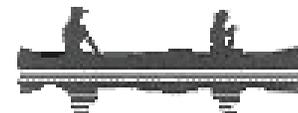
Photo credit: Nick Calabrese

Beaver management is important to protect the urban tree canopy, particularly along the slough's channels.



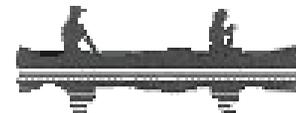
Appendix C - Table of Top Priority Projects

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
3	50	Develop a comprehensive list of revegetation sites	Portland's revegetation program maintains a list of its restoration sites. Metro, Port of Portland, Gresham, and CSWC maintain lists; however, a master list does not currently exist.
4	61	Develop system and network for funding and incentives to maintain existing revegetation sites	Portland, CSWC, Port, and Gresham have conducted stewardship and shared project costs. No cash subsidies have been developed.
12		Beaver management	Landowner buy-in and outreach to keep beavers in the watershed. Organize and coordinate around current beaver management strategies and caging efforts at sites.
19	29	Develop Riparian Tree Protection Plan to address beaver predation	Various projects have been undertaken by CSWC, BES, MCDD, Gresham, Friends of Force Lake, and Reynolds Learning Academy. Funding is limited and not programmatic. General Project sites are designated by predation pressure and tree risk on an ad hoc basis.
22	107f	Continue Slough School and other education programs offered through CSWC, and integrate this programming more into CSWC Stewardship	Slough School serves over 6000 student contacts every year. Greater coordination and project based learning with the stewardship program can add value to both programs.
28		Expand for a Bigger Slough Cleanup	Slough wide cleanup event at multiple sites in the watershed. Volunteers come together for a bbq celebration and awards.
29		Review CWSP (BES small grants awards) projects that may need revisiting	Revisit pass awarded projects for monitoring and maintenance.
34		Volunteers at Smith and Bybee Wetlands	Recruit and engage with volunteers at this unique wetland in the watershed.
37		Restoration on Peninsula Crossing Trail	Enhance this trail corridor to help connect wildlife from the Willamette River to the Slough.



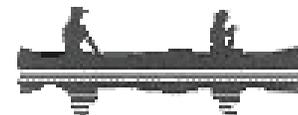
Appendix C - Table of Top Priority Projects *continued*

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
40		Engineered log jams	Monitoring, adding small debris, investigate if there is follow up on this project CSWC can assist on.
119		Streets to Slough: Navigating the Columbia Slough Water Trail	Create an online user guide for the water trail and complete community cleanup and beautification events of public launch sites.
121		Portland Water Bureau sites along the main channel of the slough	Enhance the riparian zone adjacent to PWB wellhead sites along the slough near 142nd cross levee.
123		PWB Main Pumpstation Riparian Restoration	Control invasive species and plant native shrubs along the banks of the slough at the PWB Main Groundwater Pumpstation.



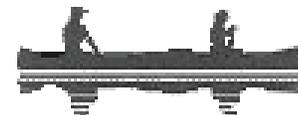
Appendix D - Table of High Priority Projects

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
7		Nadaka Master Plan	Master park planning for the Nadaka Park site, to reconcile various impacts (camping, social trails, laminated root rot, revegetation, invasive species encroachment, etc.) and prioritize natural area functions and restoration activities
10	276a	Foster development of a forum to share monitoring information every three years	An educational/information sharing platform hosted by the Council for educating the public and partners on current research.
13		Private residential rain gardens for low income homeowners	Verde led stormwater management effort in the Cully Neighborhood. CSWC to support building and expanding capacity and funding sources to other areas of watershed.
27		Reaching out to residential and business landowners who own priority property to begin restoration work	Continue outreach efforts to private landowners for access and recruitment into restoration and stewardship of the watershed.
31		Columbia Blvd Wastewater Treatment Plant	Continuing restoration with community, students, etc. at this natural area.
35		Christmas tree tossing party	Bring christmas trees to toss in for large wood material into lower slough engineered log jams near th Ash Dump, Kelley Point Park, and CBWWTP sites.
42	56a	Restore land around Whitaker Ponds for Whitaker Ponds area enhancements	PPR has a DEQ grant to continue enhancements around the ponds which will continue over the next four years (already in year one of the grant cycle)
43	69	Restore floodplain capacity and native plants on Fairview Creek near SE 202nd Avenue	Gresham acquired vacant land near Fairview Creek north of Division and west of Birdsdale. An 8-acre vegetated water quality facility collects and treats stormwater from 900 acres of commercial and residential properties.



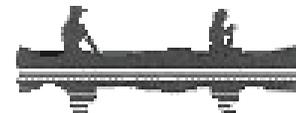
Appendix D - Table of High Priority Projects *continued*

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
44	76	Enhance north wetland at Old Marine Drive	This wetland receives stormwater from multiple businesses. Two businesses applied to Portland and DEQ for stormwater permits in 2012-13. These businesses will construct a stormwater swale, install plantings, and remove and cap contaminated soils on industrial lands bordering the wetland. Construction is slated for 2013.
45	78	Enhance Rivergate wildlife corridor between the Port of Portland West Wye mitigation site and Bonneville ponds	Under an intergovernmental agreement between the Port of Portland and BES, maintenance was conducted around the Bonneville ponds in 2005-2006. Earlier plantings by BES had limited survival because of sandy substrate. The Port landscaping group in Rivergate conducts limited invasive species control.
47	217	Revegetate riparian areas—Fairview Creek from Burnside to Stark Street	City of Gresham conducted extensive outreach to private residents along this stretch in the mid 2000s. The creek is the dividing line between parcels, so in order to do both sides of the creek you need multiple property owners to sign off.
56	22	Enhance Schmeer Road Forebay Slough	Portland's revegetation program has partially planted the site, must provide clear waterway for drainage purposes.
62	115	Improve the wetland next to Heron Pointe Estates with woody vegetation	This is a commonly owned space with a creek running through it. It is the last stretch before Fairview Creek enters Fairview Lake. Currently the site is dominated by reed canary grass and could support higher functioning habitat such as a forested wetland.
64	23	Enhance GI Joe drainage way	MCDD will be developing a waterway/stormwater plan.
67	127	Peninsula Canal westside enhancements	The east side of the Peninsula Canal is primary levee which limits vegetation per USACE regulations. MCDD has pursued further vegetation management on the west side of the canal.
70	135	Beal Property enhancement	This private property within the City of Fairview has a single owner.



