



TECHNICAL MEMORANDUM

To: Nicole Floyd
City of Olympia: Community Planning & Development
P.O. Box 1967
Olympia, WA 98507-1967

Date: July 29, 2025

From: Grette Associates, a division of Farallon Consulting, LLC
2709 Jahn Avenue NW, Suite H-5
Gig Harbor, WA 98335

Re: West Bay Yards Development: Shoreline Master Program Consistency Narrative

West Bay Development Group, LLC (the developer) is proposing the construction of a 478-unit development with five buildings with surface and structured parking below totaling 823 parking stalls, and 401 long term and 62 short term bike parking spaces. Additionally, the developer is proposing to conduct a voluntary shoreline restoration action waterward of the existing ordinary high water mark (OHWM) on the site (+15.5 feet mean lower low water [MLLW]) (collectively, along with the upland development, the “Project”). The subject property (Thurston County parcel #s 72600200101, 72600200102, 72600200103, 72600200104, and 72600200105) is located at 1210 West Bay Drive in Olympia, WA. As development is proposed within 200 feet of the OHWM of Budd Inlet, the Project is required to apply for a Shoreline Substantial Development permit and is regulated under the Shoreline Master Program pursuant to Title 18.20 of the Olympia Municipal Code (OMC).

The approximately 91,300 sf building footprints will be located on approximately 8 acres of uplands along West Bay Drive. Along with the 478 residential units, there will be cafés, restaurants, and building amenities for the residents including a recreational facility. The street level plaza allows for vehicle and pedestrian access onto the site and to the lower-level esplanade trail and amenities. The Project has been designed to meet the land use requirements of 0 setbacks and a 60% maximum building coverage.

In addition to the upland development, and as required by the conditions of the March 31, 2021 development agreement between the developer and the City, the developer is proposing to restore the shoreline along the entirety of the subject property based on the restoration alternative for the Hardel site in the City of Olympia (City)’s 2016 West Bay Environmental Restoration Final Report (CHE 2016). The restoration goals and objectives are also informed by the City’s Shoreline Restoration Plan (Appendix A in Olympia Shoreline Master Program 2012), Shoreline Inventory (TRPC 2009), and the Lacey, Olympia, and Tumwater Shoreline Analysis & Characterization Report (ESA Adolfson 2008). The restoration alternative entails placement of select substrate materials along approximately 1,100 linear feet of degraded shoreline. The fill would be extended out approximately 100-150 feet from the OHWM, with a toe elevation of approximately 0 feet MLLW. The fill material would include bedding material consisting of gravel, overlain with a mixed sand and gravel material forming the beach. The top of the existing revetment would be excavated back above the OHWM, forming a bench that would be planted with transitional and

riparian vegetation. The beach would have a slope of approximately 8H:1V, with the upper beach elevations planted with saltmarsh vegetation.

This document is intended to demonstrate how the proposed Project meets or addresses the applicable requirements of the current version of the City's Shoreline Master Program, including mitigation sequencing and no net loss of shoreline ecological functions or processes. The Shoreline Master Program is administered through the OMC in Chapter 18.20.

Photographs showing the existing site conditions can be found under Site Photographs. Additional site conditions, Project details, and design alternatives are described in the 2025 *West Bay Yards Shoreline Restoration Design – Alternatives Analysis* prepared by Moffatt & Nichol, Grette Associates, J. A. Brennan, and Sage Geotechnical (Revision 5, July 2025).

Existing Site Conditions

Upland Habitat

The subject property was first developed in in the early 1900's and was used as a sawmill. Various other industrial uses occurred on the site over the years until 1980, when the subject property was occupied by the Hardel Mutual Plywood Corp. plywood manufacturing facility. The facility stopped operations in 1996 and the buildings were demolished in the late 1990's. The site then underwent various remediation actions until 2010, when much of the site was backfilled with crushed concrete surfacing. Since that time the site has been vacant. The site is set below the grade of West Bay Drive and is primarily flat. A long, linear depression associated with two rail spur lines runs along the length of the west parcel boundary, parallel to West Bay Drive. Within and along this depression shrub and herbaceous vegetation has established, including willows, Himalayan blackberry, and butterfly bush. The central portions of the site are primarily unvegetated, with much of this area consisting of asphalt and crushed concrete. Shrubby vegetation that is present consists of occasional birch saplings, blackberry, butterfly bush, yellow sweet clover, and low grasses and forbs. Shell hash is also prevalent, likely the result of sea gulls and crows dropping shellfish from height during foraging. The upland riparian habitat along the top of the shoreline slope consists of small, sparse trees and shrubs growing up through the crushed concrete and asphalt surfacing.

Habitat quality on the upland portions of the site is low. While the site does contain dense vegetation along the west property line associated with the linear rail spur depression, invasive blackberry has reduced the habitat potential in this area. There is very little foraging opportunity within the remainder of the site due to the crushed concrete and asphalt surfacing. Sparse non-native grasses and forbs are present, though they represent low quality browse for terrestrial species such as deer, which would likely prefer foraging opportunities along the hillside west of the site. Terrestrial species likely to use the site include those species associated with disturbed urban sites, including raccoon and opossum.

Shoreline and Aquatic Habitat

The existing shoreline is composed primarily of an upland fill area and approximately 1,100 ft of steep riprap armored shoreline that abruptly transitions to intertidal mudflats and deeper subtidal areas. The shoreline of the subject property is degraded and is entirely stabilized by riprap. The top portion of the bank is characterized by sparse invasive plant species growing through asphalt,

fill and riprap. Invasive shrubs such as Himalayan blackberry and scotch broom are present along portions of the top of the slope, with occasional larger shrubs such as red elderberry also present. Small trees including Pacific madrone and big leaf maple are also present in places. In addition, various invasive and non-native forbs occur along the top of the slope above the riprap.

Below the top of the slope, the upper shoreline consists entirely of riprap and is almost entirely unvegetated. The slope is fairly steep, approximately 1:1. At the base of the riprap slope (approximately +5 feet MLLW), the lower shoreline flattens to a gentler slope. The substrate immediately below the riprap slope consists of gravel and shell hash intermixed with timber pile stubs and metal debris down to approximately 0 feet MLLW. Below, the lower intertidal substrate consists of unconsolidated silt, with sparse wood waste, debris and gravel. Shellfish, primarily clams and barnacles, are present within the mudflat habitat. Several large, derelict concrete structures and sunken barge remains are present below the toe of the riprap slope. These structures appear to have been part of the former plywood manufacturing facility.

In addition to these structures, an area of dense wooden pilings and concrete rubble is present along the northern shoreline. This debris includes approximately 70 derelict timber pile and is located waterward of the toe of the armor slope at approximately +6 feet MLLW. Over the entire shoreline, approximately 200 creosote-treated piling are present.

Habitat quality along the shoreline, both marine riparian and aquatic, is low. Vegetation along the shoreline is limited and consists mostly of invasive and non-native species. Habitat along the base of the slope is also limited. Small pockets of gravel and shell hash are present at the base of the riprap, and while these pockets could provide spawning habitat for sand lance depending on the elevation, they represent a very small percentage of the overall substrate coverage in the area. No saltmarsh or other beneficial marine aquatic vegetation was observed along the mid-to lower intertidal shoreline. As such, the site does not provide quality foraging habitat for juvenile or adult salmonids

Shoreline Armoring and Culverts

The shoreline armoring covering the property shoreline consists of one- to two-man basalt riprap. The armoring extends from the top of the slope along the entire property shoreline (approximately +17 feet MLLW) down to the toe of the slope at approximately +5 feet MLLW. Scattered timber pile stubs are present, broken off at the riprap surface, as is occasional metal and wood debris, particularly at lower elevations on the slope.

Behind the riprap, the soil consists of fill material of unknown origin and wood debris (Pioneer 2020). The Hardel site has undergone sporadic filling over the last 150 years, and was first developed in 1924. The current configuration and armoring of the shoreline were achieved around 1980, when Hardel took over the site.

Six existing corrugated metal pipe (CMP) culvert outfalls are present along the shoreline, ranging in size from 8 inches to 18 inches in diameter. Four of the culverts are abandoned and will be plugged/removed as part of the proposed Project. The other two outfalls are active and will be retained/protected and extended through the proposed beach material to maintain their function.

Ecosystem-Wide Processes

As described above, the shoreline along the West Bay Yards property is highly degraded by the presence of steeply sloped hard armoring, concrete debris and structures, and other debris. The presence of this anthropogenic disturbance has wide-ranging effects on ecosystem processes within West Bay and beyond. Steeply sloped and armored shorelines disrupt sediment processes, which can lead to increased erosion and reduced beach width (Fresh et al. 2011, Johannessen and MacLennan 2007). Additionally, wave reflection off of armored shorelines can cause scour and erosion along other beaches in the vicinity of the site, further degrading ecosystem processes bay-wide.

Biologically, the presence of the hard armoring along the site eliminates the availability of upper intertidal and riparian habitat. Intertidal and riparian habitat support a wide variety of native plant and animal species, including juvenile and adult salmon, shorebirds, and terrestrial birds and mammals. Specifically, impacts to sediment processes along the shoreline from the presence of the armoring can result in changes to the invertebrate community; loss of forage fish spawning and migration habitat; loss of juvenile salmonid forage and migration habitat; and changes in the abundance and composition of shellfish (Fresh et al. 2011).

Proposed Conditions

Upland Development

The proposed Project will develop a 478-unit mixed use development on the property. The development will consist of five separate buildings with above and below ground parking, utilities, and native landscaping. A public waterfront esplanade will be developed to include beach access points and other public access amenities.

A 30-foot-wide, 37,112-square feet Vegetation Conservation Area (VCA) will be established and planted, extending landward from the existing OHWM to the esplanade. A mix of native trees and shrubs will be planted in the VCA, including bigleaf maple, Douglas fir, shore pine, and Pacific madrone. Native shrubs would include oceanspray, willow and elderberry. Native groundcover species to be planted in the VCA include yarrow, coastal strawberry and sword fern. The VCA will provide a buffer between the esplanade and the shoreline habitat.

Habitat functions within the VCA will include perching and foraging for raptors once the forested vegetation matures. The low trees and shrubs will also provide habitat for shore-associated birds and mammals. The vegetation within the VCA and adjacent riparian area will also contribute organic detritus and falling insects to the upper shore zone, contributing nutrients and foraging opportunities to the aquatic environment below.

Shoreline and Aquatic Habitat

As part of the March 31, 2021, development agreement between the developer and the City, the developer will enhance and restore the West Bay shoreline based on the restoration alternative for the Hardel site in the City's 2016 West Bay Environmental Restoration Assessment - Final Report (CHE 2016). The proposed restoration design will also meet the intent and objectives of the City's 2012 Shoreline Master Program Restoration Plan for the restoration of Budd Inlet (City of Olympia 2012), as well as the City's Shoreline Inventory (TRPC 2009), and the Lacey, Olympia, and Tumwater Shoreline Analysis & Characterization Report (ESA Adolfsen 2008). Please refer to

the Shoreline Restoration Design Report – Alternatives Analysis prepared in response to the City’s comments on the Project (Moffatt & Nichol et al. 2025) for additional information regarding how the Project furthers the environmental goals of the City.

The selection of the various shoreline restoration actions at this site was also informed by work done by the Squaxin Island Tribe in identifying a method to identify and prioritize areas throughout Budd Inlet for restoration planning and strategies. Based on the Tribe’s evaluation of the high degree of disturbance at both the site and landscape scale the recommended restoration approaches in lower Budd Inlet, including at the Project site, are creation and enhancement (Squaxin Island Tribe 2010). Elements of both of these strategies are proposed at this site, including placement of new shoreline substrate and modification of the shoreline slope to create a gently sloping beach profile, and enhancement of the intertidal, backshore, and riparian vegetation at the site to increase habitat function along the shoreline.

In addition to these approaches, the design of the proposed shoreline restoration has been guided by the Engineering With Nature® (EWN) set of principles. Developed by the U.S. Army Corps of Engineers (USACE), EWN is the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration (EWN, 2024). The guiding principles for EWN shoreline improvement systems include the following:

- Holistic (ecosystem approach),
- A Systems Approach (consideration that projects exist in a complex physical system, i.e., Geomorphologic system),
- Sustainable (consideration for resiliency for Sea Level Rise (SLR) and Climate Change relative to beach adjustment over time),
- Innovative (embracing continuous learning and prior experience),
- Adaptive (demonstrating ability to provide sustainable designs within the natural environment),
- Collaborative (Tribal, City and Regulatory input),
- Socially Responsible (aligned with values of City West Bay Restoration Plan and Tribal Restoration Interests for Budd Inlet Nearshore Enhancements),
- Efficient and Cost Effective (reducing rework and maintenance requirements),
- Science Based (being intentional to work within natural processes).

