APPENDIX A

SEPA Environmental Checklist

ENVIRONMENTAL CHECKLIST

CHECKLIST PURPOSE

Chapter 43.21C of the Revised Code of Washington, otherwise known as the State Environmental Policy Act or "SEPA," requires the City of Olympia to consider the potential environmental impacts of a proposal before making any final decisions. The purpose of the attached checklist is to identify impacts of your proposal, to describe means of reducing or avoiding those impacts, and to evaluate whether an Environmental Impact Statement (EIS) is required. An EIS must be prepared for any proposal which, unless modified, may result in a significant adverse impact on the environment.

After reviewing this checklist and attachments, the City environmental review officer will issue a threshold determination, which may be:

- A Letter of Exemption, if this proposal is not subject to SEPA;
- A Determination of Nonsignificance (DNS), if no significant adverse impacts are identified;
- A Mitigated Determination of Nonsignificance (MDNS), if compliance with appropriate conditions will prevent those impacts identified; or
- A Determination of Significance, if significant impacts may result, an EIS will be required to identify and evaluate alternatives.

CHECKLIST INSTRUCTIONS

The Environmental Checklist asks you to provide some basic information about your proposal. The City staff will use this checklist to evaluate your proposal. Answer the questions briefly, but with the most accurate information available to you.

You must answer each question carefully, completely, and accurately to the best of your knowledge. In most cases, you should be able to answer the question from your own observation or project plans without expert assistance. If you do not know the answer, or if a question does not apply to your proposal, please so state. Some questions ask about regulations, such as zoning. Answer these questions if you can. If you have problems, the City staff will assist you. If necessary, you may attach additional pages. Be sure to sign and date the checklist.

This checklist must be accompanied by one or more applications for project approval. The checklist answers should relate to all parts of your proposal even if you plan to do them over time or on separate parcels. Please attach any additional information that will help describe your proposal or its environmental impact. If necessary, the City staff may ask you to provide additional information or studies, such as a traffic impact analysis.

REQUIRED CHECKLIST ATTACHMENTS

- List adjacent property owners within 300 feet.
- All fees, including supplemental review fees.
- Reproducible site plans and vicinity map (11"x17" or smaller).
- Five copies of all supplemental reports.

NON-PROJECT AND PROGRAM PRPOSALS

Non-project proposals are not site specific, such as citywide plans, policies, or ordinances. Complete this checklist for non-project proposals, but feel free to simply write "N/A" whenever a question is not applicable. In addition, please request a complete copy of "Part D," the Supplemental Sheet for Non-project Actions. For non-project actions, the checklist words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area."

ENVIRONMENTAL CHECKLIST

City of
OLYMPIA
Community Planning & Development, 837 7th Avenue SE, P.O. Box 1967, Olympia, WA 98507-1967
Telephone (360) 753-8314 - Fax (360) 753-8087

1. **Applicant:** City of Olympia, Parks, Arts and Recreation Department
   Address 222 Columbia St. NW
   Olympia, WA 98501
   E-mail Address: _____
   Phone: 360-753-8380
2. **Representative:** Julie McQuary
   Address: _____
   E-mail Address: jmcquary@ci.olympia.wa.us
   Phone: 360-709-2700
3. Property Address or Location: 700-900 West Bay Drive NW
4. Section/Township/Range: T18RO2W
5. Tax Parcel Nos.: 91012800000, 9101260000, 91012700000, 91022500000, 91012400000, 63401200001
6. Total Acres: Phase I is approximately 4 acres, total park property is 17.04 acres
7. Initial Permit Type(s): SEPA, JARPA. LAND USE
8. Zoning: Phase I is primarily in Urban Waterfront, other park property is Professional Office/Residential
9. Shoreline Designation (if any): Shoreline of the State
10. Water Body (if any nearby): West Bay of lower Budd Inlet on Puget Sound

*** * * OFFICIAL USE ONLY * * ***

MASTER FILE #:
SEPA #:
PROPOSAL NAME:
RELATED CASES:
PROPOSED CITY ACTION:
FEE RECEIVED:
DATE RECEIVED:
BY:
SUPPLEMENTAL REPORTS:

11. Project name and brief description of the proposal: West Bay Park Phase I Development includes first section of West Bay Trail, scenic overlook, hand-held boat launch, bike shelter, removal of over 50% of existing pavement, reconstruction of 10 vehicle parking area and southern driveway, removal of creosoted pilings along the shoreline, enhancements of intertidal and riparian habitats, interpretive signs and landscaping. In addition contaminated soils along the decommissioned railroad tracks will be removed and capped per an agreed order.
12. Proposed timing or phasing, and estimated completion date: Complete permitting late spring 2008, Construction beginning by July, 2008 and completed by November 2008. In water work window is July 16-Feb 15. In water work is scheduled to be completed within 8 weeks and total project construction is estimated to take 12 weeks.
13. Do you have any plans for future additions, expansions, or further activity related to or connected with this proposal? If yes, explain:

This is a Phase I project utilizing less than 25% of the total park property. There are no plans or funding for a Phase II project. In the future, the City of Olympia will develop a master plan for the entire property.

14. Do you know of any plans by others that may affect this site? If yes, explain?
The Olympia Comprehensive Plan calls for the development of the remainder of the West Bay Trail which is to extend both north and south of this property. West Bay Drive is to be improved in the future which will modify the west side of the park property. The existing southern driveway into the park is being modified as part of Phase I. The design accommodates the future changes to West Bay Drive.

15. List other federal, state, or local permits, licenses, or approvals required for the proposal:
JARPA, HPA, Corps 404, DOE 401 Water Quality & NPDES, Shoreline, Land Use, Engineering and Building

16. List any environmental information that has been prepared or will be prepared regarding this proposal.
JARPA, Biological Evaluation, Existing Conditions, Transportation Technical Memo, NPDES, Environmental Hazards

17. Checklist Prepared By: GISELE SASSEN Date Prepared: 2/6/08
(Please Print)

SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make this decision.

Signature: [signature] Date: 2/6/08

NOTE: An additional "Supplemental Sheet for Non-Project Actions" must be attached if this checklist is for adoption of a proposed regulation, policy, standard, plan, or similar non-construction action.

RECEIVED
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COMMUNITY PLANNING & DEVELOPMENT DEPT.

PROJECT DESCRIPTION

Background

The City of Olympia Parks, Arts and Recreation Department (OPARD) proposes to implement the first phase of a new waterfront park, which will integrate public access and recreation opportunities with shoreline and habitat restoration on the site of a former lumber mill on Budd Inlet.

The project site is located on the western shoreline of West Bay, east of West Bay Drive, north of the 4th Avenue Bridge and south of the Reliable Steel facility (Figure 1). Adjacent properties include residential areas to the west and south and industrial facilities to the north and along West Bay. The property was purchased by the City of Olympia in 2006 from the Port of Olympia and from the Burlington Northern Santa Fe (BNSF) railroad in 2007.

Existing Conditions (Photos 1-5)

The site is currently vacant and the three existing vehicular access points from West Bay Drive are closed to the public. Past forest products milling operations at the site have been discontinued and most upland and shoreline structures have since been demolished. The park uplands sit primarily on fill material, and most upland areas are paved with asphalt and bisected by decommissioned BNSF railroad tracks. During the pre-acquisition work, contaminated soil and groundwater was found along the rail tracks. Two of the areas were located within or near the Phase I park boundary (for more detail see the section titled "Remedial Investigation/Feasibility Study and Cleanup Actions").

The shoreline consists of a cobble beach but contains areas of concrete, asphalt, metal, and brick debris, as well as derelict piling from past industrial uses (Figure 2). The shoreline vegetation is a mix of native and non-native species. Downtown Olympia and the State Capitol building can be viewed from many locations within the property.

Photo 1
Overview of upland area, looking south; invasive vegetation and concrete roads/pads are visible in the foreground and upper left

Photo 2
Beach and intertidal substrate sizes and scattered debris, looking west

Photo 3
Beach substrate, concrete debris, and derelict piling, looking south

Photo 4
Derelict pilings in shoreline area, looking north

Photo 5
Shoreline erosion

Proposed Improvements

The Phase I park improvements will encompass approximately 4 acres of the overall 17.04-acre property that was purchased by the City. OPARD proposes to build a two-lane access driveway, parking, and turnaround with a drop-off area adjacent to a central entry plaza to accommodate public access. Approximately 530 feet of the very first segment of the new West Bay Trail, a multi-use bike and pedestrian trail, which will eventually connect downtown to the west side of Budd Inlet, will be constructed. Other project elements include open meadows, trails, viewing and seating areas, and shoreline restoration and access. Shoreline restoration activities will include restoration of salt marsh and riparian vegetation, removal of creosote pilings and debris, and restoration of natural cobble beach materials. Olympia's Rotary Club is sponsoring a portion of this project, which will include a viewing area at Rotary Point, a hand-held boat launch, trails, lawn, and landscaped areas (Figure 3).

