



Title of Project:
Blue Heron Slough Restoration

Name of Applicant:
Port of Everett

Award Category:
Environmental Enhancement

Contact and Job Title:

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Date Submitted: June 9, 2023

1. PROJECT SUMMARY

The Port of Everett recently concluded its \$20 million, 353-acre Blue Heron Slough Restoration project, marking a significant triumph for both environmental conservation and economic advancement. By transforming previous agricultural land back to its original estuarine state, the project has rejuvenated a vital part of the ecosystem — establishing essential habitat for local salmon species, indirectly bolstering the food chain for the Southern Resident orca. The new estuary is not only critical to salmon recovery, but also water quality, flood protection, bird habitat, and greenhouse gas carbon sequestration. As for the economic aspect of this project, it is also an environmental mitigation bank to better balance our region's future economic development with a healthier environment. As environmental considerations continue to be top-of-mind in the community, the multifaceted benefits from this project provide considerable social license for the Port. This, in combination with the mitigation bank, will support the Port's ambitions to maintain and expand its international seaport operations into the future — as well as advance other key economic opportunities in the region.

The Port took this project on, not as a required mitigation project, but rather, to restore valuable estuarine habitat at the 353-acre property. It was a massive conservation undertaking, which was more than 30 years in the making, and involved many public and private partners, including but not limited to the Port's private development partner Wildlands of Washington LLC and the Port Gardner Bay Trustees, which represents the Tulalip Tribes, Suquamish Tribe, U.S. Department of Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, and the Washington State Department of Ecology.

The Blue Heron Slough project provides multiple benefits as it:

- ✔ Restores and rehabilitates 353 acres of valuable estuarine habitat by reconnecting the Snohomish River to the site for the first time in over a century;
- ✔ Bolsters the restoration of native threatened and endangered species such as Chinook salmon, steelhead, bull trout, and Southern Resident orcas;
- ✔ Enhances water quality by wetland filtration;
- ✔ Reduces the impact of flooding by creating additional space for water absorption during flood events;
- ✔ Offsets carbon emissions, as salt marsh estuaries sequester greenhouse gas carbon at a rate 4 to 10 times higher than forests; and

- ✔ Fosters a balance between our region's future economic growth and a thriving ecosystem by functioning as an environmental mitigation bank supporting the development of a sustainable Port and growing waterfront economy, as future mitigation needs come up.

In 1993, the Port of Everett acquired the area now known as Blue Heron Slough, on Spencer Island between the cities of Everett and Marysville in Snohomish County. Spencer Island was cleared, diked and drained for agriculture around 1880. Most recently, the 353-acre property was the location of Biringer Farm, renowned for its strawberries. The farmland became less productive over time due to saltwater intrusion from the estuary, however, and operations here were discontinued.

With the farm long gone, and in line with the Port's role as an environmental steward, the Port envisioned the creation of a saltwater wetland habitat near the mouth of the Snohomish River. In 2005, the project was bolstered when the Snohomish River Basin Salmon Conservation Plan identified the Blue Heron Slough as key to salmon recovery. In 2019, the Port came to an agreement with the Port Gardner Bay Trustees to invest in and restore the area for salmon habitat and work to transform the key environmental asset.

The three-phase project involved a win-win combination of restoring a critical link for salmon recovery and generating marketable environmental mitigation credits. Phase 1 focused on preserving and enhancing the site's existing shoreline habitat. This included controlling weedy and/or invasive plants, transplanting native trees and installing native plants in 2020. Phase 2 involved redeveloping the estuary. A mosaic of channels, marshes, mudflats and riparian areas was created in 2021. The work restored a total of nine miles of channels or 18 miles of shoreline habitat. In Phase 3, after the estuary development, an agricultural dike was breached and a tide gate was removed so that the site could be reconnected to riverine and tidal influences in 2022. The dike was breached in four sections — one on the Port's adjacent Union Slough, and three on Steamboat Slough. This reconnected the river to the area for the first time in over a century.

The site now serves as a NOAA-certified environmental conservation credit bank and has a pending wetland bank accreditation, with approval expected in 2024.