The proposed West Bay Yards shoreline and beach design alternatives have been developed based on the EWN guiding principles, as detailed in research documentation and guidance documents. Following these principles represents the standard of care and best available science for coastal engineering design of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al. 2025).

Removal of Debris

Prior to shoreline restoration, derelict concrete debris, pilings and metal beams will be removed from the shoreline mudflat and disposed of at an appropriate upland facility. This will include

removal of approximately 200 timber piling¹ along with several large concrete structures in the lower intertidal. Removal of debris and pilings should avoid interference with supplemental RI/FS work and/or implementation of remedial actions. Removal of creosote-treated pilings and in-water structures should be performed consistent with Ecology's Sediment Cleanup User's Manual (SCUM).

Shoreline enhancement/restoration opportunities with the Project include creation of intertidal beach and saltmarsh areas through substrate placement, transitional plantings along the backshore, and removal and restoration of the intertidal structure areas. The enhancement/restoration design concept maintains the existing uplands and shoreline plan form while creating fronting intertidal beach and saltmarsh areas primarily through placing beach substrates offshore of the existing revetment.

Landward Excavation of Top of Revetment

Along the entire face of the existing shoreline armoring, a partial cutback of the top of the existing riprap revetment is proposed. This cutback of the revetment above the OHWM will extend approximately 18 feet landward and will result in an approximately 8-foot wide bench at +17 feet MLLW. Approximately 2,175 cubic yards (cy) of clean topsoil will be imported and placed on the cutback at a 4H:1V slope to match the grades from the restored beach fill at +17 feet MLLW to the fill placed for the upland development up to +26 feet MLLW. This topsoil will also provide appropriate planting media for riparian vegetation to be installed. The cutback at the top of the slope will reduce the volume of fill material required to be placed below the OHWM to create the naturally sloped beach by approximately 5,773 cy.

Placement of Fill for Beach Construction

Approximately 7,290 cy of gravel fill would be placed along the face of the existing riprap slope below the cutback and extending offshore at a slope of 4:1. This material will provide bedding for the placement of the beach material. Approximately 24,965 cy of sand and gravel beach material will be placed below the OHWM over the gravel bed at a slope of 8H:1V, extending offshore from the OHWM approximately 100-150 feet. This material will also be placed over the areas where concrete structures are removed offshore of the revetment. Saltmarsh (e.g., gumweed, pickleweed, jaumea, plantain) and transitional riparian plantings (e.g., oceanspray, willow, silverweed, tufted hairgrass) would be established along the top of the beach below the OHWM. These plantings would provide habitat to a variety of terrestrial and aquatic species, including juvenile salmonids and their prey. Additionally, the gravel beach substrate would provide enhanced spawning habitat for surf smelt, which are currently mapped as spawning immediately south of the site.

Construction of the restored beach would also enhance shoreline processes along the site by replacing the steeply armored slope with a gently sloped beach, which will prevent wave refraction and reduce shoreline erosion in other areas of Budd Inlet.

Construction of the shoreline restoration would entail the placement of approximately 32,813 cy of select fill material over approximately 165,000 square feet of aquatic substrate below the OHWM.

¹ Timber pile stubs that do not extend above the existing ground surface will be buried in place.

Aquatic to Upland Conversion

Construction of the upland improvements for the site will include the placement of fill material that will elevate the entire site by approximately two feet. This material placement atop the existing grade and the placement of the beach fill material will result in the conversion of approximately 0.42 acre of degraded aquatic area to upland habitat, as the face of the shoreline slope below the OHWM will be shifted waterward. This waterward shift in the OHWM will be minimized by the cutback of the top of the existing slope above OHW, from approximately 30 feet under previous alternatives to approximately 12-18 feet under the proposed alternative.

Raising the site by two feet will protect the upper intertidal and marine riparian shoreline from the effects of sea level rise. The raising of the site coupled with the proposed 8:1 slope of the beach will guard against wave runup during high tides and storm events. Additionally, the area proposed for conversion will be planted with native riparian trees and shrubs that will provide quality habitat for birds, mammals and other organisms utilizing the planted riparian and upper intertidal zones.

Shoreline – Conditional Use Permit (OMC 18.20.230)

A small portion of Building 2 (totaling approximately 2,426 square feet) containing mixed use space is located within the 100-foot shoreline setback for mixed uses in the Urban Intensity designation. Intrusion into this setback constitutes a conditional use and will require a Conditional Use Permit for Building 2. Uses classified as conditional uses may be authorized provided they satisfy the criteria set forth in Washington Administrative Code (WAC) 173-27-160 (OMC 18.20.230.B).

1. *That the proposed use will be consistent with the policies of RCW 90.58.020 and the Shoreline Program;*

The proposed commercial space in Building 2 will be consistent with the policies of RCW 90.58.020 and the Shoreline Master Program. The commercial space will consist of spaces available for public use, such as a cafe/restaurant, to ensure public access and enjoyment of the shoreline is maintained. Furthermore, the minor encroachment into the 100-foot setback will not reduce the area or width of the public esplanade, VCA, or riparian corridor. The encroachment will not affect the public use or access to the esplanade or shoreline or reduce the function or protection of the riparian habitat within the VCA.

2. *That the proposed use will not interfere with the normal public use of public shorelines;*

The proposed use will not interfere with the normal public use of the shoreline. The use will not constrain or diminish public access to the esplanade or shoreline. Furthermore, the space will be commercial and open to the public. As such, public use of the shoreline will not be negatively affected.

3. *That the proposed use of the site and design of the project is compatible with other authorized uses within the area and with uses planned for the area under the Comprehensive Plan and Shoreline Program;*

The design of the proposed space in Building 2 is consistent with the design of the remainder of the buildings on the site, both in appearance and use. The proposed Project is also similar in design and character to other waterfront mixed-use developments within

the City. The proposed use of a restaurant and cafe is compatible with the public uses associated with the esplanade and beach access, facilitating public enjoyment of the development and the shoreline.

4. *That the proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and*

The proposed use within the setback will not adversely affect the shoreline environment. The width of the riparian habitat and VCA will not be reduced or otherwise compromised by the mixed-use space extending into the 100-foot setback. The commercial space is located landward of the public esplanade and will not affect the quality of the habitat within the VCA or riparian area. Stormwater controls and other typical construction BMPs will prevent potential impacts during construction and operation.

5. *That the public interest suffers no substantial detrimental effect.*

As stated above, the commercial space will consist of areas available for public use, such as a cafe/restaurant, to ensure public access and enjoyment of the shoreline is maintained. Furthermore, the minor encroachment into the 100-foot setback will not reduce the area or width of the public esplanade, VCA, or riparian corridor. The encroachment will not affect the public use or access to the esplanade or shoreline or reduce the function or protection of the riparian habitat within the VCA. Therefore, the public interest will not be adversely affected by the proposed mixed-use space.

Shoreline Environment Purposes (OMC 18.20.330)

The Project is currently zoned as Urban Waterfront, with a shoreline environmental designation of Urban Intensity above the OHWM and Aquatic designation below the OHWM. The property is located within Reach Budd 3A, and is currently undeveloped. Under OMC 18.20.330, the purpose of the Urban Intensity environment is:

... to provide for high-intensity water-oriented commercial, transportation, industrial, recreation, and residential uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded, and to provide public access and recreational uses oriented toward the waterfront.

The purpose of the Aquatic Environment is:

...to protect, restore and manage the unique characteristics and resources of the areas water-ward of the Ordinary High Water Mark.

The proposed Project incorporates water-oriented mixed use residential, commercial and recreational uses above the OHWM and restoration below the OHWM and is therefore permitted outright in the Urban Intensity shoreline designation (OMC 18.20.620, Table 6.1).

As described herein and in supporting narratives submitted for the proposal, the Project will result in a net increase in shoreline ecological functions and processes over the existing degraded condition, and will provide significant public access and waterfront recreation opportunities. Therefore, the proposed Project is consistent with the purpose and intent of the Urban Intensity and Aquatic shoreline environment designations in OMC 18.20.330.

Mitigation Sequencing (OMC 18.20.410)

Mitigation sequencing is a set of steps intended to demonstrate that all reasonable steps have been taken to avoid adverse environmental impacts (OMC 18.20.410). The following sections demonstrate that appropriate mitigation sequencing has been incorporated into the Project design. For the purpose of clarity, this section has been separated into the two primary project elements: the upland mixed-use development, and the shoreline restoration element. Additional details on the proposed design, approach, considerations, and alternatives for the Project are described in the West Bay Yards Shoreline Restoration Design – Alternatives Analysis (Moffatt & Nichol et al. 2025), and the Restoration and Mitigation Plan (Grette Associates 2025).

Upland Development Proposal

As described above, the proposed upland development on the approximately 19.5-acre site would include construction of a 478-unit mixed use residential and commercial development, consisting of five buildings with above and below ground parking, cafes and restaurants, a public waterfront esplanade, and associated public and private amenities.

Avoidance

There are no critical areas, important habitats, significant habitat features or functioning vegetation of concern within the uplands. The site has been heavily disturbed by past industrial land uses and remediation activities resulting from those land uses. There is no functioning riparian corridor or other habitat corridors present on the site, and vegetation that does occur near the top of the shoreline slope is sparse, immature and/or invasive in nature so as to provide minimal habitat function. As such, the proposed upland development will avoid impacts to critical areas and important habitats, as they do not exist within the upland portions of the subject property.

The proposed voluntary restoration would occur through the placement of sand and gravel over the existing riprap. Based on a geotechnical assessment of the shoreline, retaining the existing revetment and placing sand and gravel beach material over it provides the highest safety factor for the stability of the revetment and the upland site behind it (LAI 2021). Removal of the revetment would lead to significant geotechnical constructability and performance issues (Moffatt & Nichol et al. 2025).

In addition, the upland site will be lifted approximately two feet through the placement of fill to address sea level rise. This will lead to a small (approximately 0.42 acre) but unavoidable loss of aquatic habitat creating a new OHWM approximately 18 feet waterward from the existing OHWM. Construction staging will be established to avoid contaminants or other construction materials from entering West Bay. A temporary staging and access point will be established in the northwest corner of the site, which will not require additional improvements for construction activities. Access within the site will occur from the upland areas. The construction staging and access areas will total approximately 1.5 acres. Temporary construction fencing around active work areas and temporary access restrictions to the property will be implemented. An area for stockpiling will also be established in the upland staging areas, to be located a minimum distance of 100 feet from the OHWM.

Minimization

The proposed upland Project has been designed to minimize potential impacts to upland habitat. Minimizing impacts to the existing, sparse riparian vegetation was considered through the preservation of existing native trees and shrubs along the shoreline. However, this was deemed infeasible as most of the riparian vegetation is growing up through asphalt and concrete rubble, and grading would be necessary along the entire top of bank to ensure the transition grades from the finished site to the restored shoreline are appropriate. Therefore, minimization through the preservation of this existing vegetation was not possible.

Restoration

Impacts to the existing low-quality riparian habitat would be restored through the restoration of a native riparian corridor along the entire site shoreline. To comply with OMC 18.20.492-18.20.496, a densely planted native VCA will be established along the entire 1,100-foot waterfront, extending approximately 30 feet landward from the existing OHWM. This approximately 37,100-square foot VCA would consist of native coniferous and deciduous trees and shrubs and would screen the shoreline from the upland uses, while also providing enhanced terrestrial habitat functions. Additionally, the conversion area between the existing and proposed OHWM (approximately 12-18 feet wide and 18,496 square feet) will be planted with native riparian vegetation. Along with the VCA, trees will be included in a tract on-site. Two identified tree tracts along the shoreline are along the northern and southern portions of the shoreline. This is to preserve the required viewsheds from the site across the bay and towards the capital.

A mix of native trees and shrubs will be planted in the VCA and riparian area, including bigleaf maple, Douglas fir, shore pine, and Pacific madrone. Native shrubs would include oceanspray, willow, and elderberry. Native groundcover species to be planted in the VCA include yarrow, coastal strawberry, and sword fern. The VCA will provide a buffer between the esplanade and the shoreline habitat. Restoration of this native riparian corridor would provide a significant increase in function over the existing conditions at the site, and would offset the removal of the existing sparse, largely non-native riparian vegetation present.