Construction will begin with the removal of existing debris and clearing activities including the removal of:

- Approximately 277 pilings (see Appendix D for Piling Removal BMPs)
- Concrete, asphalt, metal, and brick debris along the shoreline
- Existing above-ground concrete foundations in the intertidal zone (approximately 40 cubic yards [cy])
- Railroad tracks and ties within Phase I area, not including trestle and dike sections
- Approximately 1,259 cy of clean soil and 1,309 cy of contaminated soil from Areas A, B, and C along the rail spur as part of the cleanup action (Figure 7)
- Approximately 24 primarily non-native deciduous trees (6- to 12-inch diameter) and other non-native shrubs

Uplands and portions of the shoreline will be graded as appropriate to accommodate the proposed improvements. Approximately 2,500 cy of the fill and crushed rock materials used for the upland work on the project will be recycled from excavation and pavement removal activities on site (Figure 4). Approximately 350 cy of pre-washed rounded 2.5-inch minus beach gravel will be imported and placed to a maximum depth of 2 feet, covering a total area of 4,665 square feet (sf) below mean higher high water (MHHW). The purpose of the gravel placement is to replenish shoreline substrates where debris, pilings, and rubble had been removed, and to match existing beach slopes adjacent to improvements (Figure 3). Additional excavation and filling will occur as part of the proposed cleanup actions further detailed below (Figure 7).

Of the three existing access points, the south access point was chosen to serve as the main vehicular entrance for the new park, because it requires less fill and provides a better opportunity to meet the City Of Olympia's (City's) design standards for driveway intersection angles. The two other existing access points will be closed to vehicular traffic and converted to primarily pedestrian and bicycle access points only.

A new asphalt driveway beginning at the south access point and leading to a vehicle turnaround and 10-stall parking area in the central portion of the park will be constructed. Some portions of existing pavement will remain, becoming part of the new driveway (Figures 3 and 6). A new asphalt paved path will parallel the driveway leading to the entry plaza and the West Bay Trail. The segment of the West Bay Trail will be asphalt paved and will extend from the north viewing area to the Rotary area to beyond the entry plaza, for a total length of approximately 560 feet. New walking paths with concrete pavement will be constructed to encircle the Rotary Point area and lead to the boat launch area and the beach access point on the south side of the Rotary Point viewing area (Figure 3). As much as is practicable, any removed asphalt and rock material will be rotomilled and then reused as a recycled crushed rock base for the new asphalt paving. Currently, 75,841 sf of the site is covered with impervious surfaces. The final impervious surface area will be 36,857 sf, for a net reduction of 38,984 sf.

On the north side of Rotary Point, a hand-carried boat launch will be constructed to include a walking ramp terminating just above the MHHW line. This location was chosen for the launch area because of the naturally occurring gentle slope at this point along the shore. To the north of the launch area, a rockery wall will be constructed to preserve an existing big-

leaf maple (Figure 3). To stabilize excavated slopes at the proposed beach access point, a low sheet pile wall with a concrete cap will be placed at the landward side of an enlarged beach area (Figures 3 and 6) on either side of the steps. This work will occur on the landward side of the existing MHHW line. Other improvements include the installation of signage, fixed and removable bollards, handrails, a bicycle shelter with bike racks, trash receptacles, and benches in the upland park area.

Shoreline and habitat restoration will include the removal of non-native and invasive plant species and native vegetation restoration. In addition, the debris and piling removal and natural gravel substrate placement, as described previously, reinforce the habitat restoration. Native trees and shrubs will be installed in the park's upland and riparian zones. Ecology lawn meadows (a water-conserving grass and herbaceous perennial seed mix) will be established in the upland areas. To ensure plant establishment, riparian vegetation and the meadow areas will be temporarily irrigated. Landscaped areas within the Rotary Point area, and lawn areas on the east side of the proposed West Bay trail, will be permanently irrigated. Along the beach, the beach-edge marsh will be restored with additional topsoil and native salt-tolerant plant species (Figure 3). Coir fabric and coir logs and log edging will be placed to retain the topsoil and to protect new plantings until they are sufficiently established (Figure 5). Any existing wetland vegetation adjacent to this construction area will be protected from access during construction by temporary, high-visibility plastic fencing.

Construction Methods

Removal of the existing concrete foundations and debris is expected to occur from land using either a track hoe excavator with a "thumb" on the bucket or a crane and clamshell bucket. All demolition materials, except crushed rock and asphalt paving materials that will be reused, will be exported from the site by dump truck or by barge and will be hauled to an appropriate upland disposal facility.

Upland grading is expected to be completed using typical upland construction equipment, such as a track hoe excavator, front end loader, dump truck, and bulldozer. It is anticipated that placement of gravel material will occur from land, and a dump truck or front-end loader will be used to place the new beach gravel along the shoreline. It is expected that material will be spread using a bulldozer or tracked excavator with an I-beam. The machinery used will operate at low tide in the dry so that it can push the gravel material to the edge of the water without entering the water.

Construction equipment and materials will be transported to the site by truck, and activities will be staged from upland areas. Installation of the sheet pile wall is anticipated to be completed using a backhoe. A trench would be excavated and the sheet pile would be installed with the backhoe bucket and labors, and then backfilled and compacted. All upland pavement and concrete installations will be constructed using standard cast-in-place concrete and asphalt construction methods, and there will be no concrete installations below MHHW.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND CLEANUP ACTIONS

A Remedial Investigation/Feasibility Study (RI/FS) is currently being performed to aid in the

development of cleanup actions addressing petroleum contamination detected along portions of the BNSF spur line. Negotiations with Washington State Department of Ecology (Ecology) are in progress, and RI/FS and contamination cleanup activities will be conducted under an Agreed Order between Ecology and OPARD. Cleanup under the Agreed Order (termed an "Interim Action" [IA]) will be conducted during the initial phases of the Phase I park development. All RI/FS and Interim Action activities described here are presented in detail in the project document *Work Plan for Remedial Investigation/Feasibility Study and Interim Action, West Bay Park Site, Olympia, Washington* (Appendix C).

Preliminary Remedial Investigations Performed in December 2007

Preliminary RI/FS soil and groundwater sampling was conducted in December 2007 to investigate areas of contamination found within or near the Phase I park boundary during pre-acquisition sampling work. During the pre-acquisition work, soil and groundwater contaminated with lube-oil range hydrocarbons above Ecology's Model Toxics Control Act (MTCA) Method A cleanup levels were found in three areas of the site. Two of the areas were located within or near the Phase I park boundary. Additional soil and groundwater samples were collected at these two areas in order to determine the extent of contaminated media and to develop a cleanup approach (presented here as an Interim Action). In addition, surface soil samples were collected along the rail spur within the Phase I boundary. In one of these samples, carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were detected at concentrations above MTCA Method A cleanup levels.

Remedial Investigations to Be Performed to Complete the RI/FS

Subsurface soil and groundwater samples will be collected from borings installed using a push-probe rig to characterize the remaining contaminated area outside of the Phase I park boundary. Information derived from this sampling will be used in additional remedial design (if warranted). Up to eight push-probes will be installed and a single soil and groundwater sample will be collected from each of the push-probes. Samples will be analyzed for the contaminants of concern (lube oil and PAHs).

Proposed Interim Action

The IA objective is to ultimately obtain a determination from Ecology that "No Further Action" (NFA) is required at the site to address the contamination. To achieve this objective, soil and groundwater contamination should be cleaned up to meet MTCA Method A cleanup levels for the specific contaminants. Once the cleanup is completed, compliance monitoring will be conducted to confirm that IA goals are met.