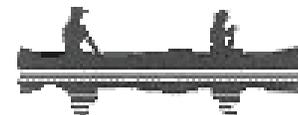
Appendix D - Table of High Priority Projects *continued*

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
72	68	TriMet Fairview Creek enhancement	TriMet, Gresham, and Knife River are potential participants in this project. Scotch broom and other invasive species need to be removed and native shrubs and trees planted.
75		Near Wilkes Creeks Headwaters - four owner mitigation site	Continue to enhance this natural area which is part of the Riverview Village Homeowners Association. Wilkes Creek flows through this site and connects Wilkes Park to Wilkes Creek Headwaters.
76		Wilkes Creek near confluence, agriculture on both sides	Enhance riparian zone along the creek to buffer agricultural activity.
77		Alice Springs - south side of big four corners	Litter and homeless camp clean up.
82		NE 33rd riparian ditch restoration	Remove non-native vegetation and replace with native vegetation.
84		NE 42nd to 47th Main and Whitaker Slough revegetation projects	Remove invasive species and restore canopy understory and plant natives.
90		Holman Pond Restoration	Plant riparian area around Holman Pond.
92		Meyers/Marx sections near NE 92nd	Invasive removal and native plantings. Wetland enhancement or creation, remove building and pavement, create off channel habitat.
93		PIC Ditches	Bench ditches, plant with native shrubs.
95		Mays Lake Revegetation	Increase canopy/buffer of this very thin riparian area.
111		Backwater Reconnection/Restoration at Blasen Ravine	Off channel salmonid habitat enhancements in the Lower Slough.
112		Bridgeton Slough Restoration	Riparian restoration within the Bridgeton Neighborhood.
115	15	Improve the boat launch at the St. John's Landfill	Clean up this site and enhance the boat launch area for easier access and use by the community.
120		Volunteer trash monitoring program	Build upon data collected during the EPA Region 10 Trash Free Waters pilot study in 2017. Continue to collect trash data in the slough for monitoring and future clean ups.



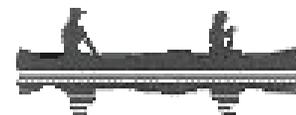
Appendix E - Table of Projects as a Partner

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
9	275	Support efforts to share monitoring information among stakeholders, regulated parties, and agencies	CSWC provides information about water quality, sediment and Lower Slough fish monitoring at its meetings. Slough 101 and website links provide ongoing information about water quality, revegetation, stewardship, regulatory measures, and compliance.
11		Brownfields remediation	Looking for opportunities to remediate a site into a purpose that is at least partially ecological benefit
14		Fish Advisory	Community outreach, signage, education about fish contamination and consumption
16	229	Depave projects	Remove impervious surfaces within the watershed. Potential partnership opportunity with Depave.
23	220	Backyard Habitat Certification Program	This program provides technical assistance to private property owners of small lots (under 1 acre) to restore native wildlife habitat in their backyards and help manage onsite stormwater runoff. The program was launched in January 2009 within the City of Portland. It is funded and organized by Audubon, Columbia Land Trust, EMSWCD, and others.
30		Carp removal/fishing	PCBs in slough, Carp Derby
36	73	Restoration at Columbia Slough Natural Area	PPR and Friends of Trees are currently active at restoring this site. Additionally this site needs a Park Master Plan.
46	103c	Add lakefront and protective border along south and west sides of Johnson Lake site: illegal camp site cleanups	Owens-Illinois and PPR conduct cleanups on an as- needed basis.
48	223b	Columbia Children's Arboretum: Restoration projects	Natural area restoration projects found throughout the park. CSWC's Slough School conducts programming here. PPR also uses the site for various youth group activities.



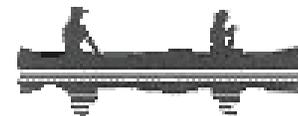
Appendix E - Table of Projects as a Partner *continued*

2018-2023 Plan ID #	2003 - 2013 Plan ID #	Project Name	Project Description
53	16a	Establish native grassland plants at St. Johns Landfill cap: Triangle site	Portland owns the Triangle site, located on the former City ash dump. BES has partially revegetated the site.
54	16b	Establish native grassland plants at St. Johns Landfill cap: Streaked horned lark project	The Metro-funded five-acre streaked horned lark pilot project began at St. Johns Landfill in 2007, incorporating dredge spoils donated by the Port of Portland on the prairie. In 2011, Metro established an additional five-acre lark habitat patch. Metro's CNRP calls for upland prairie conservation targets.
55	16c	Establish native grassland plants at St. Johns Landfill cap: Prairie project	Metro uses a combination of seeding trials, rotating mowing and grazing, and other techniques to improve prairie habitat. The CNRP calls for an additional 10 acres of prairie habitat improvement in the next five years.
58	80	Restore Force Avenue property (across from Force Lake)	The Port owns this approx. 10-acre property and began annual invasive vegetation control in 2009. The Port conducted a feasibility study to determine if the site could be used for wetland mitigation and rejected the proposal because of the amount of material that would have to be removed to bring the site down to wetland hydrology. The Port is now proposing to plant native trees and shrubs on the site.
59	114	Fujitsu Ponds area improvements	Gresham is conducting site investigations and project concept scoping for this 59-acre site.
60	8	Improve bat habitat conditions at Smith Bybee Wetlands	Improve bat habitat conditions, focusing on roosting habitat in the ash forest. Build large colonial roosting structures. Work with Bat Conservation International.
63	21	Enhance Portland Meadows drainage way	Restoration depends on the redevelopment of Portland Speedway and East Delta Park fields. The site must provide sufficient waterway for drainage purposes. MCDD will be developing a drainage plan.
65	111a	Restore wetlands/uplands at Big Four Corners and Gresham/Portland border: Gresham wetlands	A private mitigation bank was planted but not maintained. The viability of restoration is limited at this time because of the challenge of planting a riparian area dominated by reed canary grass and nutria predation. The land is currently in private ownership and slated for industrial development.