Shoreline Restoration Proposal

As a condition of the March 31, 2021, development agreement with the City, the developer will conduct shoreline restoration actions along the entire length of the Project site shoreline. Several restoration design alternatives were evaluated for the Project to ensure the Project meets the intent of OMC 18.20.410 with respect to no net-loss of shoreline ecological functions and mitigation sequencing. Detailed descriptions of the alternatives evaluated for the Project and of the proposed preferred alternative are provided in the Shoreline Restoration Design Report – Alternatives Analysis (Moffatt & Nichol et al. 2024), and in the Restoration and Mitigation Plan (Grette Associates 2024).

Avoidance

The proposed shoreline restoration actions have been designed to be consistent with the City's 2016 West Bay Environmental Restoration Assessment - Final Report (CHE 2016). Consistent with the design in that report for the Hardel site, the shoreline restoration proposal would utilize the existing riprap armoring to provide structural stability for the restored beach. As described in

the Geologic Hazards Assessment prepared for the site, removal of the existing riprap would result in an unacceptable factor of safety for the shoreline slope (LAI 2021).

The No-Action alternative, while avoiding impacts to the aquatic environment on the site in the short term, would not accomplish the purpose and need of the shoreline restoration action (i.e., habitat restoration and public access). Additionally, the existing revetment would still require on-going maintenance and repair to continue its function of protecting the site uplands from erosion and destabilization. The concrete debris and rubble, and the creosote-treated pile stubs would also remain and continue to degrade the habitat quality of the site. Therefore, impacts to the aquatic environment are unavoidable for any design alternative, including the No-Action alternative.

Minimization

The Project has been designed to minimize impacts to the shoreline to the greatest extent practicable. The preferred alternative, including the cutback of the top of the revetment and the design of the restored shoreline slope at 8H:1V, results in the least amount and extent of fill material placement to create a gently sloped beach for habitat enhancement, while also providing wave energy dissipation and backshore protection from erosion and impacts related to sea level rise.

As noted above, full removal of the existing revetment would result in an unacceptable safety factor for the shoreline slope (LAI 2021). Therefore, leaving the revetment in place and covering it with select fill material to create a gently sloping intertidal beach is the design alternative that results in the least impact to the site and the shoreline environment while accomplishing the purpose and need of the Project of restoring habitat and providing public access. Furthermore, the preferred alternative of cutting back the top of the revetment maintains an acceptable safety factor while minimizing the waterward shift of the OHWM, resulting in less fill placed waterward of OHW and minimizing the conversion of degraded aquatic habitat to uplands.

Additional information regarding the minimization of impacts to the shoreline habitat at the site can be found in the Shoreline Restoration Design Report – Alternatives Analysis (Moffatt & Nichol et al. 2025).

Restoration

Unavoidable impacts to low-quality shoreline and aquatic habitat from the preferred design alternative would be restored through the enhancement and restoration of those same habitats on the site. Existing wood piles, concrete debris, and metal waste would be removed from the shoreline. The top of the existing riprap revetment above the OHWM would be cut back. Select gravel and beach material would be placed over the existing riprap at a slope of 8H:1V, creating a gently sloped beach. The upper beach would be planted with native transitional shrubs and saltmarsh vegetation and large woody debris would be installed, providing important habitat functions to several listed and important species. Below the saltmarsh, the beach would also provide high-quality habitat for forage fish spawning.

The restoration proposal has been designed to be consistent with the intent and objectives within the City's 2016 West Bay Environmental Restoration Assessment - Final Report as well as the City's 2012 SMP Restoration Plan for Budd Inlet. The design has also been informed by the USACE's EWN® design principles, which represent the standard of care and best available science for coastal engineering design of shoreline beach fill restoration and soft shore stabilization

systems for Puget Sound beaches (Moffatt & Nichol et al. 2025). Following the design intent and guidelines in these documents, the proposed shoreline restoration design will result in a significant increase in the habitat functions and shoreline processes provided by the site shoreline to Budd Inlet.

Compensation and Monitoring

As described above, the conversion of aquatic area to uplands resulting from the placement of fill material over the face of the existing riprap revetment is unavoidable for the restoration of the shoreline. Information detailing why the preferred alternative necessitates this conversion and how that conversion has been minimized to the greatest extent practicable is presented in the Shoreline Restoration Design Report – Alternative Analysis (Moffatt & Nichol et al. 2025).

As discussed above, raising the surface elevation of the site two feet to address sea level rise and cutting back the top of the revetment along the shoreline results in the incidental conversion of 18,496 square feet (0.42 acre) of highly degraded and armored aquatic area to uplands. This area currently consists entirely of unvegetated, steeply-sloped riprap. The proposed Project will compensate for this loss of aquatic area by removing 200 creosote-treated timber pile, 10,890 square feet of concrete debris and structure, and various metal debris along the shoreline. Additionally, the Project will create 3.79 acres of high-quality sand and gravel beach with native saltmarsh, transitional and riparian vegetation.

With respect to review under OMC 18.05.855, the only amenities that will be located within the “new” uplands resulting from the placement of upland fill and the in-water restoration project are planted native vegetation and public access to the shoreline (providing a public benefit). The uplands being created through the addition of fill material on the riprap armored slope are incidental to the completion of the shoreline restoration project, which is the only option for this area, and not for purposes of creating developable land. All setbacks for the Project, including the 30-foot VCA and the 100-foot shoreline setback for the Urban Intensity shoreline designation, are measured landward from the existing location of the OHWM.

In addition to the creation of the beach, vegetated marine riparian corridor, and the VCA, the Project proponent will monitor the shoreline restoration components for a period of ten years to document the constructed habitats function as anticipated. This monitoring includes a contingency and adaptive management plan to ensure that if aspects of the shoreline restoration are not performing as required, proactive measures can be taken to correct any deficiencies. The monitoring and adaptive management plans can be found in the Restoration and Mitigation Plan submitted for the Project (Grette Associates 2025).

No Net Loss Analysis (OMC 18.20.410)

Upland Project Development

As described above, the current habitat function on the upland portions of the property is degraded from past industrial land uses and site remediation activities. Existing upland vegetation consists of sparse and primarily non-native vegetation growing up through crushed concrete and asphalt surfacing. Riparian vegetation is rare and consists of lone small trees and shrubs rooted through asphalt, crushed concrete rubble and riprap. Under the proposed Project, the entirety of the uplands will be cleared, graded and developed, and a 30-foot-wide VCA totaling 37,112 square feet and a

12-18-foot-wide riparian corridor totaling approximately 18,496 square feet will be established landward of the proposed OHWM of the site. The total area of riparian vegetation along the restored shoreline will be 55,608 square feet (1.28 acres).

Site Lighting

Artificial shoreline lighting has the potential to change the nighttime ambient light regime and may alter nighttime light-induced behaviors for wildlife within the shoreline area (Williams and Thom 2001). The implementation of the dark-sky compliant measures to minimize light pollution will eliminate the sharp shadow edges and artificial patterns that influence these behaviors. Furthermore, the bollards and proposed lighting fixtures along the VCA, waterfront esplanade, and cantilevered overlook areas will be positioned in a manner to eliminate light transmission into any potential riparian and low-tide aquatic habitat.

Dark sky-compliant lighting fixtures shield the light source to minimize glare and light pollution to surrounding areas. Utilizing these fixtures along the waterward edge of the esplanade will minimize light intrusion into the VCA and riparian corridor, thereby minimizing habitat impacts. Likewise, the use of dark sky-complaint lighting on the buildings and associated infrastructure will also prevent light trespass from the developed portions of the site into the VCA and adjacent shoreline. The use of the dark sky-compliant lighting fixtures will ensure the Project development will not result in a net loss of shoreline ecological functions with respect to site lighting.

Upland Functional Lift

Evaluation of a shoreline-related project with respect to no net loss of shoreline ecological functions must include an analysis of the existing habitat functions present at the site compared with the anticipated habitat functions present after the completion of the Project. The difference in relative habitat function between the existing condition and post-project condition is a reflection of the “functional lift” provided by the Project.

The new VCA and riparian corridor would be planted with a diverse assemblage of native coniferous and deciduous trees and shrubs that would provide screening of the shoreline from upland uses while also contributing organic material to the upper beach. This area will extend the entire approximately 1,100 feet of shoreline on the site, totaling approximately 55,608 square feet (1.28 acres), and will result in a significant increase in riparian habitat function over the existing condition. Enhanced habitat functions provided by the restored VCA and riparian corridor will include avian perching and foraging, screening of shoreline habitat from upland uses, and thermal regulation of the upper intertidal shoreline.

The presence of three public beach access points will encroach within the VCA a total of 540 square feet (1.5% of the total VCA area). To compensate for this minor encroachment, the VCA will be expanded landward 540 square feet at the south end of the VCA. The small size of the access points (6 feet wide), dense native plantings along their margins, and the commensurate expansion of the VCA will ensure there is no degradation of shoreline functions due to the presence of these access points.

Immediately north of Building 5, the original design proposed a combined pedestrian path and vehicle access ramp. However, the City is requiring relocation of the pedestrian path, as the combined pedestrian path and vehicle access ramp present a potential safety concern. This change will require a separate pedestrian path that connects to West Bay Drive, while also ensuring the

vehicular ramp is wide enough to accommodate emergency medical service and garbage vehicles. To achieve this, the revised realignment will shift the pedestrian path to the north, resulting in an 8–10-foot (at most) encroachment in the VCA over 1,233 square feet (2.2% of the total VCA). The encroachment is not anticipated to impact habitat functions from the riparian zone. Northwest of the encroachment, the current habitat conditions are degraded, consisting of invasive species and crushed concrete surfacing. To compensate for the VCA encroachment, the VCA will be expanded by 1,467 square feet into that degraded area. The VCA expansion will include a densely planted native riparian zone to increase the habitat quality for bird species, as well as remove the existing debris and invasive species. The improvement in habitat quality over a larger area of VCA than the proposed reduction will result in no net loss of shoreline ecological function.

Marine riparian areas provide several important functions that support nearshore and terrestrial ecosystem processes, such as water quality improvement, fine sediment control, inputs of large woody debris, shade/microclimate, organic detritus input, slope stability, and fish and wildlife habitat (Brennan et al. 2009). These areas also prevent erosion from storms and buffer upland areas from the effects of sea-level rise.

Water quality improvements and fine sediment control are enhanced through the presence of dense native vegetation in functioning riparian corridors. Riparian vegetation filters toxins and sediments from surface and groundwater, reducing pollutants through soil binding and conversion of nutrients while also preventing fine sediment intrusion into sandy and gravelly beach substrates. Riparian vegetation also regulates water temperatures in runoff through shading. Enhancement of these water quality functions through the shoreline restoration actions proposed for this Project will significantly improve the habitat quality for those fish and wildlife species that will utilize the restored beach such as adult and juvenile salmonids, forage fish, great blue heron, and shorebirds.

Enhancement of functions such as shading, large woody debris presence and recruitment, and organic detritus input will significantly improve the habitat quality along the site shoreline. Terrestrial and aquatic microclimates are influenced by shade provided by riparian vegetation (Brennan et al. 2009). Those microclimates in turn contribute to higher species diversity and abundance within riparian habitat (Brennan and Culverwell 2004).

Riparian vegetation along shorelines affects soil and slope stability in several ways, from mechanical reinforcement and restraint by the roots and stems to modification of slope hydrology as a result of soil moisture extraction (Brennan and Culverwell 2004). The enhancement of these functions along the shoreline within the restored VCA will minimize erosion potential and fine sediment input into the aquatic environment downslope.

Based on the above analysis, the proposed upland project development will result in a net increase (i.e., lift) in shoreline ecological functions and processes through the restoration of a functioning riparian corridor along the entire length of the site.

Shoreline Restoration

As described above, the shoreline habitat function along the site is degraded from the presence of a steep, armored slope consisting of riprap that abruptly transitions to a broad mudflat containing metal, wood and concrete debris. This unvegetated, armored shore reflects wave energy back out into Budd Inlet, contributing to erosion in other areas of the bay. The existing habitat function

along the shoreline is of low quality, providing minimal habitat for terrestrial and aquatic species, including juvenile salmonid foraging or forage fish spawning.

The proposed shoreline restoration would entail the placement of gravel and beach fill material approximately 100-150 feet waterward of the OHWM over approximately 165,000 square feet of low-functioning riprap slope and mudflat. The beach material would be placed at slope of 8H:1V, creating a gently-sloped beach that would provide high quality habitat for forage fish spawning. The upper intertidal beach would be planted with native saltmarsh vegetation, providing high quality foraging habitat for juvenile salmonids, while the upper beach transition zone would be planted with a variety of native shrubs. This vegetation will not only benefit aquatic species, but other important species that rely on functioning nearshore ecosystems such as great blue heron.

The following sections detail specific elements of the Project to address impacts to shoreline function per OMC 18.20.710 and the recent comments from the City.