The IA will consist of:

- Source removal by excavation
- In situ enhanced bioremediation of dissolved and adsorbed hydrocarbons using an oxygen releasing agent
- Placement of a 12-inch-thick soil cap as a physical barrier along the rail spur
- One year of quarterly groundwater monitoring conducted 12 months following soil excavation

Soil Removal

Source soils within the two contaminated soil areas will be removed by excavation. The actual extent of the excavation will be determined in the field by real-time observation and field screening. Once the apparent limit of contaminated soil is reached, the bottom and sidewalls of the excavation will be sampled to confirm removal. Both "clean" overburden soils and "dirty" soils will be stockpiled separately and sampled. It is estimated that a total of 1,259 cy of clean soil and 1,309 cy of dirty soil will be removed from the excavations. Soils that are confirmed clean will be returned to the excavation as backfill. Dirty soils will be transported to a permitted landfill. The remaining excavation will be backfilled with clean pit run.

Residual Plume Treatment

One of the two contaminated soil areas contains groundwater with contaminant levels above cleanup levels. In this area, a predetermined amount of oxygen releasing agent (ORA) will be spread evenly over the base of the excavation at the completion of excavation and before backfilling begins. ORAs are available in powder form and can be spread using a backhoe arm. It is critical that the ORA is placed at sufficient depth so that it remains submerged beneath the groundwater table for most of the year. The ORA will slowly provide dissolved oxygen (DO) to the groundwater for about one year (typically). The enhanced DO will encourage destruction of residual hydrocarbons in soil and groundwater by naturally-occurring aerobic bacteria in the soil.

Groundwater Monitoring

Four new groundwater monitoring wells will be installed to monitor groundwater concentrations and the performance of the ORA. The wells will be located to allow for monitoring of upgradient conditions, conditions near the former soil source area, and downgradient conditions. The wells will be installed with 10-foot screened sections that span the groundwater water table interface. It is anticipated that a screened interval of from approximately 4 to 14 feet bgs will be appropriate.

Groundwater monitoring will be conducted quarterly starting 1 year following application of the ORA. Sampling for 1 year will be conducted to assess the effectiveness of the cleanup and evaluate the need for further monitoring.

Soil Cap

Surface soils along the rail spur within the Phase I park boundary will be capped with a physical barrier of soil a minimum of 12 inches thick to prevent direct contact. The cap will extend a minimum of 5 feet horizontally from each outside edge of the steel rails. The soil cap will consist of a combination of clean fill and topsoil. Asphalt, steel rails, and rail ties will be removed prior to capping. Steel rails will be salvaged. Rail ties will be disposed of at the same permitted landfill as the contaminated soil. A geotextile fabric barrier layer will be placed beneath the cap as a marker. The soil cap will be vegetated and incorporated into landscaping for the new park.

To Be Completed by Applicant

Evaluation For
Agency Use Only

ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one):

flat, rolling, hilly, steep slopes, mountainous, other _____

Most of the site is relatively level. Relatively steep slopes 15 to 20 feet high occur along the west side of the property between the core park area and West Bay Drive NW, and between the core area and Budd Inlet.

b. What is the steepest slope on this site (approximate percent slope)?

The steepest slopes are found at the embankment east of West Bay Drive; up to an approximate 50 percent slope between West Bay Drive and the core area of the property.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The majority of the site is located on fill material. The dominant naturally occurring substrate at the shoreline is large gravel and cobble (See Photos 1 and 3), There are three soil types mapped by the Natural Resource Conservation Service (NRCS) in the project area: Xerorthents, with 0 to 5 percent slopes; Alderwood gravelly sandy loam, with 15 to 30 percent slopes; and Dystric Xerorthents, with 60 to 90 percent slopes (USDA 2007). Almost the entire Property is mapped by NRCS as Xerorthents, which are described as deep, moderately well drained to somewhat excessively drained soils on uplands and tidelands. They formed in sandy and loamy cut and fill material. The Alderwood series consists of somewhat acidic, moderately deep, well-drained soils formed on glacial till in upland contexts. Dystric Xerorthents are composed of deep well-drained soils formed in glacial till and situated on the sidewalls of drainages (USDA 1990). None of the three soil series is classified as hydric soils according to *Hydric Soil List of Thurston County, Washington* (USDA 2001).

d. Are there surface indicators or history of unstable soils in the immediate vicinity? If so, describe.

There is no known history of unstable soils, nor are there surface indications of any stability problem. The site is not designated as a landslide hazard area on the Thurston County Sensitive Areas Ordinance map. There are some areas of moderate to severe shoreline erosion.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

The site will be graded to allow for vehicular and pedestrian access from West Bay Drive, and to accommodate the various recreational elements proposed. Some of the removed asphalt paving will be reused on site as general fill material where appropriate. Cobble/gravel material will be placed along the shoreline where debris, pilings and rubble had been removed, and to match

existing beach slopes adjacent to improvements.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Measures to prevent erosion during and after construction are described in (h) below.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 36,857 square feet (sf) of the site will be covered with impervious surfaces. Approximately 75,841 sf of the site is presently covered with impervious surface. The project will result in a net reduction in impervious surface of approximately 38,983 sf.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Silt fencing will be placed along the shoreline during upland grading to prevent exposed soil from washing into the water. Logs, coir logs, and coir and jute fabric will be placed to prevent erosion.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Emissions to the air would be temporary and would come from heavy equipment such as the excavator, and possibly dust from soil removal.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odor that may affect this proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Equipment will be inspected regularly to ensure that uncontrolled emissions do not occur.

3. Water

a. Surface

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The project will occur on the shoreline of West Bay of southern Puget Sound. Garfield Creek crosses south of the project area as it drains to West Bay.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Plans are attached for all the elements described below:

- Remnants of concrete foundation will be removed.
- Creosote-treated piling will be pulled and removed.
- Miscellaneous debris and concrete rubble will be removed from the beach and shoreline.
- Exposed metal will be removed from the concrete wall at the promontory.
- Remnants of railroad tracks will be removed.
- Non-native shrubby vegetation will be removed, as well as 24 mostly non-native trees.
- Portions of the beach area will be graded and beach gravel will be placed out to approximately 2 feet mean lower low water (MLLW) to a maximum depth of 2 feet.
- Concrete steps for shoreline access will be constructed adjacent to the beach.
- A low sheet pile wall will be installed adjacent to the concrete stairs at the shoreline.
- A segment of West Bay Trail, a walking/bicycle path, will be constructed
- Native vegetation will be installed within 200 feet of the shoreline.
- Native salt marsh vegetation will be installed below MHHW.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Approximately 350 cubic yards (cy) of beach gravel covering a total of 4,665 sf will be imported and placed to a depth of up to 2 feet in the upper intertidal zone, to restore the shoreline grade after debris removal.

(4) Will the proposal require surface water withdrawals or diversion? Give general description, purpose, and approximate quantities if known.

The proposal will not require surface water withdrawals or diversions.

(5) Does the proposal lie within a 100-year flood plain? If so, note location on the site plan.

Most of the site lies within the 100-year floodplain.

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The proposal does not involve the discharge of any waste materials to surface waters.

b. Ground

(1) Will groundwater be withdrawn or will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn, and no water will be discharged to groundwater.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example, domestic sewage; industrial containing the following chemicals . . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground.

c. Water Runoff (including stormwater)

(1) Describe the source of runoff (including stormwater and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other water? If so, describe.

The finished project will be a beach/upland park, and stormwater will sheet flow into the Budd Inlet. During construction, silt curtains will be used to prevent any turbid runoff from flowing into the water. Vegetated filterstrips will be constructed alongside the entry drive.

(2) Could waste materials enter ground or surface water? If so, generally describe.

Debris could enter Budd Inlet during demolition. A containment boom and silt curtains will prevent debris from floating out of the immediate area, and debris that sinks to the bottom will be picked up and properly disposed of.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any.

Conservation measures to control temporary turbidity include:

- All work will be conducted within the approved timing windows for listed species in this area of the Puget Sound, which extends from July 16 to February 15.
- If a barge is used, it will remain in adequate water depths to prevent grounding.
- An emergency spill containment kit will be located on site and promptly used for cleanup of accidental spills.

A silt curtain and floating boom will be deployed during demolition activities as needed. All floating debris will be removed at the end of every work day.

4. Plants

a. Circle types of vegetation found on the site:

Deciduous tree: [alder], [maple], aspen, [other] Madrona, cherry, black locust

Evergreen tree: fir, cedar, pine, other

[Shrubs]; [Grass]; Pasture; Crop or grain
Scotch broom, twinberry, Japanese knotweed, Himalayan blackberry

Wet soil plants: cattail, buttercup, bulrush, skunk cabbage, [other] sea plantain, pickleweed

Water plants: water lily, eelgrass, milfoil, other

Other types of vegetation English ivy

b. What kind and amount of vegetation will be removed or altered?