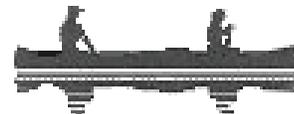
Appendix E - Table of Projects as a Partner *continued*

68	128	Wildlife Pinch Point MCDD #1 Office	Some of this area is not levee and could be vegetated. Patches of cover and a good linkage to the riparian area across the levee (to the east) are needed to provide connectivity.
71	225	Reveg at Fairview Woods wetlands	This project is included in Gresham's Consolidated Stormwater Master Plan.
73	57	Increase street tree plantings east of 82nd Avenue	Friends of Trees, Verde, ODOT, Portland, Gresham, and Fairview have made major efforts. Friends of Trees has planted 184 street trees east of 82nd and 8,559 in the watershed.
74		Colwood Golf Course stewardship	Mulch the trees and shrubs, pull ivy and holly, mulch trails.
79		Peninsula Canal Turtle Enhancement	Protect and enhance Peninsula Canal for turtle habitat.
81		Elrod Slough Turtle Enhancement	Create nest habitat and enhance existing conditions for turtles in Elrod Slough and associated drainageways.
83		Elrod Road Ditch Benching	Bench both sides of ditch and create wetland and plant with shrubs and trees.
87		Flyway Wetlands	Enhance wetlands onsite and reconfigure channels.
89		Cornfoot Road Knotweed Control	Treat invasive knotweed along NE Cornfoot Road.
94		Little Four Corners restoration	Riparian plantings along slough banks (300 ft wide) and upland habitat reveg.
100		Pacific Willow Wetland Enhancement	Enhance pacific willow wooded wetlands along banks of the Lower Slough.
102		Smith and Bybee Ash Forest	Plant riparian ash forest.
104		PIR Wetland Enhancement	Enhance a RCG wetland by planting shrubs and trees and meandering an existing channel throughout the wetland.
106		Rocky Butte Invasive Control	Control ivy and other invasive weeds.
107		Wilkes Creek Headwater Restoration	Remove small dam, replace a culvert with a bridge, revegetate 100-300 ft wide buffer along 1300 ft of stream bank and associated upland.
109	130	Cross Levee Park	Enhance site conditions at the park.
118		Colwood Golf Course Master Planning	PPR develops master plans for all park sites. Colwood still needs a master plan and there is room for community engagement in the process.



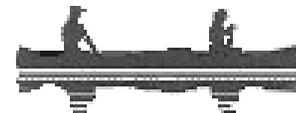
Appendix F -Table of Projects as an Advocate

2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
1		GIS students map Ramsey	Map hydrology and habitat units.
2		Combine BMPs for wildlife species	Compile best management factsheets for wildlife (e.g. nesting habitat, etc.).
5	205a	Turtle research: Gresham	Monitor population trends at known habitat sites in the watershed.
6	205b	Turtle research: Portland	Monitor population trends at known habitat sites in the watershed.
8	274	Promote efforts to identify, track, and record conditions of mitigation sites in accessible database and GIS	Portland created a report on state and federal mitigation projects in the Columbia Slough watershed in 2003. No up-to-date comprehensive report of local mitigation projects exists in Portland. It is not known if this information exists for Gresham and Fairview.
17		Support sediment work	DEQ leads contaminated sediment cleanup in the Slough. BES does long-term monitoring of sediments, fish tissues, and stormwater.
18		Air quality	Facilitate similar work as Jade district project
24	222	Verde Nursery	Funding in 2010 from EMSWCD enabled Verde to create curriculum, install bioswales and drip irrigation, and train a diverse population in green jobs. Verde's native plant garden is located at Thomas Cully Park.
25	264	Bird counts and studies	Yearly bird counts occur around Christmas in Portland. Volunteers and Metro staff have conducted breeding bird monitoring at Smith Bybee. Citizen volunteers have conducted weekly bird monitoring for 15 years at Smith Bybee.
26	31	*Develop landowner incentive program for proper vegetation maintenance in environmental zones	BES and CSWC have provided a variety of stewardship and partnership opportunities. Projects are not specific to E-zone areas.
41	5	*Revegetate Smith Bybee with woody plants	Metro's management of water levels supports regeneration of willows. Funding is being sought for planting an additional 80 acres of bottomland (floodplain) forest dominated by Oregon ash. An additional 250 acres could also be restored.