Shoreline Functional Lift

There are numerous ways to evaluate a project with respect to functional lift. As part of the City's 2016 West Bay Environmental Restoration Assessment – Final Report (CHE 2016), the proposed Project site was evaluated using both a habitat value quantification model as well as a qualitative evaluation framework to describe the functional lift in habitat value that could be expected from the preferred restoration alternative.

The habitat value quantification model provides a relative, science-based quantification of the habitat improvements. The habitat valuation model used in CHE 2016 used four primary inputs: existing habitat type value, proposed habitat type value, size, and years to maturity. Sites were then normalized for size by determining the habitat “points per acre”. Based on this model, the Hardel site received 21.84 habitat points/per acre, ranking it fifth out of the twelve sites assessed in the report for functional lift potential (CHE 2016). This ranking illustrates that the Hardel site (i.e., Project site) exhibits a potential for providing significant functional lift through the restoration design contemplated in CHE 2016 (and proposed herein).

The qualitative evaluation framework was utilized in the report to provide a means of assessing important restoration elements that were difficult to quantify. Based on this framework, the Hardel site scored sixth out of the twelve alternatives for the metrics chosen by the report authors. These metrics include sediment supply and transport, underrepresented habitats, resiliency, and providing recreational compatibility (CHE 2016). Again, this ranking illustrates the site has a relatively high potential for providing significant functional lift among shoreline ecological processes that are difficult to quantify in a numeric model.

Further evaluation of the proposed shoreline restoration actions is possible when assessing the actions against the management measures identified in *Management Measures for Protecting and Restoring the Puget Sound Nearshore* (Clancy et al. 2009). These management measures represent a broad range of actions that can be applied individually at specific sites or combined into larger restoration and protection efforts. The management measures incorporated into the proposed shoreline restoration actions include:

- Armor removal or modification
- Beach nourishment
- Debris removal

- Large wood placement
- Revegetation
- Species habitat enhancement
- Substrate modification
- Topography restoration

Several of these measures are described as being “primary restorative measures”, such as armor removal, topography restoration and revegetation. These measures “exert long-lasting effects on ecosystem processes and will often provide the best chance of achieving complete restoration of processes.” (Clancy et al. 2009). The remaining measures included in the proposed shoreline restoration action are described as “supplementary enhancement measures”, which “includes mainly structural measures that provide immediate but often short-lived benefits in terms of habitat structure.” (Clancy et al. 2009). Taken as a whole, these measures will provide for both the near-term increase in structural and habitat function (e.g., large wood placement, debris removal, beach nourishment/substrate modification) as well as the long-term sustainability of the ecosystem processes provided by the restored site (e.g., armor modification, topographic restoration, revegetation). The result is a restored shoreline that immediately enhances the physical and biological elements of the ecosystem, while also promoting the durability of the ecosystem processes that sustain those elements.

The results of these evaluation methods demonstrate that the proposed shoreline restoration action will result in a significant increase in shoreline ecological functions and processes over the existing shoreline condition. This represents a significant habitat functional lift resulting from the proposed shoreline restoration and VCA establishment.

Aquatic to Upland Conversion

The uplands of the site will be elevated through the placement of approximately two feet of fill material to prevent impacts to the site from sea level rise. In addition, the top of the existing revetment will be cutback from the location of the existing OHWM, extending approximately 18 feet landward. Gravel and beach fill material will be placed on the top of the existing riprap to create the gently sloping beach. Topsoil fill will be placed on the cutback slope above OHW to match the grade between the top of the upland fill and the top of the beach fill at a slope of 4H:1V.

This material placement atop the existing riprap will result in the conversion of approximately 18,496 square feet (0.42 acre) of degraded aquatic habitat to upland habitat. Placement of the proposed beach fill will result in the incidental shift of the OHWM further waterward. The creation of intertidal beaches, salt marsh, and riparian planting will substantially improve substrate quality and enhance ecological functions of existing natural resources and their buffers. The removal of derelict structures including 200 creosote-treated piles, the outline of a dilapidated timber dock, an old concrete structure, various concrete debris, metal iron beams, wood logs, rock, and iron pipe will improve habitat function and water quality. The proposed actions will provide improved habitat for fish and other natural resources, and improve ecosystem services, water quality, and nutrient storage to increase ecosystem stability over time. Overall, the proposed 0.42-acre habitat conversion area will lead to a substantial improvement to the nearshore habitat, resulting in a substrate with higher primary productivity of epibenthic organisms with improved migration and foraging habitat.

With respect to review under OMC 18.05.855, the only amenities that will be located within the “new” uplands resulting from the shoreline restoration project are planted native vegetation within the VCA and public access to the shoreline (providing a public benefit). The uplands being created through the addition of fill material over the riprap armored slope are incidental to the completion of the shoreline restoration project, which is the only option for this area, and not for purposes of creating developable land. Creation of the “new” uplands also will not affect the location of the setbacks associated with the OHWM. The 100-foot shoreline setback for the Urban Intensity shoreline designation and the 30-foot VCA will be measured from the existing OHWM and not the new, waterward OHWM resulting from the shoreline restoration.

Sediment Transport and Littoral Drift

The existing shoreline of the Project Area consists of angular spalls and riprap, concrete debris, wood debris, and concrete structures, along a steepened bank. The cutback of the top of the slope, placement of sand and gravel over the existing armored slope, removal of derelict creosote-treated timber piles, and removal of concrete structures will temporarily increase turbidity and transport some sediment into Budd Inlet as is the design of the shoreline restoration’s riparian planting. The riparian planting area consists of a small elevation of topsoil fill over the cutback area to provide appropriate planting media and match grades between the upland area and the natural beach slope. The material placement atop the existing grade below the OHWM will result in the conversion of 0.42 acre of degraded aquatic habitat to upland habitat. This proposed action will result in the shift of the OHWM approximately 12-18 feet waterward away from the area of upland fill. The creation of intertidal beaches, salt marsh, and riparian planting will substantially improve substrate quality and enhance ecological functions of existing natural resources, and their buffers.

Littoral drift is not a constant process at any given site. The process varies drastically based on wave action, wave direction and distance of wave runup, and is commonly reversed in drift during strong storms. (McLachlan & Brown, 2006). The Washington State Department of Ecology (Ecology) provides mapping of littoral drift along shorelines of Puget Sound and has identified ‘no appreciable drift’ for the southwestern shoreline of West Bay (from the Fifth Avenue Dam at the south to the West Bay Marina to the north) that includes the Project site (Ecology 2021). The southwestern shoreline of West Bay is armored and there are no sources of sediment (such as feeder bluffs) within this stretch of shoreline (Grette 2009, Ecology 2021). Please also refer to the Shoreline Restoration Design Report – Alternatives Analysis prepared for the Project (Moffatt & Nichol et al. 2025).

As such, given ‘no appreciable drift’ at the site and a lack of sediment sources along this length of shoreline, construction of the proposed Project is unlikely to adversely or beneficially impact littoral drift and sediment transport processes. Therefore, there will be no net loss of sediment generation or littoral drift functions or processes resulting from construction of the Project.

Habitats and Species

Restoration of a functioning shoreline and riparian corridor along the land/water interface of the site will provide significant increases in ecosystem processes that will benefit habitats and species within West Bay.

Creation of a gently-sloped sand and gravel beach at the site will provide numerous benefits to important species in West Bay. The Washington Department of Fish and Wildlife (WDFW) maps

spawning grounds for surf smelt on the south half of the of the Project site. The existing shoreline revetment severely limits the available substrate and elevations upon which surf smelt can spawn. The proposed Project would create a beach where appropriately-sized spawning substrate is placed along the shore. Additionally, planting saltmarsh and overhanging shrub and tree vegetation would provide shade for incubating eggs, which is an important habitat attribute in the summer months (Pentilla 2007).

The upper intertidal zone of the shoreline will be planted with native saltmarsh vegetation. This vegetation provides numerous benefits to important species, including juvenile Chinook salmon. Saltmarsh provides an important link in the food web of juvenile salmon, supporting a diverse assemblage of prey resources and providing organic detritus. The presence of abundant and diverse prey resources promotes high growth rates and allows juvenile salmon to quickly outgrow predators (Fresh 2006).

The transitional and riparian zones immediately above the saltmarsh vegetation will be planted with a diverse assemblage of native trees, shrubs and groundcover vegetation. This vegetation will significantly enhance the physical and biological attributes of the ecosystem services provided by the shoreline of the site. These attributes and services include the following (Brennan 2007):

- Contribution of standing and downed large woody debris which increases habitat structure and organic detritus;
- Promotion of slope stability and prevention of erosion through root structure and drainage control;
- Production of prey resources for upper intertidal and nearshore vertebrate organisms; and
- Filtering of runoff to trap contaminants and fine sediment.

No Net Loss Summary

Based on the analyses above, the overall proposed Project (including both the upland and shoreline restoration elements) will result in a net increase in shoreline ecological functions and processes. The nearly unvegetated existing riparian zone will be replaced with a 30-foot wide, densely-planted native VCA totaling 37,112 square feet. The “created” riparian area between the new OHWM and the VCA totaling approximately 18,496 square feet (0.42 acre) will also be planted with native trees and shrubs. Also, the steeply armored, low functioning shoreline will be restored to a gently sloping beach with the upper shore planted with saltmarsh and transitional shrubs.

As designed, the proposed Project addresses several restoration priorities described in the City’s 2012 SMP Restoration Plan (Chapter 6), along with many of the management measures described in Clancy et al. 2009. Among others, the Restoration Plan priorities include restoring riparian vegetation; restoring and improving wildlife habitat; restoring natural sediment transportation processes; reducing shoreline armoring and restoring shoreline conditions and processes; restoring tree canopy coverage along shorelines; and restoring estuarine transition habitat and intertidal influence. Based on the proposed conditions described above of the upland development and shoreline restoration actions, the proposed Project address all of these priorities along the Project site shoreline.

Beach nourishment and restoration projects in Puget Sound have a history of significantly increasing habitat contributing to no net loss of habitat viability or function. Beach nourishment is a common technique used for shore protection and habitat enhancement. Beach nourishment

applications and project elements have increased in recent decades as hard armor has become less desirable due to negative habitat impacts, down-drift sediment reduction, and increasing costs (Finkl and Walker 2005). Beach nourishment has most often been used in the Puget Sound region to reestablish broad beach profiles that act as buffers against wave attack, and to mitigate erosion of the upper beach and backshore areas and typically range from several thousand feet for larger projects. The length of shoreline restoration of the West Bay Project correlates with the length and highly relevant overall approach and performance of similar beach nourishment actions (Johannessen et al. 2014).

As such, the Project as proposed meets the intent and objectives of the City's SMP Restoration Plan for Budd Inlet, the City's Comprehensive Plan land use policies described in Policy 6.7, and satisfies the requirements of OMC 18.20.410. The proposed Project will result in a net benefit to shoreline ecological functions and processes.

Public Access (OMC 18.20.450-460)

Public access to the shoreline has been designed as part of the West Bay Yards Project in the form of a 22-foot wide publicly-accessible waterfront esplanade extending the entire length of the Project parcel. The esplanade incorporates three beach access points, providing direct pedestrian access to the beach for the public.

The following sections of the OMC related to Public Access (OMC 18.20.450-460) are applicable to this project and are addressed herein.

OMC 18.20.450

- A. *Public access shall be required for the following types of development, unless waived pursuant to Section C.*
1. *Residential developments of more than nine residential lots or dwelling units;*
 2. *Commercial or industrial developments; and*
 3. *Shoreline developments proposed or funded by public entities, port districts, state agencies, or public utility districts.*

The proposed West Bay Yards Project is a mixed-use, multi-family development with 478 residential units within five buildings placed on a street level plaza with surface and structured parking below. Along with the residential units will be cafés, restaurants, and building amenities for the residents including a recreational facility. As this proposed development will contain more than nine residential dwelling units along with commercial uses, the Project is required to provide Public Access.

- B. *Where a development or use will interfere with an existing public access, the development or use shall provide public access to mitigate this impact. Impacts to public access may include blocking access or discouraging use of existing onsite or nearby public access.*

The existing Project site does not provide public access. Currently, the site is undeveloped private property. The proposed Project will not interfere with existing public access on the site or on surrounding sites, and will enhance public access to the shoreline once constructed.

E. Public access sites shall be constructed and available for public use at the time of occupancy of the use or activity or in accordance with other provisions for guaranteeing installation through a monetary performance assurance.

The public esplanade and shoreline access points will be constructed during the first phase of Project construction, and will be available to the public upon completion of the first phase of the Project, estimated to be Summer through Fall of 2026. Please refer to the revised Site Phasing Plan and Building Phasing Plan for this Project.