Twenty-four trees, existing shrubby and low-growing vegetation (mostly non-native species) will be cleared and grubbed in the upland portion of the property and replaced with native vegetation.

c. List threatened or endangered species known to be on or near the site.

Chinook salmon, steelhead, and bull trout.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Native plants will be installed in the uplands and riparian zone. Upland planting will include native trees and Ecology lawn meadows (a water conserving grass and herbaceous perennial seed mix). Riparian plantings will include native trees and shrubs.

The beach edge marsh will be restored. Any existing wetland vegetation adjacent to this construction area will be protected from access during construction with temporary orange plastic fencing.

5. Animals

a. Circle any birds and animals that have been observed on or near the site or are known to be on or near the site:

Birds: hawk, [heron], [eagle], songbirds, [other:] purple martin, great egret, Vaux's swift, peregrine falcon

Mammals: deer, bear, elk, beaver, [other:] mink

Fish: bass, [salmon], [trout], herring, shellfish, other

b. List any threatened or endangered species known to be on or near the site.

Puget Sound Chinook salmon, steelhead, and bull trout

c. Is the site part of a migration route? If so, explain.

The site is part of the Pacific Flyway, a major north-south seasonal migration route for many bird species.

d. Proposed measures to preserve or enhance wildlife, if any:

Measures to minimize impacts to wildlife include:

- No concrete pouring or curing will occur below mean higher high water (MHHW).
- Trees to remain will be protected with temporary tree protection fencing during construction.
- Existing wetland vegetation adjacent to the construction area will be protected from access with temporary high-visibility plastic fencing.
- An emergency spill containment kit will be kept on site ready for prompt use should accidental spills occur in the water from construction equipment and/or debris.
- Creosote-treated piling and associated materials that are removed will be taken to an upland facility approved for this type of material.
- Debris booms will be present at the site during in-water work, such as pile extraction and concrete foundation demolition in order to contain any floating debris.
- Appropriate material will be available and used (e.g., oil pads, oil boom) to contain or remedy any sheen that appears on the water surface following pile extraction.

The project will ultimately enhance wildlife habitat by enhancing habitat quality within the shoreline environment through the removal of pilings and debris and vegetation restoration.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Solar energy will be used for irrigation and security lighting.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project will not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The use of solar energy for the operation of the irrigation and security lighting system is proposed. Equipment used in construction will meet applicable efficiency and emissions standards. Low-maintenance park facilities are being designed. Pedestrian and bicycle facilities will encourage walking and biking to the park. Recycled materials are a significant part of the building materials. The project also includes extensive native plantings that will help cool and moderate the site.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill or hazardous waste, that could occur as a result of this proposal? If so, describe.

Some areas of low-level petroleum contamination have been found to exist along the BNSF rail spur line. As part of this project, environmental contamination will be cleaned up removing exposure risk to park visitors. The City is in the process of signing an Agreed Order and Work Plan with the Department of Ecology.

(1) Describe special emergency services that might be required.

There are no unusual risks associated with this proposal. The construction foreman will have emergency medical contact numbers and directions to the nearest hospital.

(2) Proposed measures to reduce or control environmental health hazards, if any.

Project includes cleanup of environmental contamination. Refer to previous project description for additional details.

b. Noise

(1) What types of noise exist in the area that may affect your project (for example, traffic, equipment, operation, other)?

There are no known sources of noise in the area that will affect the proposed project.

(2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site.

There will be some noise during construction, more so during the demolition phase. Pavement and large concrete debris will need to be broken apart before it is hauled away. Generally, noise will come from heavy equipment operation. Louder noises such as jackhammers will be temporary and of short duration. The total construction time for the project is anticipated to be 12 weeks in duration. City Ordinance allows construction from 7 a.m. to 7 p.m. seven days a week.

(3) Proposed measures to reduce or control noise impacts, if any.

Construction will take place during daylight hours. No unusual noise impacts are anticipated that would require further control measures.

8. Land and Shore Use

a. What is the current use of the site and adjacent properties?

The site is an abandoned lumber mill. Mixed residential and commercial uses occur to the south and east of the site. Mixed commercial and industrial uses occur to the north.

b. Has the site been used for agriculture? If so, describe.

The site has not been used for agriculture.

c. Describe any structures on the site.

Three access driveways with gates, asphalt paving, an abandoned railroad line, relic concrete foundations and debris on uplands and shorelines, and a low concrete wall on the outer perimeter of Rotary Point.

d. Will any structures be demolished? If so, what?

The relic concrete foundation from the wood mill will be demolished. Asphalt paving and derelict pilings will also be removed.

e. What is the current zoning classification of the site?

Urban Waterfront and Professional Office/Residential

f. What is the current comprehensive plan designation of the site?

Urban Waterfront

g. If applicable, what is the current Shoreline Master Program designation of the site?

West Bay park is identified in the Olympia Comprehensive Plan.

h. Has any part of the site been classified an "environmentally sensitive" area? If so, specify.

The site is a Shoreline of the State, the slopes between the park and West Bay Drive are Landslide Hazard Areas. Based on the observed condition of the access roadways, it appears that these areas were built in accordance with accepted construction standards and thus are exempt from designation as Landslide Hazard Areas per OMC 18.32.605.B. There are five small wetlands identified in the vicinity of the project site. For classification of the wetlands, see Appendix A.

i. Approximately how many people would reside or work in the completed project?

No one would reside in the park. OPARD will maintain the site.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any?

There will be no displacement impacts resulting from this project.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

The project will be reviewed by the City of Olympia for a Shoreline Substantial Development Permit. The City will evaluate consistency with the Shoreline Master Plan and the Comprehensive Plan.

9. Housing

a. Approximately how many units would be provided, if any? Indicate

whether high-, middle-, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high-, middle-, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any.

No housing impacts will occur as a result of this project.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas. What is the principal exterior building material(s) proposed?

The tallest structure will be the bicycle shelter . The shelter will be less than 10 feet tall and open; therefore, it will not obstruct views.

b. What views in the immediate vicinity would be altered or obstructed?

The proposed project will significantly improve the views onto the property from West Bay Drive and from across the inlet. Large paved areas and areas currently infested with non-native and invasive plants will be restored with native vegetation. Pilings and miscellaneous unsightly debris will be removed from the site. Attractive views towards Downtown Olympia and the Capitol building will be accessible to the public.

c. Proposed measures to reduce of control aesthetic impacts, if any:

None required; the proposed project will enhance the aesthetic quality at the site.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Security lighting only is proposed.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

No existing light/glare sources are known.

d. Proposed measures to reduce or control light and glare impacts, if any.

None needed.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The Seven Oars Art Project, including benches and a scenic view of the bay, is located south of the park property. Further south is Capitol Lake, which is looped with public trails and recreation facilities. On the east side of West Bay

is Percival Landing, a public boardwalk with access to boating docks. To the northeast across the bay is Priest Point Park, the largest park in the City of Olympia. The Swantown Marina is located on East Bay, and the West Bay Marina is located to the north of the project. Recreational boating occurs in Budd Inlet and Capitol Lake. Across the street from the project is the Garfield Creek Nature Trail leading into the uplands west of West Bay Drive and linking to the surrounding neighborhoods.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No existing recreational uses will be displaced.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any.

None needed.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on or proposed for national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

As a requirement of the grants received from the State Recreation and Conservation Office, the project was submitted to Washington Department of Archaeological and Historic Preservation (DAHP) on the EZ Forms. The web site for the DAHP was queried. The Charles Giles House is on the National Register of Historic Places (NRHP), at 727 West Bay Drive. The George B. Lane house, also on the NRHP, is at 1205 West Bay Drive.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

The majority of the park property is located on fill. The project site does not include the original shoreline. Based on archeological records, the project area does not include any known sites of cultural importance. No historic structures remain on site. The State Capitol is located about 1 mile from the site.

c. Proposed measures to reduce or control impacts, if any:

The historical and cultural landmarks described above will not be affected by project activities. If unknown objects or materials are encountered during construction, site disturbance will be stopped for archeological investigations.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

West Bay Drive is the main shoreline drive. Currently there are three driveways accessing the site from West Bay Drive. Two of the access drives will be closed to vehicular traffic and converted to primarily pedestrian and bicycle entrances to the park area. The existing south entrance will be reconfigured to serve as the main park entrance and to allow for continued vehicular access.

b. Is site currently served by public transit? If not, what is the approximate

distance to the nearest transit stop?