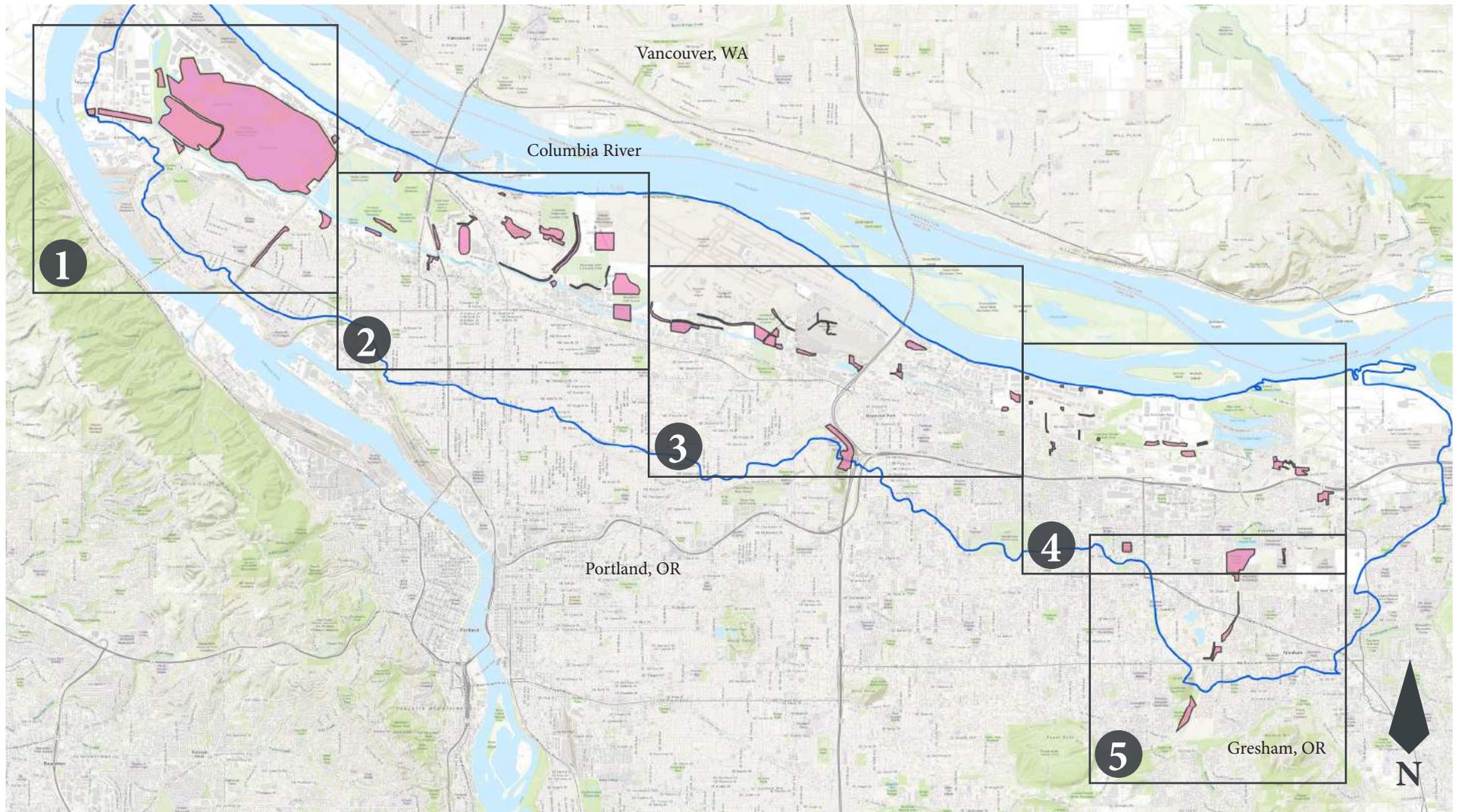


Appendix F - Table of Projects as an Advocate *continued*

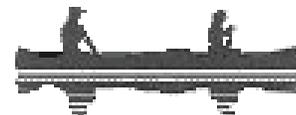
2018-2023 Plan ID #	2003-2013 Plan ID #	Project Name	Project Description
49	224	*Blue Heron Wetlands Ludwigia control	EMSWCD funds field study and scientific field trials for removal of invasive Ludwigia at this site. The work includes volunteer education and coordination. BES, Metro, and the East Columbia Neighborhood Association provide assistance. Treat non-native invasive Ludwigia (water primrose) in 3 acre Blue Heron Wetlands
50	3d	*Improve fish habitat conditions in Lower Slough: Wright and Moore islands	BES has begun design and permitting for this project, with construction anticipated 2014.
51	3e	*Improve fish habitat conditions in Lower Slough: Ramsey Reach	BES began planning for the Lower Slough refugia project in 2011 and anticipates implementation within five years. Funding is being sought.
52a	7a	Leadbetter sedge meadow restoration at Bybee Lake	Metro has been working to restore the wet meadow for the last 10 years. Plantings are incremental. The project will include up to 50 acres.
52b	7b	Interlakes sedge meadow restoration	Metro has been working to restore the wet meadow for the last 10 years. Plantings are incremental. The project will include up to 50 acres.
57	79	*Restore upland grass area adjacent to T-5 mitigation site	This site is leased to a Port tenant, but is not used at this time. The Port does limited invasive species control on the site. The Port seeded the site with native grasses in 2002 to establish grassland/prairie habitat
96	101	**Catkin Marsh (formerly Subaru Wetlands)	Enhance the old horse pasture and improve wetland habitat by removing invasive species and planting natives.
101		Lower Slough Salmon Refugia	Reveg slough bank and place large woody debris for juvenile salmon refugia.
116		Channel maintenance project between Smith and Bybee	This project will deepen the channel in some sections between Smith and Bybee lakes and provide a better location for beaver activity.
117		water control structure upgrades and repairs, Smith and Bybee	Upgrade the water control structure to manage the hydrology of Smith and Bybee for invasive species control and seasonal water storage.