F. Public access facilities shall be available to the public from dawn to dusk unless specific exceptions are granted through a shoreline substantial development or other permit.

While specific rules and restrictions for public access have not been developed at this stage in project design, it is anticipated that the waterfront esplanade and beach access will be available for public use from dawn to dusk, unless modified as allowed through the shoreline substantial development permit process.

Sections G through J of OMC 18.20.450 relate to maintenance and signage for public access, as well as approval of the public access areas by the Administrator. The Project proponent or their successors will be assuming responsibility for the maintenance of the public access features on the property for the life of the development. Signs indicating the public's right to access and the hours of such access will be installed at appropriate locations along the waterfront esplanade and public access points. The signage will be installed and maintained by the owner, developer or assignee.

OMC 18.20.460

A. Public access shall be located, designed and maintained in accordance with all of the following:

1. The size and configuration of public access areas shall be at least the minimum necessary based on location, intended use, compatibility with adjacent uses, and proximity to other public access areas.

The proposed waterfront esplanade will be approximately 22 feet in width with one-foot gravel shoulders and will extend the length of the Project waterfront, a total of approximately 1,100 linear feet. The esplanade will feature at least three beach access points consisting of stairs or sloped pathways to provide public access to the shoreline. In addition, the public esplanade will feature a cantilevered viewing platform, parklets, play areas, and native landscaping.

2. Trails and shared uses paths (including access paths) shall be buffered from sensitive ecological features and provide limited and controlled access to sensitive features and the water's edge where appropriate (for example, when part of an interpretive or educational site). Fences may be used to control damage to vegetation and other sensitive ecological features. If used, fences shall be designed and constructed of materials that complement the setting, as well surrounding features or structures, and allow for wildlife movement.

The restored shoreline will be buffered from the public waterfront esplanade by a 30-foot VCA that extends landward of the existing OHWM. This 37,112-square feet VCA will be planted with a mix of native trees, shrubs and groundcover vegetation. Additionally, the area between the new

and existing OHWM (approximately 12-18 feet wide and 18,496 square feet) will be planted with native riparian vegetation as well. Three beach access points, each approximately 6 feet wide, will be established through the VCA to allow direct public access to the shoreline. At this point fencing is not proposed along the esplanade.

3. Where feasible, public access shall be located adjacent to other public areas, accesses and connecting trails, with connections to the nearest public street or trail.

Public access to the waterfront esplanade from West Bay Drive will be provided via a parking lot located in the northern extent of the Project site.

4. Where physical access to the water's edge is not feasible, a public viewing area shall be provided.

Physical public access to the shoreline will be provided through the three beach access points along the public waterfront esplanade. One of the three beach access points will include an ADA-compliant ramp, while the other two access points will be via stairs.

5. Public access shall be designed to minimize intrusions on privacy and conflicts between users. For example, provide a physical separation between public and private spaces, orient public access away from windows or private outdoor spaces, or provide a visual screen such as a fence or vegetation.

The public waterfront esplanade will be separated from the residential and commercial properties on the site by native landscaping and slopes. The esplanade will be located below the level of the residential units, limiting privacy concerns. Additionally, parking for the residential and commercial tenants of the site will be provided by private underground parking, whereas the parking for public access will be provided via a surface lot at the north end of the Project site.

6. Public access shall be designed to provide for the comfort and safety of users. Such spaces shall be visible from the street or adjacent uses, have adequate lighting, and be designed to discourage offensive or illegal conduct.

The public waterfront esplanade will be approximately 22 feet wide with one-foot gravel shoulders, providing adequate space for the comfort and safety of users. Lighting will be provided at the parking lot and along the public esplanade for the safety of users. Additionally, the esplanade will be in view of the residences and commercial properties, discouraging offensive or illegal conduct by the public.

7. Public amenities such as, but not limited to, a covered shelter, benches, or picnic table shall be provided in public access areas.

The public waterfront spaces include amenities such as the esplanade, with picnic tables/benches and beach access trails.

8. Where feasible, public access areas shall be barrier free for the physically disabled in accordance with the Americans with Disabilities Act (ADA).

The public waterfront esplanade will be well-defined, handicap accessible, accommodate families, and encourage slow wandering, water-viewing, and bicycle use. To do this it will follow the Accessibility Guidelines for Outdoor Developed Areas (section T303) which state:

- Uphill and downhill segments separated by level transition segments with slope less than or equal to 5%
- Running slope options: 1:20 for any length, 1:12 max for 200 feet, 1:10 max for 30 feet, 1:8 max for 10 feet
- Cross slope: 2%

Along with two stair beach access points, an accessible ramp down to an accessible shoreline plaza is proposed 1-2 feet above OHWM. The ramp will follow the above guidelines down to a generally level gathering space with seating. Through this, it opens the accessibility for all to participate in the proposed beach & shoreline amenities while also not proposing development below OHWM.

B. The design and layout of public access shall conform to applicable City design standards and procedures, such as the width of public access easements or dedications for trails and shared-use paths and trail classification and corresponding corridor widths set forth in the Olympia Engineering Design and Development Standards (EDDS). Any deviation shall be the minimum necessary to achieve the intended purpose of such deviation. It is not the intent of the City to authorize informal trails and the standards contained herein are not intended to address them.

The Project has been designed to meet the applicable design standards contained in the City of OMC, including the City’s Engineering Design and Development Standards.

Signage (OMC 18.20.480)

The Project has been designed to comply with the Signage requirements of OSMP 18.20.480. All signs, including signs for public access, will be located such that they will not block or obstruct views of the shoreline, and will be compatible with the aesthetic quality of the shoreline, the proposed development, and adjacent land uses. If lighted signs are to be used, they will be designed to minimize glare from adjacent properties or from the water.

Vegetation Conservation Area Standards (OMC 18.20.495)

The proposed restored VCA within the Project site has been designed to meet the provisions of OMC 18.20.495, including the use of diverse native tree and shrub species planted at densities mimicking natural shoreline conditions in the south Puget Sound area. The VCA will be maintained for the life of the development and will be protected from future development by placement in a separate tract or conservation easement.

OMC 18.20.495.C states “*Encroachment of an authorized use or activity shall require an equivalent area elsewhere onsite be set aside as a VCA and shall not result in a net loss to shoreline ecological functions.*” As required for public access to the water’s edge per OMC 18.20.450.A, the installation of the three beach access points on the east will pass through the VCA resulting in minor VCA encroachment. These access points will total approximately 540 square feet within

the VCA. To offset this encroachment, the VCA will be expanded at the south end of the site by 540 square feet.

On the north, although a small portion of the VCA width will be reduced to provide the required public trail, it will be mitigated with adjacent wider VCA for VCA averaging. The public recreation trail as identified in the Thurston Regional Trails Plan, is a permitted use within the VCA without a variance per OMC 18.20.493.3. The VCA in this location will be reduced by 1,233 square feet. To compensate for this reduction, the VCA will be expanded by 1,467 square feet immediately to the north. The combined impacts to the VCA (1,773 square feet) represent 4.8% of the overall VCA area, while the compensatory VCA expansion (2,007 square feet) represents 5.4% of the overall VCA area.

The presence of the three beach access points and northern VCA encroachment will not result in a net loss of shoreline ecological functions. The existing condition of shoreline riparian habitat on the Project site is significantly degraded. Restoration of the riparian habitat along the site within the proposed VCA will significantly increase the ecological functions provided by the shoreline. The restored VCA will total 37,112 square feet, while the three beach access points and encroachment area will total approximately 1,773 square feet (4.8% of the VCA area). The access points will be relatively narrow (6 feet wide) with the borders densely planted to discourage users from leaving the path. Furthermore, the VCA expansion areas will be densely planted with native trees, shrubs and groundcover. Based on the existing degraded condition of the riparian habitat on the site, the significant increase in function that will result from the restoration of the VCA, and the small area of encroachment from the beach access points, the presence of the access points and the commensurate expansion of the VCA will not result in a net loss of shoreline ecological functions.

Use Analysis – Shoreline Use and Development – Intent (OMC 18.20.600)

The Project is currently zoned as Urban Waterfront, with a shoreline environmental designation of Urban Intensity. The property is currently undeveloped. Under the Urban Intensity shoreline designation, Mixed-Use Multi-Family developments incorporating water-related and enjoyment commercial and recreational elements are a permitted use (OMC 18.20.620 Table 6-1).

In general, to be an approved use within the shoreline zone a development must be a water-oriented use. Under WAC 173-26-020, a water-oriented use is defined as “a use that is water-dependent, water-related or water-enjoyment, or a combination of such uses.” The proposed commercial uses for this Project include cafes and restaurants, which meet the definition of a water-enjoyment use. As such, the proposed Project must meet the requirements of OMC 18.20.663.

Water-Oriented Commercial Use and Development (OMC 18.20.663)

Per OMC 18.20.663, water-oriented commercial uses and developments must demonstrate the following:

6. *There will be no net loss of shoreline ecological functions or processes;*

Currently, the Project site is vacant and provides very little habitat function or contributions to shoreline ecological processes. Past industrial land uses and remediation activities have resulted in much of the site being covered with crushed concrete and asphalt surfacing. Very few native trees and shrubs are present scattered throughout the site, providing very

little habitat function. While several small trees and shrubs are present along the top of the shoreline bank, no effective riparian corridor is present. The west property boundary of the site, bordering West Bay Drive, does contain areas of dense native vegetation. However, these areas are interspersed with dense Himalayan blackberry and do not connect to other habitat areas or corridors, diminishing the habitat value.

The area of upland created between the existing OHWM and the new OHWM (approximately 12-18 feet wide, 18,496 square feet) will be densely planted with native vegetation. This zone will function as a transitional riparian corridor and will provide important riparian habitat functions such as regulation of upper intertidal temperatures, input of organic material, and large woody debris recruitment.

The completed development will establish 37,112-square-foot, densely planted VCA along the entire waterfront of the site. Extending landward approximately 30 feet from the existing OHWM, this area will be planted with a diverse assemblage of native trees, shrubs and groundcovers, and will include nest boxes, perch poles, and standing snags to provide quality habitat for birds. The VCA will provide high-quality riparian buffer functions to the Project site, including buffering the shoreline from the interior uses of the development, organic material input for the transitional and upper shore zone, increased diversity of native species, and perching and foraging habitat for raptor and other avian species. Additionally, native species landscaping will also contribute to increased vegetative diversity on the site.

The establishment of a functioning riparian corridor along the shoreline of the developed site as well as the use of native vegetation landscaping throughout will ensure site development does not result in a net loss of shoreline ecological functions or processes.

Additionally, as required by the development agreement with the City, the developer will implement a shoreline restoration action, as described in the City's West Bay Environmental Restoration Final Report for the Hardel site (CHE 2016). Implementation of this restoration action will result in a net increase in shoreline ecological function and processes.

Please refer to the Shoreline Restoration Design Report – Alternatives Analysis (Moffatt & Nichol et al. 2025) submitted with this application.

7. *There will be no significant adverse impact on other shoreline uses, resources and/or values such as navigation, recreation, public access, and design compatibility; and*

The Project site is currently vacant. Construction of the Project and its associated public waterfront esplanade, beach access points, and other public amenities will significantly *enhance* the available shoreline uses and values, such as recreation and public access. The completed project will have no effect on navigation or design compatibility on or adjacent to the Project site.

8. *The design, layout and operation of the use or development meet the definition of water-oriented uses.*

Proposed commercial uses must demonstrate that they are water-oriented uses to be allowed within the shoreline zone. According to WAC 173-26-020, water-oriented use

“means a use that is water-dependent, water-related, or water-enjoyment, or a combination of such uses.” Furthermore, a water-enjoyment use means “a recreational use or other use that facilitates public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must be open to the general public and the shoreline-oriented space within the Project must be devoted to the specific aspects of the use that fosters shoreline enjoyment.”

The proposed Project would allow direct beach access to the public along the public waterfront esplanade. No boating facilities, launch ramps, or boat storage infrastructure are included as part of this proposal.

The commercial uses in the proposed Project include cafes and restaurants. These uses will be open to the general public and will support the public access and recreational aspects of the proposed Project. As such, these uses fit the definition of water-enjoyment uses, thus meeting the requirements of OMC 18.20.663.

Setbacks (OMC 18.20.620)

The required shoreline setback and VCA width for the Project is shown in OMC 18.20.620 Table 6-3. For the Urban Intensity designation in the Budd-3A location, the shoreline setback is 30 feet and the VCA width is also 30 feet. As shown on the site plan, the Project has incorporated the 30-foot setback and VCA from the existing OHWM.