There is no bus line on West Bay Drive. There are several Intercity Transit routes on Harrison Boulevard within walking distance of the park for most people.

c. How many parking spaces would the completed project have? How many would the project eliminate?

No former use. The former Solid Wood plant had expansive parking and asphalt pavement, of which more than half will be removed as part of the project. The proposed project will create 10 parking spaces.

d. Will the proposal require any new roads or streets or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No new roads or streets will be needed. Three crosswalks, one at each entrance, are proposed to improve the safety of pedestrians accessing the park. In addition, short sections of sidewalk will be constructed to connect to the crosswalk.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project will use existing roads and provide access to water for hand-held boats, such as kayaks, canoes, and other non-motorized recreational watercraft..

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

The completed project will generate a small number of vehicular trips by park users at various times of day. These trips will be made by passenger cars. Peak volumes would probably occur on weekends.

g. Proposed measures to reduce or control transportation impacts, if any:

The park is expected to have moderate use. Transportation impacts will be minimal, if any. Pedestrian and bicycling facilities are being improved to encourage the public to walk or bike to the park. The proposed new south driveway to the park property will create a safer intersection at West Bay Drive.

15. Public Services

a. Would the project result in an increased need for public services (for example, fire protection, police protection, health care, schools, other)? If so, generally describe.

The project will not result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The park is being designed with good visibility and will have security lighting to help reduce or eliminate potential criminal activity. The only structure on site is a bike shelter. The park is being designed with low-maintenance requirements so that intensive park maintenance will not be required.

To Be Completed by Applicant

Evaluation For
Agency Use Only

16. Utilities

a. Circle utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer,

septic system, other _____

The site is directly served by electricity. Other utility connections are available via West Bay Drive.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed.

Electricity and water will be needed for park irrigation and security lighting.

SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make this decision.

Signature: _____ Date: _____

NOTE: An additional "Supplemental Sheet for Non-Project Actions" must be attached if this checklist is for adoption of a proposed regulation, policy, standard, plan, or similar non-construction action.

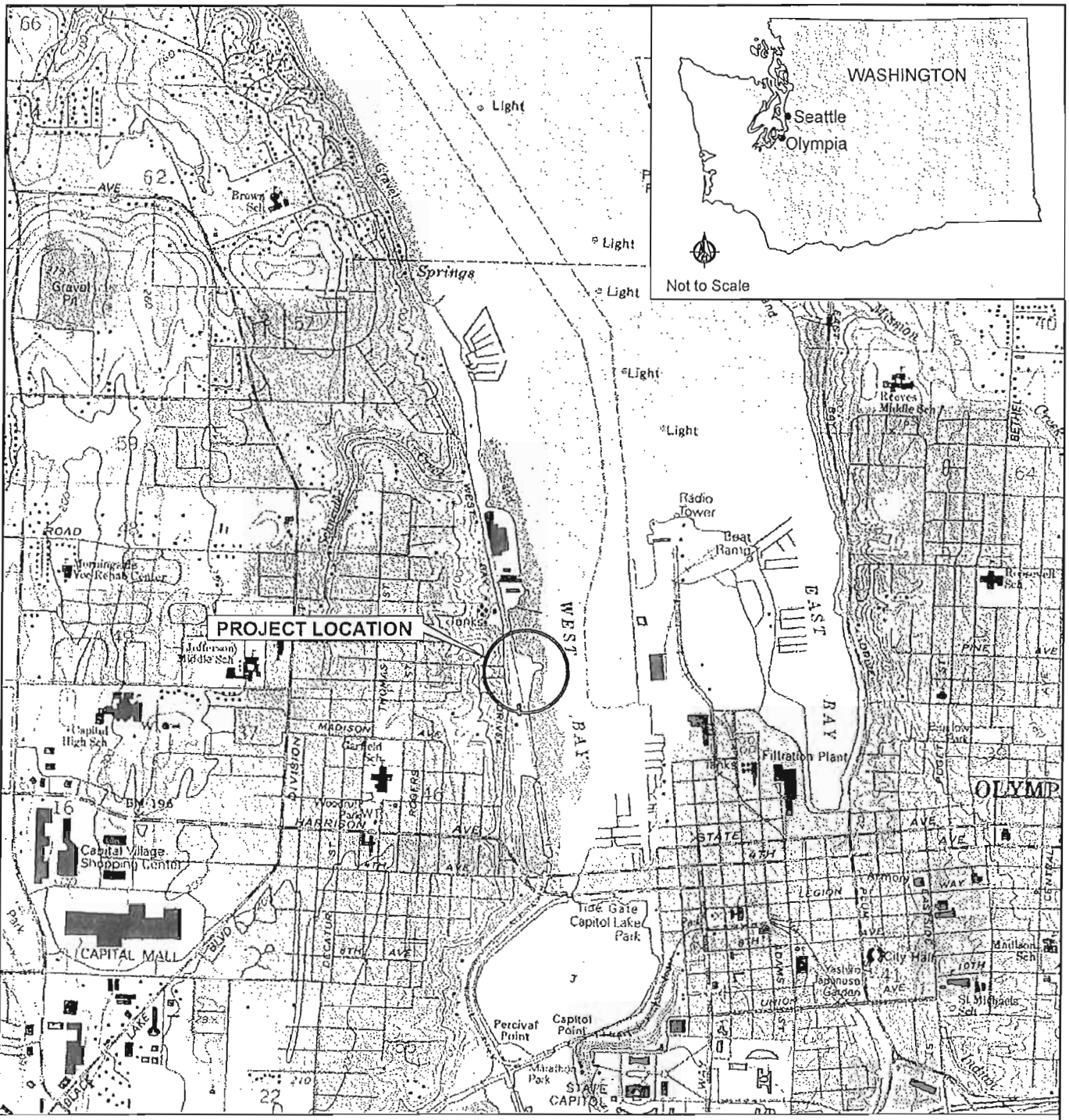
References

United States Department of Agriculture (USDA). 1990. Soil Survey of Thurston County, Washington. USDA Soil Conservation Service (SCS).

USDA. 2001. Hydric Soil List for Thurston County, Washington. USDA Soil Conservation Service. Accessed online at http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html on May 1, 2007.

USDA. 2007. Natural Resource Conservation Service (NRCS) Web Soil Survey. Accessed online at http://websoilsurvey.nrcs.usda.gov/app on May 1, 2007

FIGURES



Note: Base map prepared from Terrain Navigator Pro
USGS 7.5 minute quadrangle map of Tumwater, Washington.

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Scale in Feet

VICINITY MAP

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION DATUM: LAT: 47°03'09.65" N LONG: 122°54'42.59W T18N, R2W, SEC15 VERTICAL: MLLW = 0 ADJACENT PROPERTY OWNERS:	NAME: WEST BAY PARK - PHASE I IMPROVEMENTS REFERENCE #: SITE LOCATION ADDRESS: 900 WEST BAY DRIVE NW OLYMPIA, WA	PROPOSED: NEW SHORELINE PARK FACILITY IN: OLYMPIA NEAR: WEST BAY COUNTY OF: THURSTON STATE: WA DATE: FEBRURAY 2008 SHEET: 1 OF 8