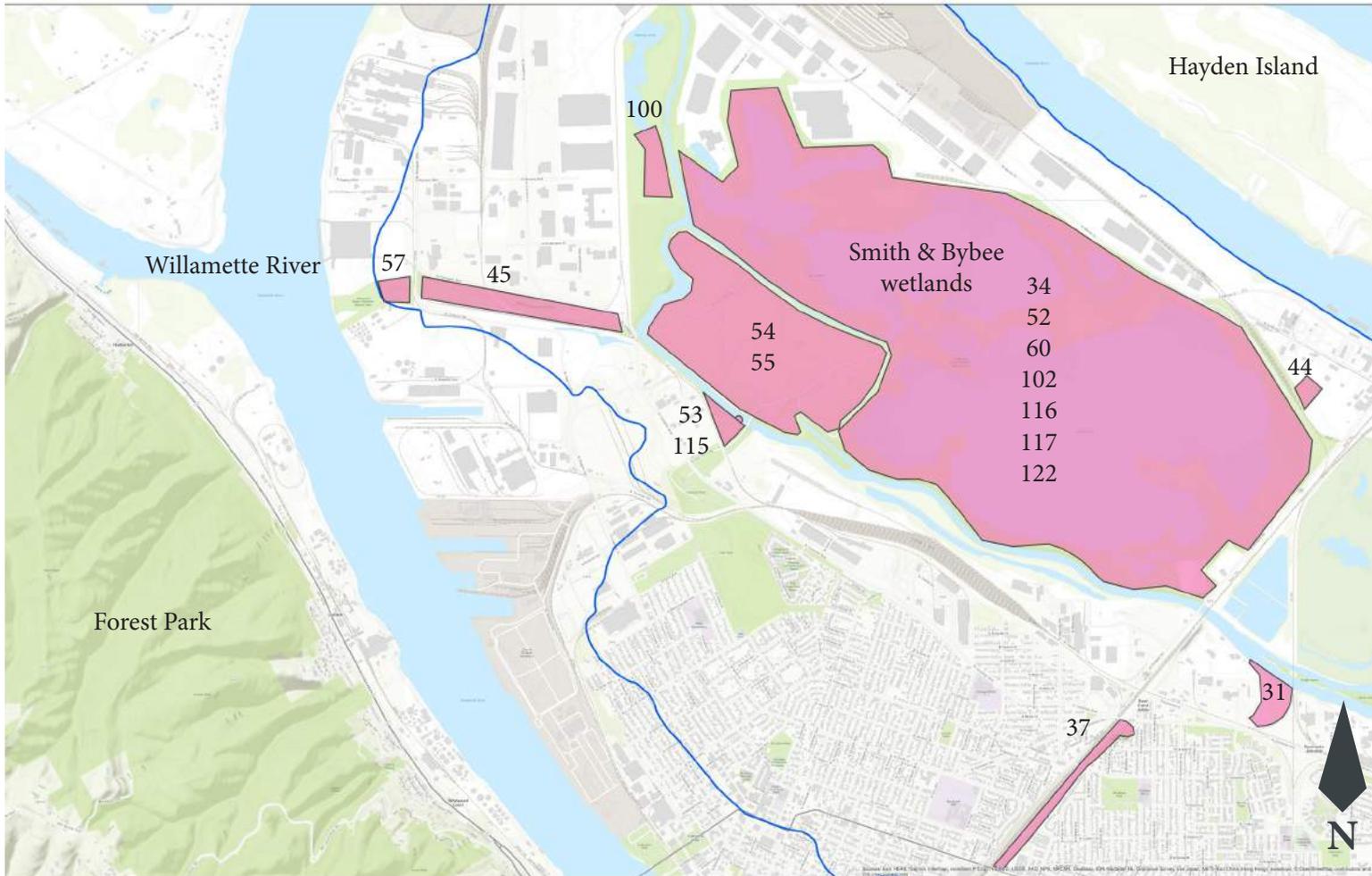
Appendix G - Columbia Slough Watershed Map Overview



 Columbia Slough Watershed boundary



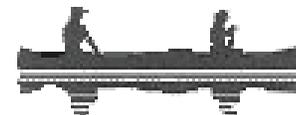
Appendix G - Inset Map 1 : Willamette River to Smith & Bybee Lakes