For mixed-use project elements to be a permitted use within the Urban Intensity designation and proceed with the Substantial Development Permit process, all mixed-use developments must be setback 100 feet from the OHWM. While all the proposed buildings extend within 100 feet of the OHWM, the uses within Buildings 1, 4, and 5 are residential only. Building 3 contains office/business spaces (i.e., mixed uses), however, the mixed-use spaces are located outside of the 100-foot setback and do not trigger the need for a Conditional Use Permit. Building 2, however, contains both residential and commercial uses where the commercial uses extend within 100 feet of the existing OHWM. As a result, the small mixed-use portion of Building 2 (2,426 square feet) that lies within the 100-foot shoreline setback for the Urban Intensity designation will require a Conditional Use Permit.

Upland – Recreation (OMC 18.20.680)

Recreational use and development shall include appropriate mitigation to minimize light and noise impacts on adjoining properties. Such measures shall include, but not be limited to, fencing, vegetative screening, increased setbacks, limited hours of operation, and other appropriate measures. Where lighting is used, the illumination levels shall be the minimum needed for the intended use. Lighting must be shielded to avoid light and glare on the water and to prevent spillover offsite.

The Olympia SMP designates measures to minimize light pollution in shoreline areas, including Budd Inlet. OMC 18.20.680.C regulates the recreational lighting effects of the Project to reduce

impacts to adjoining properties. Furthermore, OMC 18.20.680.C requires that light and glare on the water be avoided to prevent spillover offsite.

All external lighting on the buildings, internal walkway lighting, and lighting along the shoreline esplanade will be dark sky-compliant. The use of dark sky-complaint lighting is being implemented to prevent light pollution and spillover off-site. The prevention of light trespass from the developed portions of the site into the VCA and adjacent shoreline is essential in preventing a net loss of shoreline ecological functions from lighting impacts to shoreline habitats.

All nighttime lighting will be designed to be safe and efficient by directing it only to the areas where it is needed and, by allowing and encouraging reduction or elimination of nighttime light sources where safety is not impacted per the City's Comprehensive Plan GNP.PN9.1. Furthermore, the proposed Project will limit lighting near the shoreline (to the extent practicable while achieving site safety needs) to avoid disrupting the natural development and life processes of wildlife per the City's Comp Plan GNP.PN9.2.

Shoreline – Residential Development (OMC 18.20.690.b)

The majority of the existing riprap along the shoreline will not be removed prior to placement of more natural beach fill (mixed sand and gravel). Per the shoreline slope stability analysis in the Geologic Hazards Assessment conducted to address this proposal (LAI 2021) as well as the geotechnical analysis in the Shoreline Restoration Design Report (Moffatt & Nichol et al. 2025), removal of the entire existing riprap slope is not viable because doing so could undermine the stability of the slope. Three conditions were analyzed for the stability of the shoreline slope with the following resulting factors of safety (FS):

- Existing slope, static conditions, with riprap (FS = 1.5).
- Existing slope, static conditions, without riprap (FS = 0.7).
- Proposed slope configuration, static conditions (FS = 3.0).

Full removal of riprap would result in the lowest FS. Because of this, the proposed beach fill will be placed over the existing riprap. During construction, it is likely that isolated sections of the existing riprap and armored shoreline could be disturbed to provide access for construction equipment to the beach. As part of the Project construction requirements, the contractor will be responsible to investigate and maintain stability of slopes and prevent erosion during construction, and to restore any disturbance to the shoreline and upland areas after the construction.

The top portion of the riprap slope will be removed and the shoreline cut back above the OHWM. While removal of this portion of the slope will provide less slope protection than leaving the entire armored slope in place, partial removal is still feasible and will not significantly affect the overall stability of the slope (Moffatt & Nichol et al. 2025). Slope cutback will also minimize the amount of fill that is placed waterward of the OHWM.

The proposed fill has been engineered to stay stable against coastal processes (wind waves, tides and currents, and vessel wakes). The design has been developed using the guiding principles detailed in EWN developed by the USACE. EWN is the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration (EWN 2024). The EWN principles represent the standard of care

and best available science for coastal engineering design of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al. 2025).

Upland – Utilities (OMC 18.20.710)

All public utility infrastructure on-site will be installed outside of the shoreline environment and VCA, and will be designed and located to avoid impacts to shoreline ecological functions, preserve the natural landscape, and minimize conflicts with existing and planned land and shoreline uses per OMC 18.20.710 A. Project utility infrastructure will be located as far landward of the OHWM as feasible, outside of the shoreline setback at least 30 feet landward of the OHWM per OMC 18.20.710 B and all aspects of the Project will adhere to all regulations outlined in OMC 18.20.710.

Shoreland Fill (OMC 18.20.833)

The voluntary shoreline restoration action included in the proposed Project will involve the placement of shoreland fill to restore a functioning sand and gravel beach on the site both below and above the OHWM. Please refer to the Shoreline Restoration Design Report (Moffatt & Nichol et al. 2025) for further information on the avoidance and minimization of fill materials for the voluntary shoreline restoration. See below for the stipulations of OMC 18.20.833 and response comments specific to the proposed Project:

- A. Fill shall be the minimum necessary to accommodate the proposed use or development or protect it from flooding, and allowed only in conjunction with approved shoreline use and development activities that are consistent with Olympia’s Shoreline Program.*

The proposed beach fill (mixed sand and gravel) has been engineered to be the minimum necessary to remain stable against local site coastal processes (wind waves, tides and currents, and vessel wakes). The design has been developed using the guiding principles detailed in EWN developed by the USACE. EWN is the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration (EWN 2024). The EWN principles represent the standard of care and best available science for coastal engineering design of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al. 2025).

Through an alternatives analysis conducted by Moffatt & Nichol, the current proposed design alternative (“Alternative 3”) includes a cutback of the top of the armored slope above the OHWM. This will result in a reduction of the volume of fill material that must be placed over the riprap revetment to construct the beach and will also result in a reduced footprint of the fill material. The volume of fill represents the minimum necessary to achieve the purpose and need of the shoreline restoration Project.

- B. Fill shall be permitted only when it can be demonstrated that the proposed action will not:*

- 1. Result in significant damage to water quality, fish, shellfish, and wildlife habitat;*

The proposed Project will be adding fill and removing debris and creosote with the purpose of improving water quality, fish, shellfish, and wildlife habitats. The eroding asphalt, debris, and riprap along the shoreline will be converted to a sand and gravel beach with riparian and saltmarsh plantings. Also, the volume of fill material proposed to be placed below the OHWM has been minimized to the extent

feasible through the EWN and alternatives analysis processes, further limiting impacts to the aquatic environment.

2. *Adversely alter natural drainage and circulation patterns, currents, river, and tidal flows or significantly reduce flood water capacities; or*

The proposed Project will not adversely alter natural drainage, circulation patterns, or current and tidal flows. It will remove debris from the shoreline and derelict concrete structures from the nearshore and place sand and gravel fill but will not alter flow of any sort.

3. *Alter channel migration, geomorphic, or hydrologic processes.*

The littoral drift for the southwestern shore of West Bay has been mapped by Ecology as ‘no appreciable drift’. In addition, there are no sediment sources adjacent to the Project shoreline. Therefore, the proposed fill is not expected to impact littoral drift.

- C. *Except for beach feeding, fill shall be designed, constructed, and maintained to prevent, minimize and control all material movement, erosion, and sedimentation from the affected area.*

The proposed fill has been engineered to remain stable against coastal processes (wind waves, tides and currents, and vessel wakes) and during design storm events while also supporting the creation of shoreline marsh and riparian habitat. The Project has been designed utilizing the EWN approach to shoreline restoration design. The EWN principles utilize a collaborative approach to aligning natural and engineering processes to deliver economic, environmental, and social benefits through the shoreline restoration. These principles represent the standard of care and best available science for coastal engineering design of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al.2025).

The bedding layer is designed at a 4:1 slope with 2.5-inch gravel. Over the bedding layer, sand and gravel material will be placed at a slope of 8:1. There is no appreciable drift at the site so material movement, erosion, and sedimentation is expected to be minimal.

- D. *Fill for the construction of transportation facilities is allowed only when there is a demonstrated purpose and need, there are no feasible alternatives, and impacts are mitigated in accordance with mitigation priorities in OMC 18.20.410(B).*

This is not applicable to this project.

- E. *Fill shall not be used as a means to increase the allowable building height by increasing the natural or finished grade, except as authorized to meet the flood elevation requirements of OMC Chapter 16.70.*

The proposed Project does not include fill to be used as a means to increase the allowable building height.

F. Fill for the sole purpose of creating land area is prohibited.

The proposed Project does not include fill for the sole purpose of creating land area, which is prohibited. The proposed Project does include fill to elevate the site two feet to protect against sea level rise (see item L below). All applicable setbacks for the Project have been applied using the existing OHWM on the site, and any new upland created will be incidental and result from the protection of the site against sea level rise and restoration of the shoreline.

G. The excavation of beach material for fill is prohibited.

The proposed Project does not include excavation of beach material for fill.

H. Fill within critical areas and/or critical area buffers shall comply with this chapter and the critical areas provisions of Chapter 18.32.

For a detailed analysis of Wetlands and Streams near the subject property, please see the West Bay Yards Critical Areas Report (Grette Associates 2022a). Per the Thurston County Permitting Mapper, no Critical Aquifer Recharge Areas are present on the proposed Project site. A Category I Critical Aquifer Recharge Area is present across West Bay Drive from the subject property.

Important Habitats and Species that may be present on or near the subject property and project compliance with provisions contained in OMC 18.32.300 are discussed in the West Bay Drive Important Habitats and Species Report (Grette Associates 2022b).

Geologic Hazard Areas in the vicinity of the subject property and compliance with provisions contained in OMC 18.32.600 are discussed in the West Bay Mixed-Use Development Geologic Hazards Assessment (Landau Associates, Inc. 2021).

I. Perimeters of fill shall be designed to eliminate the potential for erosion and be natural in appearance. Perimeter slopes shall not exceed 1 foot vertical for every 3 feet horizontal unless an engineering analysis has been provided, and the Administrator determines that the landfill blends with existing topography.

Please see response in item C above for a narrative on erosion. Additionally, the beach fill will be placed at a 1 foot vertical for every 8 feet horizontal slope.

J. Fill shall consist of clean material including sand, gravel, soil, rock, or similar material approved by the City. The use of contaminated material or construction debris is prohibited.

The proposed fill consists of clean material including sand and gravel. Contaminated material or construction debris will not be used.

K. Fill shall not be located where shoreline stabilization will be necessary to protect materials placed or removed. Disturbed areas shall be immediately stabilized and revegetated to avoid erosion and sedimentation.

While the Project site is located in an area designated as “high energy” by the WDFW Marine Shoreline Design Guidelines (Johannessen et al 2014), the proposed fill has been engineered to remain stable against local site coastal processes (wind waves, tides and currents, and vessel wakes) (Moffatt & Nichol et al.2025). No shoreline stabilization measures will be necessary to protect the placed material.

- L. Fill within the shoreline jurisdiction shall be allowed in response to increases in sea level subject to all other provisions of this Master Program and the mitigation sequencing process.*

City of Olympia Sea Level Response Plan (2020) states that “Naturally sloped, vegetated shorelines help moderate upland flooding by reducing wave energy as waves approach the shoreline. Green shorelines can reduce the risk of high waves overtopping the shoreline.” The proposed beach fill (mixed sand and gravel) is analogous to natural stretches of shoreline and reference sites within Puget Sound. Additionally, the proposed riparian and saltmarsh plantings will provide some protections. The proposed 8:1 beach slope has been engineered to mimic a natural slope that will reduce wave energy, and the increased backshore width will further protect the riparian corridor, VCA, and the Project site from flooding due to high waves and sea level rise. The Project site will be raised two feet through filling with the purpose of addressing sea level rise. In addition, installing and maintaining an upland cap/cover as well as a sediment cap will likely be a requirement of the selected Model Toxics Control Act (MTCA) remedy for the site (Moffatt & Nichol et al. 2025).

As described herein and in supporting narratives and design submittals and reports, the shoreland fill required for the proposed Project’s voluntary shoreline restoration meets all of the applicable requirements above. Fill will be the minimum necessary to accommodate the Project, will restore and significantly enhance shoreline ecological functions and processes along the Project waterfront, has been designed in such a way as to control erosion and be natural in appearance, and will be located where shoreline stabilization will not be necessary.