NOTE: We have submitted this project for consideration under the Environmental Enhancement category since the Blue Heron Slough, while now also serving as a mitigation bank, was not constructed as mitigation for a specific project development. The project will eventually be used for such future mitigation requirements into the future, but its main priority was habitat restoration for salmon recovery. If you feel a different category is more applicable, please still consider this important project for recognition.

2. GOALS AND OBJECTIVES

As time has passed, the goals of the project have evolved and expanded far beyond the somewhat narrow goals first envisioned 30 years ago and, therefore, the importance of the project has increased over time. The initial environmental goal of this project was strictly salmon recovery. However, over the intervening time, new concerns or increased concerns have emerged that this project uniquely addresses, including the decline of salmon and Southern Resident orca populations at alarming rates; the effects of climate change, involving increased flooding, increased greenhouse gas emissions, and decreased water quality; and the increased social capital requirements to operate an international seaport and move key economic development projects forward. That said, the original objectives of the project remain in-tact and include:

- ✔ Restore and enhance 353 acres of disturbed habitat in the lower Snohomish River Estuary to include sustainable mudflats, intertidal marches and riparian areas;
- ✔ Improve and increase refuge and off-channel rearing habitat for federally listed and state priority fish species;
- ✔ Reconnect refuge and off-channel rearing habitat to the Snohomish River Estuary;
- ✔ Permanently protect and manage the improved, enhanced and restored habitats; and
- ✔ Provide a high-functioning mechanism to meet future mitigation needs via conservation and wetland credits for approved projects in the service area.

3. DISCUSSION

3.1 BACKGROUND

The Port of Everett and Wildlands partnered on the Blue Heron Slough project to restore 353 acres of habitat and create a mitigation bank under a Conservation Bank Agreement that follows federal guidelines to provide critical habitat for the recovery of threatened species like Chinook salmon and bull trout in Puget Sound and the Snohomish River Estuary.

Blue Heron Slough is located on north Spencer Island in the lower Snohomish River Estuary, between the cities of Everett and Marysville (Figure 1). The site is 1-2 miles upstream of the confluence of Steamboat and Union sloughs and Possession Sound. It is bordered by Interstate-5 to the west, Steamboat Slough to the north and Union Slough to the south (Figure 2). Blue Heron Slough lies within the 100-year floodplain of the Snohomish River in what was historically part of an extensive estuary complex, supported by daily flooding from Possession Sound and intermittent flooding from the Snohomish River (Figure 3). In the late 1880s, the area was

cleared, diked and drained, with ditches and tide gates, and farmed in some manner. The tide gate limits access to the slough by salmon rearing in the nearby Steamboat and Union sloughs.

The overall goal of this restoration project was to reconnect the former estuary to the Snohomish River sloughs and restore natural habitat-forming processes. It involved the creation of a mosaic of estuarine mudflats, tidal marshes, riparian habitats, islands and, over time, some forested wetlands.

In 2022, the Port of Everett, the Tulalip Tribes, Suquamish Tribe, Wildlands and the Port Gardner Bay Trustees celebrated the completion of Blue Heron Slough and the public-private investment made thanks to the Trustee's agreement to construct the project (Figures 4 and 5). Blue Heron Slough is also under a conservation easement held by the Tulalip Tribes, which will protect this land for conservation purposes in perpetuity.

3.2 OBJECTIVES AND METHODOLOGY

RESTORE OVER 350 ACRES OF CRITICAL ESTUARINE HABITAT

About 87% of the 353-acre site had been cleared for agriculture. Crops grown at the previous site of Biringer Farms included strawberries, raspberries, kale and pumpkins (Figure 6). Around the former farm, the property had 17 acres of private perimeter dike and 13 miles of dirt access roads. A two-story residence, barn, outbuildings, farm equipment and a children's area with a corn maze were located on about 6 acres. The site supported farming activities up until 1994. The Port had a vision for restoring the site, and in partnership with private developer Wildlands, worked since the early 2000s on project planning, design and permitting. After the Port Gardner Bay Trustees agreed to fund a portion of the project in 2019, the Port removed the buildings and farming equipment from the site.