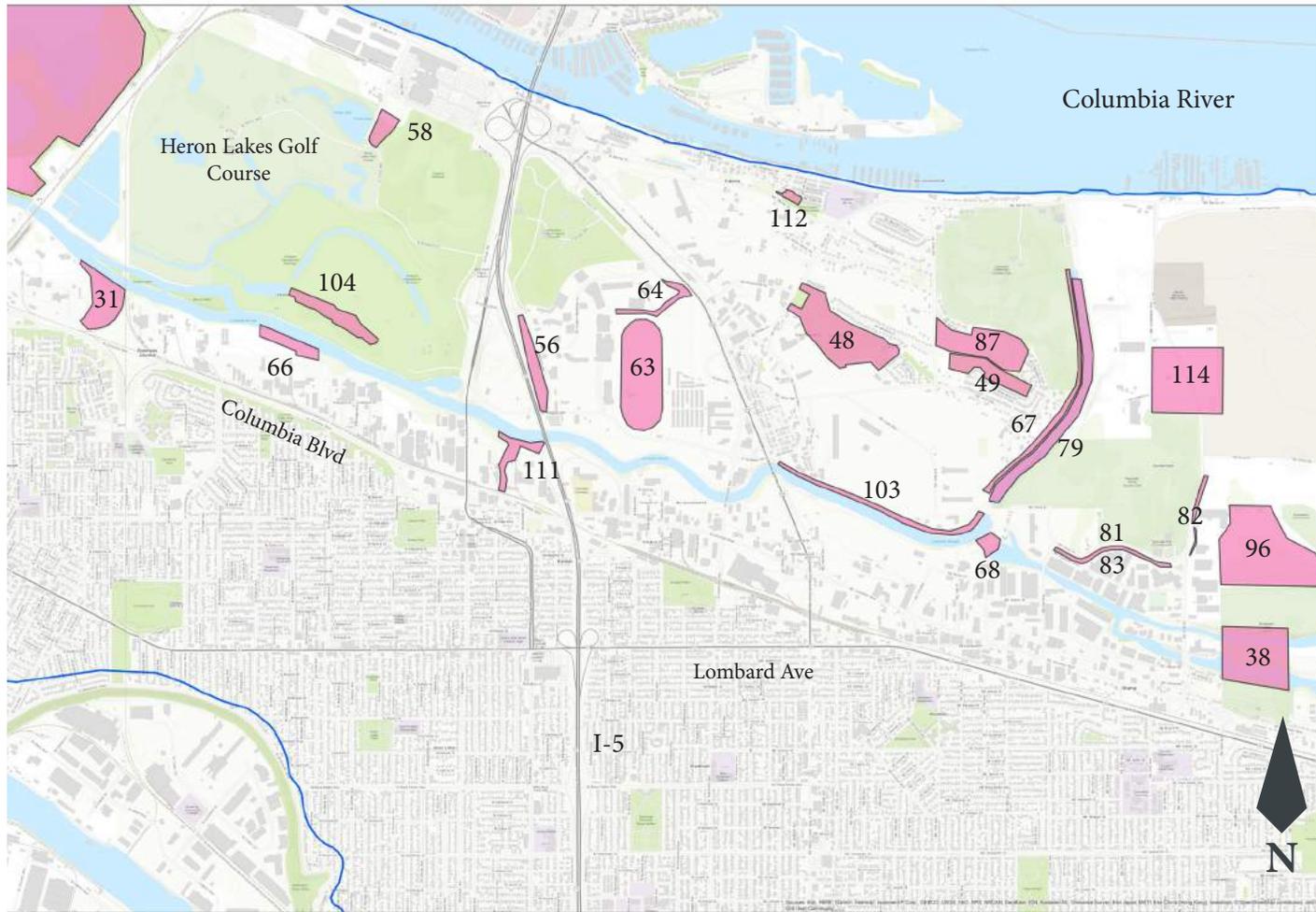
Project ID

- 31: Columbia Blvd Wastewater Treatment Plant enhancement
- 34: Smith & Bybee volunteer efforts
- 37: Restoration on Peninsula Crossing trail
- 44: Old Marine Dr. Wetland Enhancement
- 45: Enhance Rivergate corridor
- 52: Interlakes sedge meadow restoration
- 53: Enhance landfill triangle site
- 54: Streaked horned lark project
- 55: Native prairie project
- 57: Enhance T-5 mitigation upland
- 60: Bat habitat at Smith & Bybee
- 100: Pacific willow wetland enhancement
- 102: Smith & Bybee ash forest plantings
- 115: Improve boat launch at St. John's landfill
- 116: Channel project at Smith & Bybee
- 117: Water control tower at Smith & Bybee
- 122: Ludwigia control

 Columbia Slough Watershed boundary



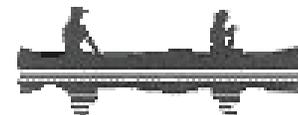
Appendix G - Inset Map ② : Heron Lakes Golf Course to NE 33rd Dr