Fill Waterward of Ordinary High Water Mark (OMC 18.20.837)

The voluntary shoreline restoration action included in the proposed Project will involve the placement of fill material waterward of the OHWM to restore a functioning sand and gravel beach and backshore on the site (Moffatt & Nichol et al. 2025; Grette Associates 2025). Per OMC 18.20.837, fill waterward of the OHWM shall be permitted for the following purposes only:

- 1. Port development for water dependent uses where other upland alternatives or structural solutions, including pile or pier supports is infeasible;*
- 2. Expansion or alteration of transportation facilities where there are no feasible upland alternatives;*
- 3. Ecological restoration or enhancement such as beach nourishment, habitat creation, or mitigation when consistent with an approved restoration or mitigation plan;*
- 4. Disposal of dredge material in accordance with the Dredge Material Management Program (DMMP) of the Department of Natural Resources;*

5. *Construction of protective berms or other structures to prevent the inundation of water resulting from sea level rise shall be allowed subject to all other provisions of this Master Program and the mitigation sequencing process when there are no other feasible options to protect existing development;*
6. *Public access; or*
7. *Cleanup of contaminated sites.*

As described herein and in supporting narratives and design submittals, the proposed Project includes voluntary shoreline restoration which will restore and significantly enhance shoreline ecological functions and processes along the Project waterfront. The proposed Project will create intertidal beach, salt marsh, and riparian areas, improve public access, and preserve and enhance ecological functions of existing natural resources and their buffers, to the extent practicable. The proposed Project will consist of six elements: (1) sand and gravel beach, (2) shore access, (3) waterfront esplanade, (4) debris removal, (5) riparian and salt marsh plantings, and (6) demobilization. The following elements of the proposed Project meet the purpose of Items 3, 5, and 6 above:

3. Ecological restoration or enhancement –

Elements (1) *sand and gravel beach*, (4) *debris removal*, and (5) *riparian and salt marsh plantings* will contribute to ecological restoration or enhancement. The sand and gravel beach will be constructed out of material that will provide optimal habitat for Important Species while covering the existing riprap revetment. The riparian and salt marsh plantings will contribute nutrients, shading, and shelter for Important Species. Debris removal will further improve the habitat by eliminating relic concrete, 200 creosote-treated timber pile, and other debris of various material that are occupying potential habitat.

The West Bay Environmental Restoration Assessment – Final Report (CHE 2016) identifies impacts that have degraded habitat for marine-dependent species in West Bay. The Report suggests that future restoration efforts should focus on improving ecological functions for eleven habitat conditions. This Project would improve ecological function for seven of the eleven:

1. Intertidal and nearshore salmonid habitat

The proposed Project will convert the highly degraded intertidal and nearshore area into high quality sand and gravel habitat for salmonids and their prey. The Project will add sand and gravel fill to cover the existing eroding and degraded riprap slope which will both provide proper substrate for salmonids and their prey and optimize slope angle. Large woody debris serves as refuge habitat for juvenile salmonids, other fish, birds, and mammals in the nearshore environment. Riparian and saltmarsh plantings and large woody debris placement will further improve shoreline ecological functions.

2. Forage fish spawning habitat

Few patches of beach substrate suitable for forage fish spawning are available within the Project area; therefore, very limited spawning opportunity is present. The presence of surf smelt spawning in the study area implies that more forage fish

spawning could occur in the Project area if additional spawning substrate was available. The sand and gravel beach along the intertidal and nearshore will provide optimal habitat for forage fish spawning.

4. Estuarine habitat and pocket estuaries

If the proposed Estuary or Hybrid alternatives are accepted and implemented per the Capitol Lake – Deschutes Estuary Long-Term Management Project Environmental Impact Statement, this proposed Project would contribute to the health and productivity of the estuary.

6. Marine bird/mammal habitat

Improving the intertidal and nearshore habitat will provide habitat for marine bird and mammal prey species. Nest boxes, perch poles, and standing snags will be incorporated into the riparian corridor along the shoreline, which will increase habitat quality for birds. Native riparian vegetation, including low-growing shrubs and groundcover, will provide quality habitat for mammal prey species. The Project would also remove creosote and other debris and derelict concrete structures which would improve water and sediment quality for those species.

7. Marine and freshwater riparian establishment/connectivity

The proposed Project incorporates riparian and transitional plantings at the upper edge of the beach slope and on the bench created by the top of slope cutback. These plantings will restore a 12-18-ft wide marine riparian corridor and a 30-ft VCA along the entire site shoreline, providing organic detrital input, shading, and native species diversity functions that do not exist on the site currently. At the lower edge of the riparian corridor, large woody debris will be anchored along the shoreline, providing further habitat and structural benefits. Immediately below this riparian corridor, saltmarsh vegetation will be planted to provide upper intertidal connectivity with the adjacent uplands. Ensuring connectivity between these two important habitats (upland and aquatic) will ensure the functions provided benefit both habitats.

8. Salt marsh habitats

The proposed Project includes creating 8,752 square feet of saltmarsh habitat in the intertidal. Currently, there is only eroded substrate below overhanging broken asphalt with degraded riprap aquatic area in the nearshore.

10. Sediment transport along the shoreline

The proposed Project will remove derelict concrete structures and other debris that currently block sediment transport up and down the Inlet. If the Estuary or Hybrid alternatives for the Capitol Lake project proceed, these positive impacts for sediment transport will be magnified.

11. Stormwater flow control and water quality treatment, possibly through implementation of Low Impact Development (LID) strategies

The existing conditions at the site include previously developed uplands with impervious surfaces and no treatment or flow control for stormwater generated at the site. The proposed Project would comply with the City's stormwater manual and include treatment and flow control for surface stormwater.

5. Sea level rise -

Elements (1) *sand and gravel beach* and (5) *riparian and salt marsh plantings* will provide protection to the uplands by limiting erosion resulting from wave run-up and high-tide wind-waves through a gently sloped beach profile and upper intertidal and backshore plantings that will stabilize the beach material. Element (3) *waterfront promenade and paved trails* will be constructed immediately landward of the riparian plantings and VCA on ground that will be elevated two feet above existing to prevent the inundation of water resulting from sea level rise. No other berms or structures are included in the design.

6. Public Access -

Elements (1) *sand and gravel beach*, (2) *shore access*, and (3) *waterfront promenade and paved trails* are all designed to provide ADA-compliant public access while also maximizing habitat for Important Species. The public can access the beach from three beach access points, including two stairways and one ADA-accessible ramp. The public can also enjoy views from the esplanade and the café/restaurant.

Therefore, the proposed Project meets the purpose of Items 3, 5, and 6 above.

Also, per OMC 18.20.837(B), the proposed shoreline restoration action would incorporate a beach slope of 8H:1V. This slope (and the fill required to attain it) is consistent with the restoration design contemplated for the Hardel site in the City's 2016 West Bay Environmental Restoration Assessment (CHE 2016) and is the minimum slope necessary to meet the structural and habitat requirements for the Project to significantly enhance the ecological functions on the site. The fill would not extend beyond the existing relic concrete structures to be removed, and thus would not impact the navigation channel located approximately 750 feet east of the site.

The goal of the proposed changes to the shoreline is aquatic habitat restoration, enhancement, and establishment. The proposed changes include restoration and enhancement of existing armored shoreline to more natural conditions that could support establishment of marsh and riparian areas by placement of more natural beach fill (mixed sand and gravel material) on top of and seaward of the existing armored shoreline. With the exception of the top of the revetment above the OHWM, the existing riprap along the shoreline will not be removed prior to fill placement per the Geologic Hazards Assessment (LAI 2021) and the Shoreline Restoration Design Report (Moffatt & Nichol et al. 2025); rather, it will be buried with beach substrate that will benefit the Important Species and Habitats of Budd Inlet.

Per the shoreline slope stability analysis in the Geologic Hazards Assessment conducted to address this proposal (LAI 2021), removal of the entire existing riprap slope is not viable because doing so could undermine the stability of the slope. Three conditions were analyzed for the stability of the shoreline slope with the following resulting factors of safety (FS):

- Existing slope, static conditions, with riprap (FS = 1.5).
- Existing slope, static conditions, without riprap (FS = 0.7).

- Proposed slope configuration, static conditions (FS = 3.0).

Full removal of riprap would result in the lowest FS.

Further justification for leaving the existing riprap revetment in place and burying it with the sand/gravel beach fill is presented in the Shoreline Restoration Design Report (Moffatt & Nichol et al. 2025).

The proposed Project would add approximately 3.8 acres of bedding and beach material (gravel overlain with mixed sand and gravel) that would replace highly degraded habitat with high quality habitat for ESA-listed fish species and forage fish.

The upland portion of the Project site will be raised two feet through the addition of fill material with the purpose of addressing sea level rise. To minimize the placement of fill material below the OHWM, the top of the existing riprap revetment will be cut back above the OHWM. While the volume of fill placed below the OHWM has been minimized, placement of the beach material on the face of the revetment will result in the OHWM moving waterward between 12 feet and 18 feet. The waterward movement of the OHWM will result in approximately 0.42 acres of degraded aquatic area being converted to upland.

The only amenities that will be located within the “new” uplands resulting from the shoreline restoration project are planted native vegetation within the VCA and public access to the shoreline (providing a public benefit). The uplands being created through the addition of fill material on the riprap armored slope are incidental to the completion of the shoreline restoration project, which is the only option for this area, and not for purposes of creating developable land. Furthermore, the shoreline setbacks and 30-foot VCA associated with the upland development use the existing OHWM location and not the proposed (waterward) OHWM location.

The proposed changes to the shoreline do not include any large structures such as dikes, breakwaters, piers, docks, weirs, or bulkheads. No new hard shoreline armoring is proposed as part of this Project. Therefore, based on the above the Project is consistent with the requirements of OMC 18.20.837.

Shoreline Restoration and Enhancement – Intent (OMC 18.20.850)

OMC 18.20.850 defines the intent of restoration and enhancement actions along the shoreline. Restoration is defined as “the reestablishment or upgrading of impaired ecological shoreline processes or functions”, while enhancement includes actions meant to “intentionally increase or augment one or more functions or values of the existing area”. The proposed voluntary shoreline is designed to be consistent with the City’s 2016 West Bay Environmental Restoration Assessment (CHE 2016). Additionally, the proposed Project is consistent with the restoration objectives for Budd Inlet in the City’s 2012 Final Restoration Plan (Chapter 3, Appendix A to the SMP). The proposed shoreline restoration action would enable natural wave attenuation through construction of a natural beach slope, would restore wildlife habitat through the planting of intertidal saltmarsh and transitional vegetation along the upper beach, and increase the sources and delivery of large woody debris along the shoreline. Furthermore, the design of the shoreline restoration has been guided by the EWN set of principles for coastal engineering of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al. 2025).

As such, this proposed action is consistent with the restoration intent described in OMC 18.20.850.

Shoreline Restoration and Enhancement – General Provisions (OMC 18.20.855)

Per OMC 18.20.855, the proposed voluntary shoreline restoration action must demonstrate the following:

- A. *Restoration and enhancement shall be allowed on all shorelines, and carried out by the applicant/proponent in accordance with an approved restoration/enhancement plan. Such plans shall be designed, constructed and maintained in accordance with the policies and regulations of Olympia’s Shoreline Program. Restoration and enhancement projects restore the natural character and ecological functions of the shoreline; and must be consistent with the implementation of a comprehensive restoration plan approved by the City and/or Department of Ecology, or the Administrator must find that the project provides an ecological benefit and is consistent with Olympia’s Shoreline Program.*

The proposed voluntary shoreline restoration action has been designed to be consistent with the City’s 2016 West Bay Environmental Restoration Assessment (CHE 2016) as well as the restoration objectives for Budd Inlet in the City’s 2012 Final Restoration Plan (Chapter 3, Appendix A to the SMP). The shoreline restoration is described in detail in the Shoreline Restoration Design Report (Moffatt & Nichol et al. 2025) as well as the Restoration and Mitigation Plan (Grette Associates 2025) prepared for this Project.

- B. *The City shall coordinate with other local, state, and federal regulatory agencies, tribes, and non-government organizations to ensure that mitigation actions are likely to be successful and achieve beneficial ecological outcomes.*

The voluntary shoreline restoration action is being conducted as part of the development agreement between the developer and the City and is not being conducted as mitigation for developing the upland Project site. However, local, state, and federal permits and approvals are necessary to conduct the shoreline restoration. During the permitting and approval process for this Project, the shoreline restoration proposal will be reviewed by the appropriate local, state, and federal permitting agencies, as well as tribes and non-government organizations during the public comment processes inherent in the permitting process.