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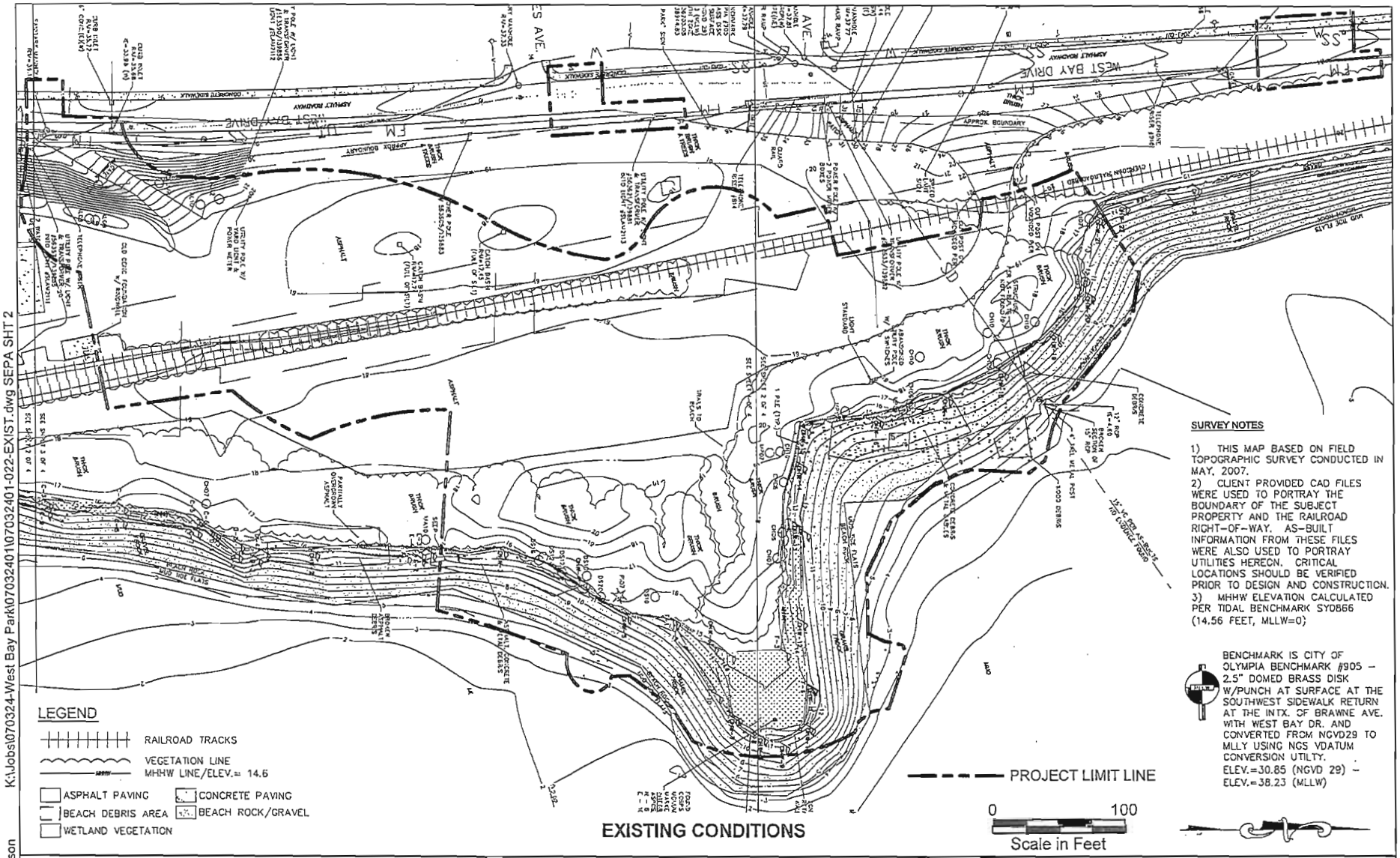


EXISTING CONDITIONS

SURVEY NOTES

1) THIS MAP BASED ON FIELD TOPOGRAPHIC SURVEY CONDUCTED IN MAY, 2007.
2) CLIENT PROVIDED CAD FILES WERE USED TO PORTRAY THE BOUNDARY OF THE SUBJECT PROPERTY AND THE RAILROAD RIGHT-OF-WAY. AS-BUILT INFORMATION FROM THESE FILES WERE ALSO USED TO PORTRAY UTILITIES HEREON. CRITICAL LOCATIONS SHOULD BE VERIFIED PRIOR TO DESIGN AND CONSTRUCTION.
3) MHHW ELEVATION CALCULATED PER TIDAL BENCHMARK SY0866 (14.56 FEET, MLLW=0)

BENCHMARK IS CITY OF OLYMPIA BENCHMARK #905 – 2.5" DOMED BRASS DISK W/PUNCH AT SURFACE AT THE SOUTHWEST SIDEWALK RETURN AT THE INTX. OF BRAWNE AVE. WITH WEST BAY DR. AND CONVERTED FROM NGVD29 TO MLLY USING NGS VDATUM CONVERSION UTILTY.
ELEV.=30.85 (NGVD 29) – ELEV.=38.23 (MLLW)

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION

DATUM: LAT: 47°03'09.65" N
LONG: 122°54'42.59W
T18N, R2W, SEC15
VERTICAL: MLLW = 0

ADJACENT PROPERTY OWNERS:

NAME: WEST BAY PARK - PHASE I IMPROVEMENTS

REFERENCE #:

SITE LOCATION ADDRESS:
900 WEST BAY DRIVE SW
OLYMPIA, WA

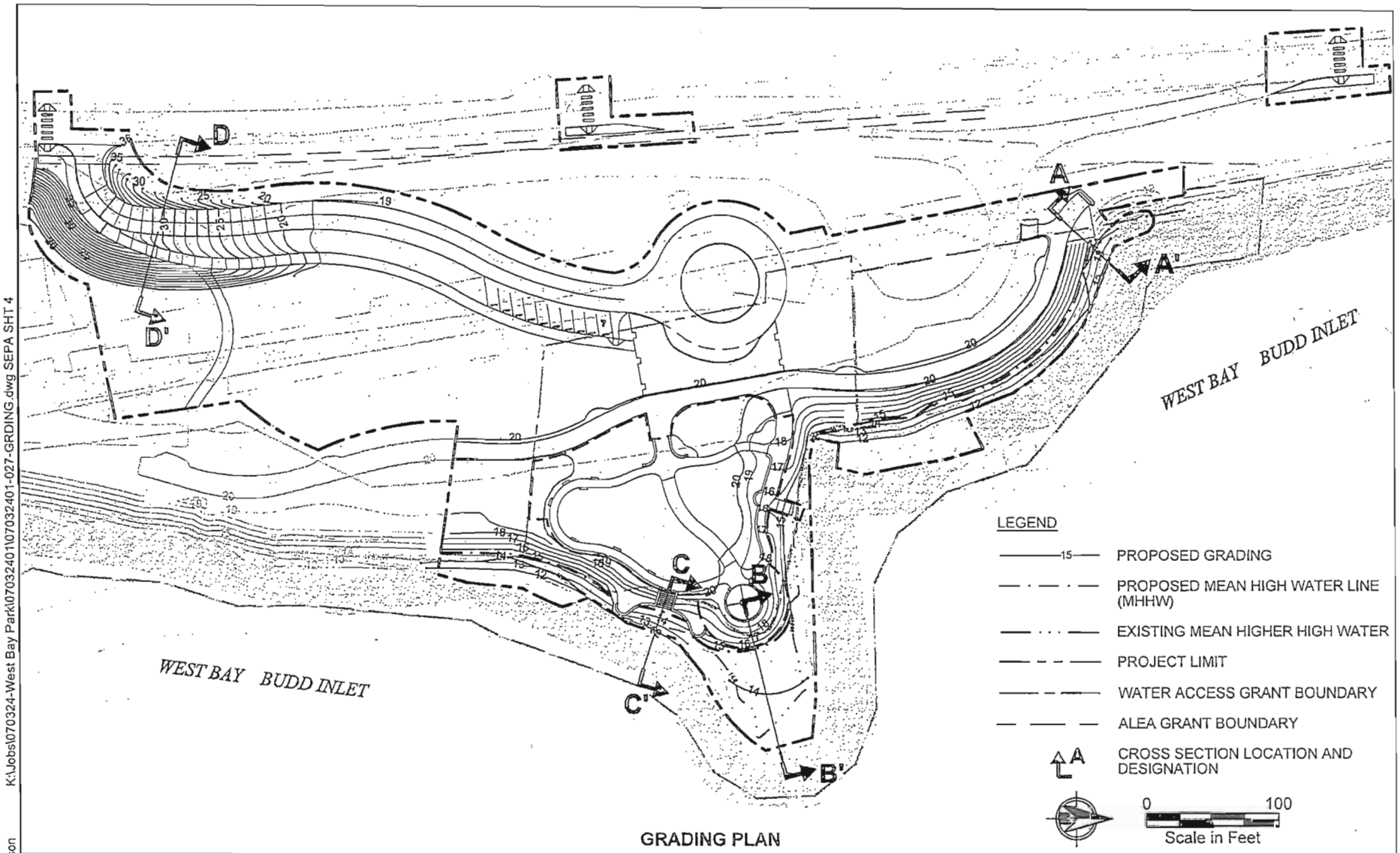
PROPOSED: NEW SHORELINE PARK FACILITY

IN: OLYMPIA
NEAR: WEST BAY
COUNTY OF: THURSTON STATE: WA

DATE: FEBRUARY 2008

SHEET: 2 OF 8

Feb 04, 2008 3:39pm cdavidson K:\Jobs\070324-West Bay Park\070324010703240102-EXIST.dwg SEPA SHT 2