The physical reconstruction of the site followed, and took three years' time, as each of the three phases of the project was spaced about one year apart to allow habitats to stabilize and vegetation to establish. The following is an explanation of each phase of work to restore Blue Heron Slough:

PHASE 1

The first phase focused on preserving and enhancing the existing shoreline habitat. About 50% of the site's shoreline habitat along Steamboat and Union sloughs needed to be restored because Blue Heron Slough had been diked and drained for farmland. This phase included controlling weedy and/or invasive plants, transplanting native trees and installing native plants. Descriptions of invasive species, vegetation control

techniques and the location of these non-native plants to be removed were provided when applying for construction permits. Mowing and/or discing of fields continued to temporarily help control weeds. All areas with exposed soil were managed and protected with Best Management Practices (BPMs) to minimize surface water runoff, erosion and sedimentation. A temporary erosion and sediment control plan (TESCP) was implemented during all phases of construction. Upon completion of grading and planting activities, a stormwater pollution prevention plan (SWPPP) was implemented to protect critical areas.

PHASE 2

In the second phase, working with its partner Wildlands and their contractor Dungeness, the Port constructed the slough network of channels, marshes, mudflats and riparian areas. Diking had led to the loss of this habitat that is essential to the estuarine ecosystem, and this work was critical to restore that element (Figure 7). These habitats were greatly modified by development activities and disconnected from natural sediment, vegetation and woody debris processes.

Slough reconfiguration is a very important step. If the site had only been reconnected to the river system, it may have caused juvenile salmon and other species to get stranded at the tidal gate and also would have subjected them to poor water quality from restricted circulation and poor habitat quality from a lack of shade. This phase also included native plantings and the installation of large woody debris to improve the habitat.

In addition, a 4,000 linear foot cross dike, or buttress, was constructed to protect Interstate-5 from the 100-year flood. Material for the dike was excavated from the site during the construction of the estuary; more than 400,000 cubic yards of soil — or 33,000 dump truck loads — was moved to cut nine miles of channels. The soil was repurposed onsite to create habitat mounds. The cross dike is maintained per U.S. Army Corps of Engineers standards.

PHASE 3

In Phase 3, the agricultural dike was breached in four sections and the tide gate was removed to reconnect the site to tidal and riverine processes, restoring it to a fully functioning estuarine system. The four dike breaches were completed during low tide, one at a time, with waters flowing into the site with each successive breach (Figure 8). Other portions of the dike were peeled back, or reduced in height, to allow more frequent overtopping of tidal and flood waters and increase the width of the riparian buffer.

DEVELOP AN ENVIRONMENTAL MITIGATION BANK FOR FUTURE PROJECTS

The project serves as a regional environmental mitigation bank to support future economic development and maintenance projects that have impact on the environment. The use of regional banks is encouraged by the federal government because they provide such substantial lift for the environment, on an ecosystem level. There are two types of credits that are or will soon be available for this site — conservation credits to offset impacts to Endangered Species Act (ESA) listed species (salmon, bull trout, etc.), and a wetland bank to compensate for impacts to wetlands and waters of the United States.

For the conservation credit bank, the Habitat Development Plan and Conservation Bank Management Plan were prepared in accordance with federal guidelines for the establishment, use and operation of mitigation banks. The Port partnered with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers' Seattle District and the U.S. Environmental Protection Agency to develop these plans and get them certified.

As a NOAA-certified conservation credit bank, Blue Heron Slough will generate conservation credits for projects that may have impacts on federally listed species in Puget Sound and need to mitigate those impacts as a condition of their permits (Figure 9). At this site, impacts can be to Puget Sound runs of Chinook salmon, steelhead and bull trout, which are listed as threatened species, and Coho salmon, a special status species that may be listed in the near future. It will also provide compensation for impacts to essential fish habitat for Pacific salmon. In addition, this certification can also offset natural resource damage assessment claims or contaminated sites.