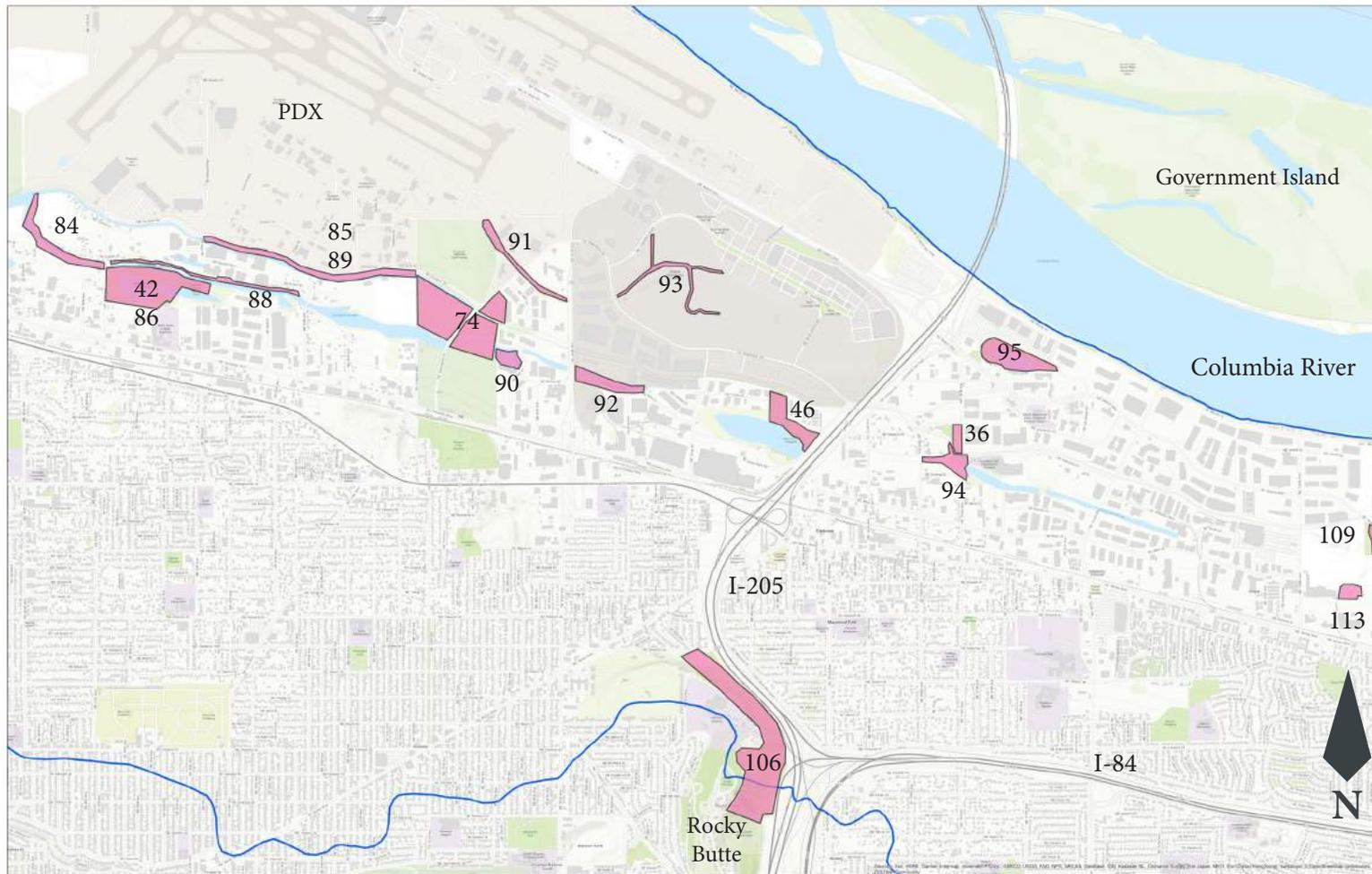
Project ID

- 38: Bank restoration at Broadmoor Golf Club
- 48: Columbia Children's Arboretum
- 49: Blue Heron wetlands: Ludwigia
- 56: Schmeer Rd. Forebay Slough
- 58: Enhance Force Ave Property
- 63: Enhance Portland Meadows drainage way
- 64: Enhance G.I. Joe drainage way
- 66: Malarkey Roofing restoration
- 67: Enhance Peninsula Canal westside
- 68: Wildlife pinch point MCDD #1
- 79: Peninsula Canal turtle habitat
- 81: Elrod Slough turtle habitat
- 82: NE 33rd Dr ditch restoration
- 83: Elrod Rd Slough benching
- 87: Enhance Flyway wetlands
- 96: Catkin Marsh enhancements
- 103: Enhance Lower Slough levee
- 104: PIR wetland enhancements
- 111: Blasen Ravine: backwater reconnection
- 112: Bridgeton Slough restoration
- 114: Enhance Zanabelle Complex

 Columbia Slough Watershed boundary



Appendix G - Inset Map 3 : PDX to I-205

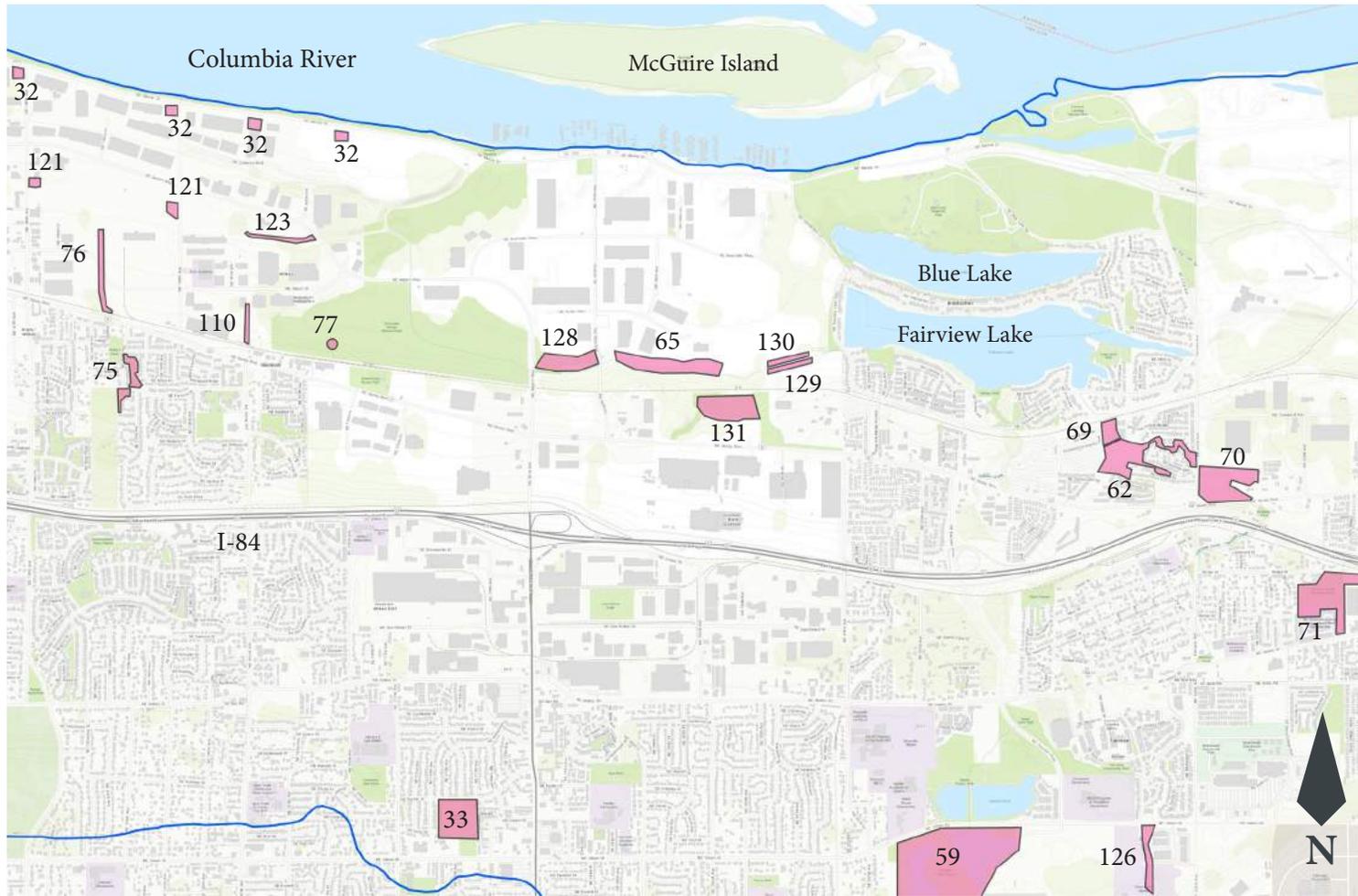


- Project ID**
- 36: Columbia Slough Natural Area restoration
 - 42: Whitaker Ponds restorations
 - 46: Johnson Lake shoreline buffers
 - 74: Colwood Golf Natural Area stewardship
 - 84: Whitaker Slough revegetation btwn NE 42nd & NE 47th
 - 85: Add shade along Cornfoot Rd
 - 86: Whitaker Ponds ball fields restoration
 - 88: Whitaker Slough revegetation btwn NE 47th & NE 60th
 - 89: Cornfoot Rd knotweed control
 - 90: Holman Pond restoration
 - 91: McBride Slough restoration
 - 92: Meyers/Marx enhancements
 - 93: PIC ditches restoration
 - 95: Mays Lakes revegetation
 - 94: Little Four Corners riparian restoration
 - 106: Rocky Butte invasives control
 - 109: Cross Levee Park restoration
 - 113: Enhance Columbia Enterprises wetland