GRADING PLAN

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION	NAME: WEST BAY PARK - PHASE I IMPROVEMENTS	PROPOSED: NEW SHORELINE PARK FACILITY
DATUM: LAT: 47°03'09.65" N LONG: 122°54'42.59W T18N, R2W, SEC15 VERTICAL: MLLW = 0	REFERENCE #:	IN: OLYMPIA NEAR: WEST BAY COUNTY OF: THURSTON STATE: WA
ADJACENT PROPERTY OWNERS:	SITE LOCATION ADDRESS: 900 WEST BAY DRIVE SW OLYMPIA, WA	DATE: FEBRUARY 2008 SHEET: 4 OF 8

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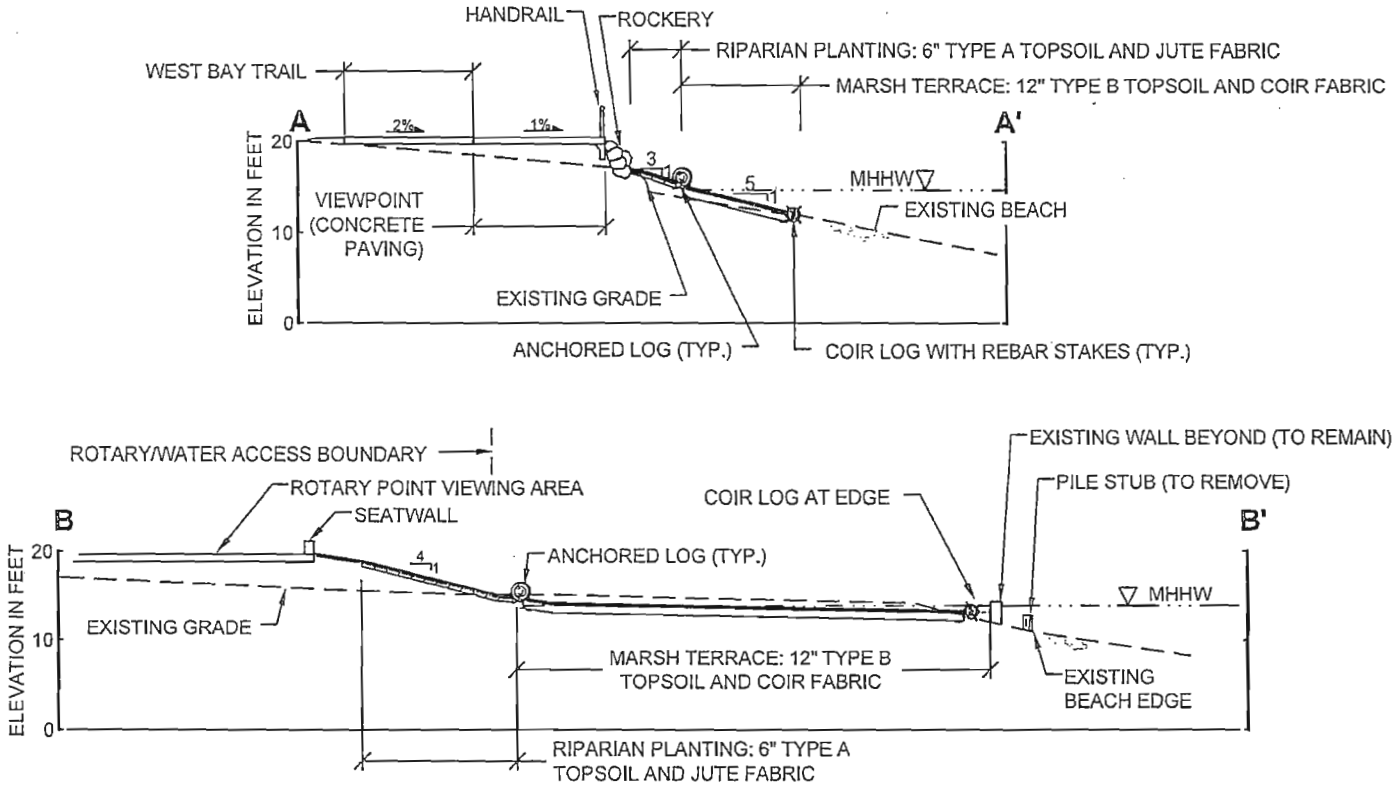
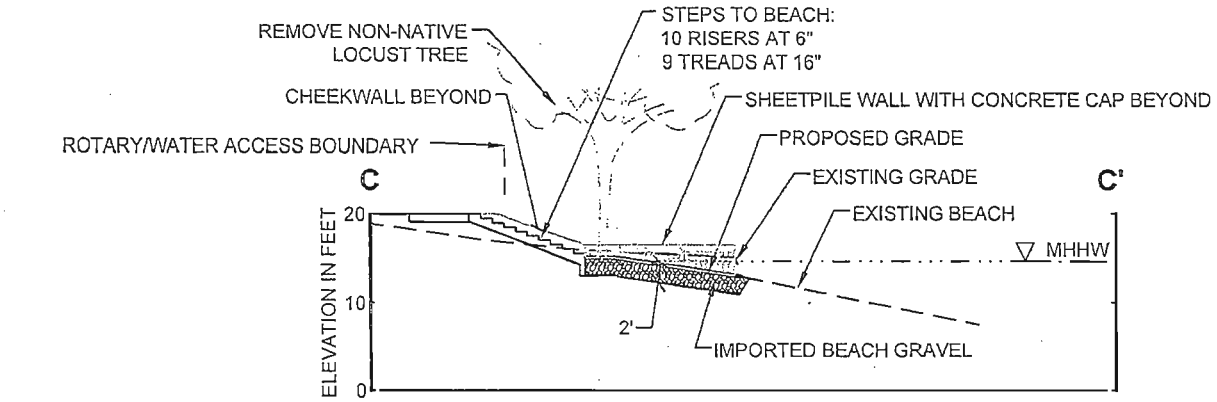
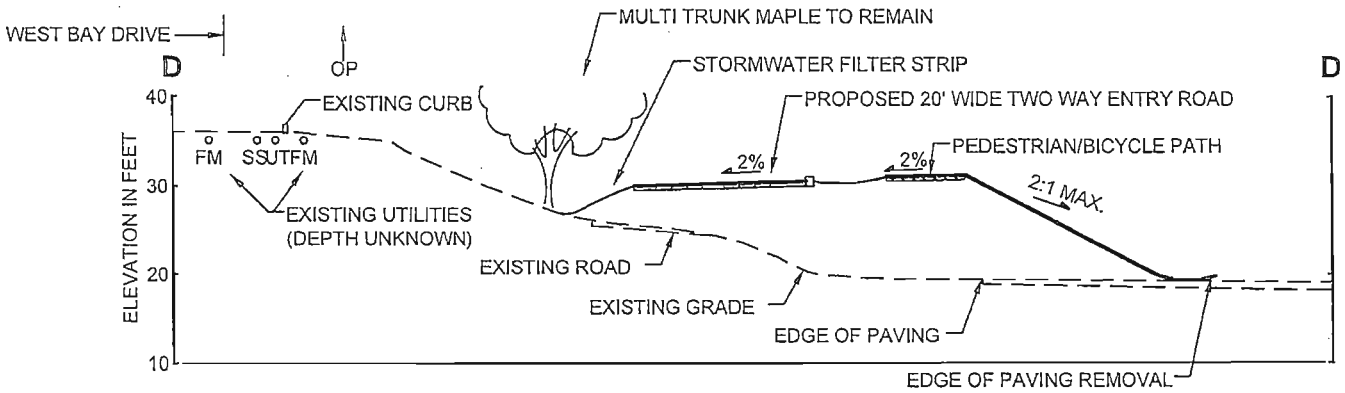


CROSS SECTIONS AA' AND BB'

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION	NAME: WEST BAY PARK - PHASE I IMPROVEMENTS	PROPOSED: NEW SHORELINE PARK FACILITY
DATUM: LAT: 47°03'09.65" N LONG: 122°54'42.59W T18N, R2W, SEC15 VERTICAL: MLLW = 0	REFERENCE #:	IN: OLYMPIA NEAR: WEST BAY COUNTY OF: THURSTON STATE: WA
ADJACENT PROPERTY OWNERS:	SITE LOCATION ADDRESS: 900 WEST BAY DRIVE SW OLYMPIA, WA	DATE: FEBRUARY 2008 SHEET: 5 OF 8