The wetland bank is currently undergoing an approval process. Similar to the conservation bank accreditation process, the wetland banking approval process in Washington state involves submitting a proposal to the Interagency Review Team (IRT), which includes representatives from the U.S. Army Corps of Engineers and the Department of Ecology, among other regulatory agencies and Native American tribes. The proposal, detailing site plans, hydrological assessments and projected environmental benefits, is subject to a rigorous review by the IRT and a public comment period. Once approved, the bank must implement the plan under the ongoing oversight of the IRT. This includes periodic monitoring and reporting to ensure compliance and effectiveness. Successful completion of the wetland bank project results in the issuance of wetland credits, which can be sold or traded to offset wetland impacts elsewhere, per state and federal mitigation requirements.

4. HOW THE PROJECT FULFILLS AWARD CRITERIA

ENVIRONMENTAL BENEFITS

The completed Blue Heron Slough (Figure 10) was designed to restore critical habitat for threatened species of salmon, steelhead and bull trout — it reconnects an off-channel rearing and refuge habitat for the fish. It is a perfect example of the Port of Everett's commitment to enhancing, restoring and preserving the overall environmental health of our environment. Not only does the \$20 million project benefit salmon, Southern Resident orca and other estuary-dependent species, but it provides other important benefits as well, including water quality improvements through wetland filtration, reduced flooding by providing more space for water to be absorbed during flood conditions, and greenhouse gas carbon capture at a higher rate than forest lands. This project helps build a more resilient and robust ecosystem.

In addition to providing compensation for impacts to salmon, steelhead and bull trout habitat, the site also restores the drained and diked land to its natural estuarine condition. Of note, the restoration of Blue Heron Slough increased the tidally-influenced acreage in the Snohomish River Estuary by about 13%.

In addition to these environmental benefits, the Port's delivery of this project has improved its relationships with tribal partners, federal, state and local government agencies, and its local and regional communities. The increased social license gained by the Port through this project is hard to measure. But it is tangible in the experiences of Port staff and its elected officials and has proved to be invaluable.

PORT INVOLVEMENT

Environmental stewardship is an integral part of the Port's strategic goals and an underlying focus of what the Port does and how it operates — and the Blue Heron Slough project is a prime example. The Port places a strong emphasis on remediating, protecting and enhancing the environment while carrying out its mission of growing the local economy and creating family-wage jobs. As stewards of the land, waterfront and marine environment, the Port is committed to revitalizing and restoring historically contaminated lands and water, protecting and enhancing water and air quality, restoring and protecting valuable wildlife habitat and implementing environmental programs that reduce the impact of our carbon footprint.

In line with the Port's role as an environmental steward, the Port envisioned the creation of a saltwater wetland habitat near the mouth of the Snohomish River. For three decades, the Port worked alongside its private partner Wildlands to design and permit the project, while also working with many partners who comprise the Port Gardner Bay Trustees to reach an agreement to move forward with the construction in

2019. It was indeed a massive project not only because of the time involved but because the Blue Heron Slough is the largest undertaking in size and scope in the Port's history. To put it into perspective — this estuary is larger in footprint than the Port of Everett International Seaport, neighboring Naval Station Everett and the Port's 100+ acre destination waterfront at Waterfront Place, combined.

CREATIVE SOLUTIONS

The primary challenge associated with this restoration, as is common with many such projects, was securing adequate funding for construction. Even after years of substantial investment in land acquisition, permitting and banking accreditations, the project still needed financial resources for its execution. The Port tackled this challenge with a creative and high-risk strategy, spearheading a Natural Resources Damages claim. This unconventional approach successfully secured the required funding, thereby enabling the restoration to move forward.

As background, since the launch of Washington's Puget Sound Initiative in 2007, the Port, its partners at the Washington State Department of Ecology (Ecology) and other parties have invested more than \$238 million to clean up historic contamination on Port-owned waterfront properties. These cleanup efforts represent more than 250 acres of waterfront that are now clean or currently under cleanup action. The Port is restoring these former mill sites into sustainable 21st-century job-producing hubs to support trade and industry at the working waterfront.

In 2014, the Port Gardner Bay Trustees Council was established and notified the Port of Everett along with other responsible parties of a pollution claim. The Council is made up of representatives from the Tulalip Tribes, Suquamish Tribe, U.S. Department of Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, and Washington State Department of Ecology. A number of entities, including Weyerhaeuser Company, the U.S. Navy, Jeld-Wen, and Kimberly-Clark, who formerly owned these polluted sites, are accountable for the legacy contamination along the Everett waterfront.