- C. *Shoreline property owners that remove hard-armoring or otherwise restore the shoreline prior to development may apply such restoration toward any mitigation required at the time of development provided that:*
1. *The applicant/property owner can provide conclusive evidence of the pre- and post-restoration conditions using photographs, reports, plans, affidavits, or similar evidence;*
 2. *The City can confirm via site inspection, photographs, affidavits or other evidence that the restoration actions have improved shoreline conditions;*
 3. *The work has occurred on the same site within five years of the proposed development; and*
 4. *The applicant/property owner provides assurances that the restoration area will be preserved in perpetuity. Such assurance can be in the form of a notice on title, conservation easement, or similar mechanism.*

As stated above, the voluntary shoreline restoration action is being conducted as part of the development agreement between the developer and the City and is not being conducted as mitigation for developing the upland Project site.

- D. *Shoreline restoration and enhancement may be permitted if the applicant demonstrates that no significant change to sediment transport will result and that the restoration or enhancement will not adversely affect shoreline ecological processes, water quality, properties, or habitat.*

The design of the proposed shoreline restoration will provide for natural wave energy dissipation and enhanced habitat quality over the existing degraded conditions (Moffatt & Nichol et al. 2025; Grette Associates 2025). The vegetation installed along the upper intertidal and transition zones will provide increased organic nutrient input and large woody debris functions over the existing condition. The increase in function provided by the proposed shoreline restoration action has been demonstrated in the City's 2016 West Bay Environmental Restoration Assessment – Final Report (CHE 2016).

- E. *Shoreline restoration and enhancement projects shall use best available science and management practices.*

The proposed voluntary shoreline restoration has been designed to be consistent with the City's 2016 West Bay Environmental Restoration Assessment and the 2012 Final Restoration Plan for the City's SMP. Additionally, the proposed design has been guided by the EWN set of principles for coastal engineering of shoreline beach fill restoration and soft shore stabilization systems for Puget Sound beaches (Moffatt & Nichol et al. 2025). Further design refinements will be consistent with the relevant Best Available Science and management practices governing shoreline restoration in South Puget Sound.

- F. *Restoration shall be carried out in accordance with an approved shoreline restoration plan and in accordance with the policies and regulations of Olympia's Shoreline Program.*

The proposed voluntary shoreline restoration has been designed to be consistent with the City's 2016 West Bay Environmental Restoration Assessment – Final Report, the 2012 Final Restoration Plan for the City's SMP, the City's Shoreline Inventory (TRPC 2009), and the Lacey, Olympia, and Tumwater Shoreline Analysis & Characterization Report (ESA Adolphson 2008). Please also refer to the West Bay Yards Restoration and Mitigation Plan (Grette Associates 2025) and the Shoreline Restoration Design Report and Alternatives Analysis (Moffatt & Nichol et al. 2025) for additional information on this Project's alignment with the City's Shoreline Program.

- G. *Restoration and enhancement projects shall be designed to minimize maintenance over time.*

The proposed shoreline restoration has been designed to restore a natural beach slope on the site. The intent of the design is to maximize resiliency and wave energy dissipation and to prevent erosion. This design has incorporated elements such as large woody debris and saltmarsh plantings meant to provide substrate stability and reduce potential future maintenance.

- H. *Restoration and enhancement projects shall be designed, constructed, and maintained to avoid the use of shoreline stabilization measures. Where such measures cannot be avoided, bioengineering shall be used rather than bulkheads or other stabilization measures, unless it can be demonstrated that there are no feasible options to achieve the intended result. Restoration and enhancement projects that include shoreline modification actions shall be authorized provided the primary purpose of such actions is clearly restoration of the natural character and ecological functions of the shoreline.*

The proposed shoreline restoration has been designed to be a stable beach without the use of new shoreline armoring. Structural stability for the shoreline will be maintained by covering the existing shoreline armoring with select gravel and sand to create the natural beach slope. Bioengineering in the form of anchored large woody debris and upper intertidal shoreline vegetation will provide substrate stability and prevent erosion during high tides and storm events. As the proposed shoreline restoration is not being conducted to provide mitigation for Project-related impacts, the purpose of the restoration action is to restore the natural character and ecological functions of the shoreline on the site.

- I. *Restoration and enhancement projects shall not extend water-ward more than the minimum necessary to achieve the intended result and shall not result in the creation of additional upland area.*

The proposed shoreline restoration will achieve the minimum slope necessary (8H:1V) to provide the intended, resiliency, wave dissipation, and habitat functions. Additionally, the upper portion of the existing revetment will be cutback above the OHWM. This will result in the minimum fill necessary being placed waterward of the existing OHWM of the site in order to achieve the restoration goals (Moffatt & Nichol et al. 2025).

Placement of fill material to create the sloped beach and maintain appropriate transitional grades in the riparian corridor will necessitate moving the OHWM waterward of its existing location. In places, the new OHWM may extend up to 18 feet waterward to maintain appropriate grades. This movement of the OHWM is required to establish the 8H:1V slope of the beach and to maintain appropriate slopes within the riparian corridor that will avoid the potential for erosion and allow for access at the public access points. This waterward shift in the OHWM will be the minimum necessary to achieve the shoreline restoration designs for stability/resiliency and habitat functions, and is not intended to increase the developable area within the site. The current site design would meet the 30-foot shoreline setback required under OMC 18.20 Table 6.3 for Urban Intensity – Budd 3A from the **existing** OHWM, thus demonstrating the waterward movement of the OHWM is a result of providing the appropriate grades for the establishment of restored habitat and not for an increase of developable upland area (Moffatt & Nichol et al. 2025).

- J. *In accordance with RCW [90.58.580](#), a Substantial Development Permit is not required for development on land that is brought under shoreline jurisdiction due to a shoreline restoration project. However, projects are still required to comply with the regulations of this Master Plan.*

The voluntary shoreline restoration proposed herein has been designed to be consistent with the applicable provisions of the City's current SMP.

K. *Projects taking place on lands that are brought into shoreline jurisdiction due to a shoreline restoration project that caused a landward shift of the OHWM may apply to the Administrator for relief from the SMP development standards and use regulations under the provisions of RCW [90.58.580](#). Any relief granted shall be strictly in accordance with the limited provisions of RCW [90.58.580](#), including the specific approval of the Department of Ecology.*

This provision is not applicable to the proposed Project.

References

- Brennan, J.S. 2007. Marine Riparian Vegetation Communities of Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-02. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
- Brennan, J.S., and H. Culverwell. 2004. Marine Riparian: An Assessment of Riparian Functions in Marine Ecosystems. Published by Washington Sea Grant Program - Copyright 2005, UW Board of Regents Seattle, WA. 34 p.
- Brennan, J., H. Culverwell, R. Gregg, and P. Granger. 2009. Protection of Marine Riparian Functions in Puget Sound, Washington. Prepared by Washington Sea Grant, UW Contract A39268. Prepared for Washington Department of Fish and Wildlife, Agreement 08-1185. June 15, 2009.
- City of Olympia. 2012. Shoreline Master Program Appendix A: Restoration Plan. Prepared with funding from WA State Department of Ecology. June 12, 2012.
- Clancy, M., I. Logan, J. Lowe, J. Johannessen, A. MacLennan, F.B. Van Cleve, J. Dillon, B. Lyons, R. Carman, P. Cereghino, B. Barnard, C. Tanner, D. Myers, R. Clark, J. White, C. A. Simenstad, M. Gilmer, and N. Chin. 2009. Management Measures for Protecting the Puget Sound Nearshore. Puget Sound Nearshore Ecosystem Restoration Project Report No. 2009-01. Published by Washington Department of Fish and Wildlife, Olympia, Washington.
- Coast & Harbor Engineering (CHE). 2016. City of Olympia West Bay Environmental Restoration Assessment – Final Report. Prepared by Coast & Harbor Engineering, a Division of Hatch Mott MacDonald; in association with JA Brennan Associates, GeoEngineers, Davido Consulting Group, and Environmental Science Associates. February 26, 2016.
- Engineering With Nature® (EWN). 2024. Engineering With Nature, Website. URL: <https://ewn.ercd.dren.mil/>
- ESA Adolfson. 2008. Lacey, Olympia, and Tumwater Shoreline Analysis and Characterization Report. Prepared for the Thurston Regional Planning Council. December 2008.
- Finkl, C.W., and H.J. Walker, 2005. Beach nourishment. In Encyclopedia of Coastal Science. Edited by M.L. Schwartz. Springer, Dordrecht, Netherlands. p. 147–161.
- Fresh, K.L. 2006. Juvenile Pacific Salmon in Puget Sound. Puget Sound Nearshore Partnership Report No. 2006-06. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.

- Fresh K., M. Dethier, C. Simenstad, M. Logsdon, H. Shipman, C. Tanner, T. Leschine, T. Mumford, G. Gelfenbaum, R. Shuman, J. Newton. 2011. Implications of Observed Anthropogenic Changes to Nearshore Ecosystems in Puget Sound. Prepared for the Puget Sound Nearshore Ecosystem Restoration Project. Technical Report 2011-03.
- Grette Associates. 2009. Thurston County, Shoreline Master Program Update, Shoreline Analysis and Characterization. Prepared for Thurston County. July 14, 2009.
- Grette Associates, LLC. 2022a. West Bay Yards Critical Areas Report. Prepared for West Bay Development Group, LLC. February 2022.
- Grette Associates, LLC. 2022b. West Bay Yards Important Habitat and Species Report and Habitat Management Plan. Prepared for West Bay Development Group, LLC. February 2022.
- Grette Associates. 2025. West Bay Yards Restoration and Mitigation Plan. Prepared for West Bay Development Group, LLC. Revised June 2025.
- Johannessen, J. and A. MacLennan. 2007. Beaches and Bluffs of Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-04. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
- Johannessen, J., A. MacLennan, A. Blue, J. Waggoner, S. Williams, W. Gerstel, R. Barnard, R. Carman, and H. Shipman. 2014. Marine Shoreline Design Guidelines. Washington Department of Fish and Wildlife, Olympia, Washington.
- Landau Associates, Inc. (LAI). 2021. Geologic Hazards Assessment – West Bay Mixed-Use Development. Project No. 1912001.020.021. Prepared for Milestone Companies West Bay Development Group. October 29, 2021.
- McLachlan, A. and A.C. Brown. 2006. Impact of Hard Structures on Longshore Sand Transport. The Ecology of Sandy Shores. Littoral Drift. Regional Geology and Tectonics. 2nd Edition.
- Moffatt & Nichol, Grette Associates, J. A. Brennan, and Sage Geotechnical. 2025. West Bay Yards Shoreline Restoration Design – Alternatives Analysis. Revision 5. Prepared for City of Olympia. July 2025.
- Nightengale, B. and C. Simenstad. 2001. Overwater Structures: Marine Issues. Washington State Transportation Center (TRAC) and Washington State Department of Transportation. Prepared for the Washington State Transportation Commission and the US DOT. (FHA). May 2021. <https://www.wsdot.wa.gov/research/reports/fullreports/508.1.pdf>
- Penttila, D. 2007. Marine Forage Fishes in Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-03. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
- PIONEER Technologies Corporation. 2020. Phase II Environmental Site Assessment Report. HardeI Mutual Plywood Corporation Site. Prepared for West Bay Development Group, LLC. October 2020.
- Squaxin Island Tribe and K. Brakensiek. 2010. Conceptual Approach to Prioritization for Restoration and Conservation of Budd Inlet, South Puget Sound, WA. Report Version 1. Squaxin Island Tribe Natural Resources. October 18, 2010.

Thurston Regional Planning Council. 2009. Shoreline Inventory for the Cities of Lacey, Olympia, and Tumwater and their Urban Growth Areas. Prepared with funding from WA State Department of Ecology. June 2009.

Washington State Department of Ecology (Ecology). 2021. Washington State Coastal Atlas. URL: <https://apps.ecology.wa.gov/coastalatlas/tools/Map.aspx> Shoreline Layer = 'Drift cells'. Accessed on October 10, 2021.

Williams G. and R. Thom. 2001. Marine and Estuarine Shoreline Modification Issues. Batelle Marine Sciences Laboratory. Pacific Northwest National Laboratory. Prepared for Washington Dept. of Fish and Wildlife, DOT and Ecology. [wdfw00054.pdf \(wa.gov\)](#)

Site Photographs

Photograph 1. Typical upland site habitat, looking to north.



Photograph 2. Typical riparian conditions along top of shoreline slope.



Photograph 3. Vegetated area along rail spur adjacent to West Bay Drive.



Photograph 4. Typical steeply sloping shoreline armoring along shoreline slope.



Photograph 5. Typical mudflat conditions along property shoreline. Note presence of wood and metal debris from prior land uses.



Photograph 6. Large concrete structures, debris and piling to be removed, located immediately waterward of property shoreline.