 Columbia Slough Watershed boundary



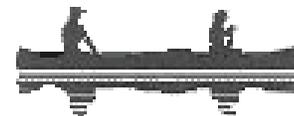
Appendix G - Inset Map 4 : Marine Dr. to Blue & Fairview Lakes



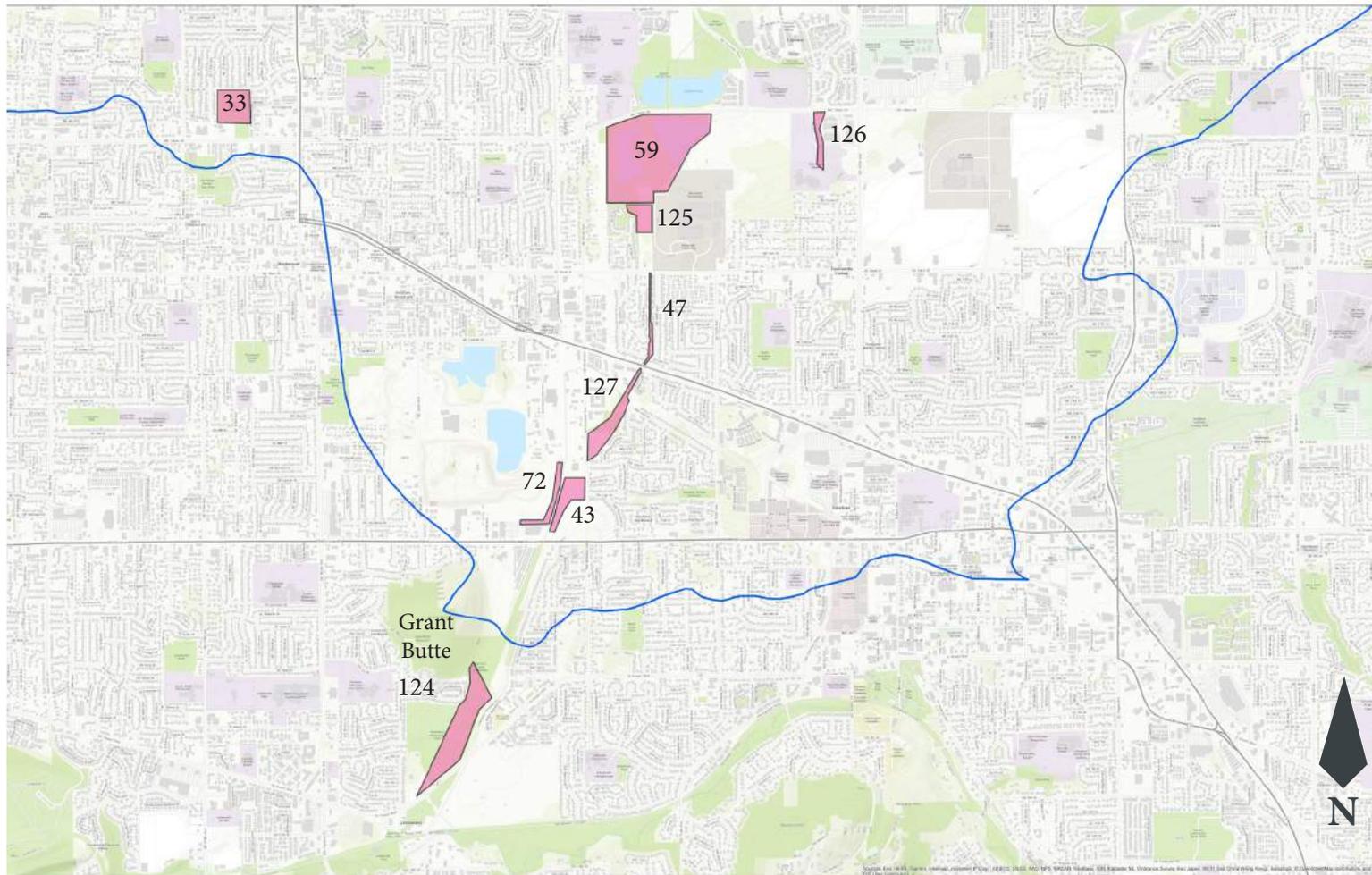
 Columbia Slough Watershed boundary

Project ID

- 32: Enhance PWB wellhead sites along Marine Dr.
- 33: Nadaka Nature Park restoration
- 59: Fujitsu Ponds improvements
- 62: Enhance MacDonald property
- 65: Enhance Gresham wetlands
- 69: Enhance Heron Pointe wetlands
- 70: Enhance Beal property
- 71: Enhance Fairview Woods wetlands
- 75: Wilkes Creek Natural Area restoration
- 76: Wilkes Creek, enhance riparian buffers near confluence
- 77: Alice Springs enhancements
- 110: Stream daylighting at FXI Inc.
- 121: Enhance PWB wellhead sites along main channel
- 123: PWB Main Pumpstation riparian restoration
- 126: Enhance Clear Creek reach
- 128: Rockwood North Shore wetlands
- 129: Enhance Gresham south fields
- 130: Enhance Gresham north fields
- 131: Columbia Slough Regional Water Quality Facility



Appendix G - Inset Map 5 : Fairview Creek Headwaters



Project ID

- 33: Nadaka Nature Park
- 43: SE 202nd Fairview Creek corridor improvements
- 47: Private residential enhancements along Fairview Creek (Burnside to Stark St.)
- 59: Fujitsu Ponds improvements
- 72: TriMet Fairview Creek enhancements
- 124: Enhance Fairview Creek Headwaters wetlands
- 125: Conifer Parks HOA restoration
- 126: Enhance Clear Creek reach
- 127: SE 202nd Fairview Creek corridor improvements (Burnside to SE 202nd)

 Columbia Slough Watershed boundary