The Trustees aimed to resolve a Natural Resources Damages pollution claim under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a federal cleanup regulation. However, the cleanup activities on the Everett waterfront were administered by the State of Washington under the Model Toxics Control Act (MTCA), creating a potential clash of jurisdictions. To harmonize these diverging interests, the Port orchestrated a comprehensive settlement, culminating in a funding mechanism for the construction of Blue Heron Slough.

To achieve this, the other parties with liability contributed \$5.5 million to a settlement fund. This money was designated to the Port for the construction of Blue Heron Slough, resulting in a mutually beneficial outcome for all parties involved. Consequently, the Port was also exempted from a \$6 million claim. As part of the agreement, the bank had 20% of its available mitigation credit value deducted.

Without the Port's agreement with the Trustees, the 353-acre estuarine habitat and conservation bank, known as Blue Heron Slough, would not exist today. This clearly underlines the significance of this mutual agreement in the successful execution of this environmental restoration project.

PROVEN RESULTS

All of the Port's work to implement this project has proven to be an environmental success and is a critical component to its future maintenance and expansion of its international seaport.

During construction, Blue Heron Slough was already home to deer, coyotes, ducks, frogs, owls, cougars and its namesake, the great blue heron. Now that the agricultural dike has been breached, experts expect salmon to quickly make use of this newly established habitat. Abundant schools of smelt fish were found onsite within the first 24 hours after it was breached — a very promising start.

The project's proven results include the restored and enhanced 353 acres of estuarine habitat in the lower Snohomish River Estuary — which includes 18 miles of shoreline habitat and nine miles of channels — as well as the reconnected refuge and off-channel rearing habitat to the Snohomish River Estuary. But the Blue Heron Slough benefits much more than salmon. Researchers at Earth Corps, Restore America's Estuaries and Western Washington University have found that an investment in estuary restoration supports other important benefits, including improved water quality, increased storm and flood protection, and better greenhouse gas carbon storage. According to their study, coastal wetlands capture carbon at rates 2-4 times greater than forests and bury carbon in the ground at rates 10 times greater than forests.

The project has significantly fostered positive relations within the community, including regional elected officials and tribal partners. As mentioned earlier, the project significantly enhances the Port's social acceptance in managing and growing its international seaport and provides a highly effective mechanism for future mitigation requirements. It forms a part of the comprehensive package that the Port offers to its community — combining economic development and environmental stewardship.

COST

The Port partnered with private developer Wildlands on the \$20 million Blue Heron Slough project. In this partnership, the Port acquired the land and Wildlands permitted, entitled and constructed the 353-acre estuary, which provided significant cost savings for the Port. The Natural Resources Damage settlement provided funding to construct the bank and eliminated a natural resource damage claim valued at more than \$6 million. The Port to date has only invested about \$5 million in the project, demonstrating the incredible cost efficiency of the project and the strategies employed, including but not limited to the property acquisition, the public private partnership, and natural resources damage claim resolution.

TRANSFERABILITY TO PORT INDUSTRY

The Blue Heron Slough project demonstrates the Port's role as an environmental steward in the region it serves. Environmental sustainability has many elements that are interconnected with and, in some cases, facilitates the Port's economic development mission. The Port works diligently to develop partnerships and programs that revitalize the health of the land, restore valuable wildlife habitats, and enhance and protect water and air quality.

The approach employed in this project can be replicated across the port industry, as environmental stewardship — encompassing remediation, protection, and enhancement of the environment — is integral to a port's mission and core values. In this case, the combination of estuary restoration and the creation of a mitigation bank is a modern, highly visible project that effectively balances economic growth with environmental health. This project also serves as an excellent example of the success of public-private investment in benefiting a port's interests.

Furthermore, conducting a large-scale restoration, like this one, grants a port the social credibility to undertake projects as an economic developer within the region it serves. Other ports could implement similar extensive environmental restoration projects to harmonize economic development with environmental preservation. All the benefits garnered, both tangible and intangible, more than validate the efforts.