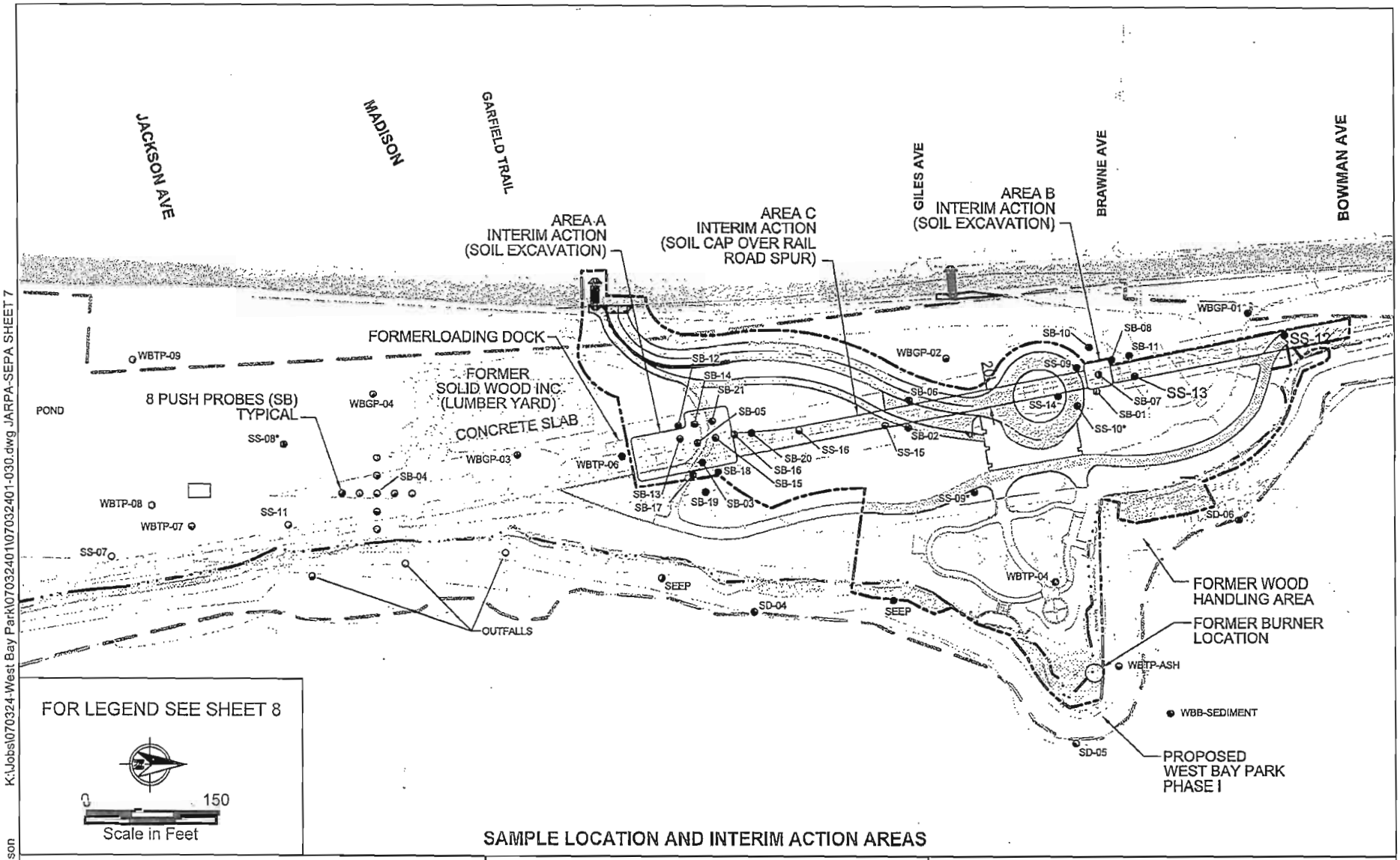
LEGEND

- PROPOSED WALKWAY/WEST BAY TRAIL ASPHALT PAVEMENT 2" AC OVER 4" ROCK OR RECYCLED AC BASE
- PROPOSED ROADWAY ASPHALT PAVING 3" AC OVER 6" RECYCLED AC BASE
- PROPOSED TOPSOIL - TYPE A - 6"
- PROPOSED TOPSOIL TYPE B - 12"
- PROPOSED BEACH GRAVEL AND SAND
- PROPOSED GRADE
- EXISTING GRADE

0 20
Scale in Feet

CROSS SECTIONS CC' AND DD'

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION	NAME: WEST BAY PARK - PHASE I IMPROVEMENTS	PROPOSED: NEW SHORELINE PARK FACILITY
DATUM: LAT: 47°03'09.65" N LONG: 122°54'42.59W T18N, R2W, SEC15 VERTICAL: MLLW = 0	REFERENCE #:	IN: OLYMPIA NEAR: WEST BAY COUNTY OF: THURSTON STATE: WA
ADJACENT PROPERTY OWNERS:	SITE LOCATION ADDRESS: 900 WEST BAY DRIVE SW OLYMPIA, WA	DATE: FEBRUARY 2008 SHEET: 6 OF 8



FOR LEGEND SEE SHEET 8

0 150
Scale in Feet

SAMPLE LOCATION AND INTERIM ACTION AREAS

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION	NAME: WEST BAY PARK - PHASE I IMPROVEMENTS	PROPOSED: NEW SHORELINE PARK FACILITY
DATUM: LAT: 47°03'09.65" N LONG: 122°54'42.59W T18N, R2W, SEC15 VERTICAL: MLLW = 0	REFERENCE #:	IN: OLYMPIA NEAR: WEST BAY COUNTY OF: THURSTON STATE: WA
ADJACENT PROPERTY OWNERS:	SITE LOCATION ADDRESS: 900 WEST BAY DRIVE SW OLYMPIA, WA	DATE: FEBRUARY 2008 SHEET: 7 OF 8

Feb 04, 2008 3:42pm cdavidson K:\Jobs\070324-West Bay Park\07032401\07032401-030.dwg JARPA-SEPA SHEET 7

LEGEND

WBGP ◎	2004 GEOPROPE SAMPLING LOCATIONS
WBPT ◎	2004 TEST PIT SAMPLING LOCATION
OUTFALL/SEEP ◎	2004 SEDIMENT AND SURFACE WATER SAMPLING LOCATION
◎	2007 PHASE II ESA SAMPLING LOCATION
	RI/FS SAMPLING LOCATION (PROPOSED OR COMPLETED)
*	SURFACE SOIL SAMPLE ANALYZED FOR DIOXIN AND TOC ONLY

mg/kg	MILLIGRAMS PER KILOGRAM
mg/L	MILLIGRAMS PER LITER
SD	SEDIMENT SAMPLING LOCATION
SS	SURFACE SOIL SAMPLING LOCATION
SB	SOIL BORING LOCATION

NOTES:
1. INTERIM ACTION AREAS A, B AND C SHOWN ARE BASED ON RI/FS RESULTS TO DATE AND TARGET PARK PHASE I AREA ONLY.

2. RI/FS SAMPLING LOCATIONS SHOWN WITHOUT AN IDENTIFIER ARE PROPOSED.

LEGEND FOR SHEET 7 - SAMPLE LOCATION AND INTERIM ACTION AREAS

PURPOSE: INTEGRATE RECREATIONAL OPPORTUNITIES WITH SHORELINE RESTORATION

DATUM: LAT: 47°03'09.65" N
LONG: 122°54'42.59W
T18N, R2W, SEC15
VERTICAL: MLLW = 0

ADJACENT PROPERTY OWNERS:

NAME: WEST BAY PARK - PHASE I IMPROVEMENTS

REFERENCE #:

SITE LOCATION ADDRESS:
900 WEST BAY DRIVE SW
OLYMPIA, WA

PROPOSED: NEW SHORELINE PARK FACILITY

IN: OLYMPIA
NEAR: WEST BAY
COUNTY OF: THURSTON STATE: WA

DATE: FEBRUARY 2008 SHEET: 8 OF 8

APPENDIX A

EXISTING CONDITIONS REPORT

EXISTING CONDITIONS REPORT

WEST BAY PARK PHASE I IMPROVEMENTS

Prepared for

City of Olympia
Parks, Arts and Recreation Department
222 North Columbia Street
Olympia, Washington 98501

Prepared by

Anchor Environmental, L.L.C.
1423 Third Avenue, Suite 300
Seattle, Washington 98101

October 2007

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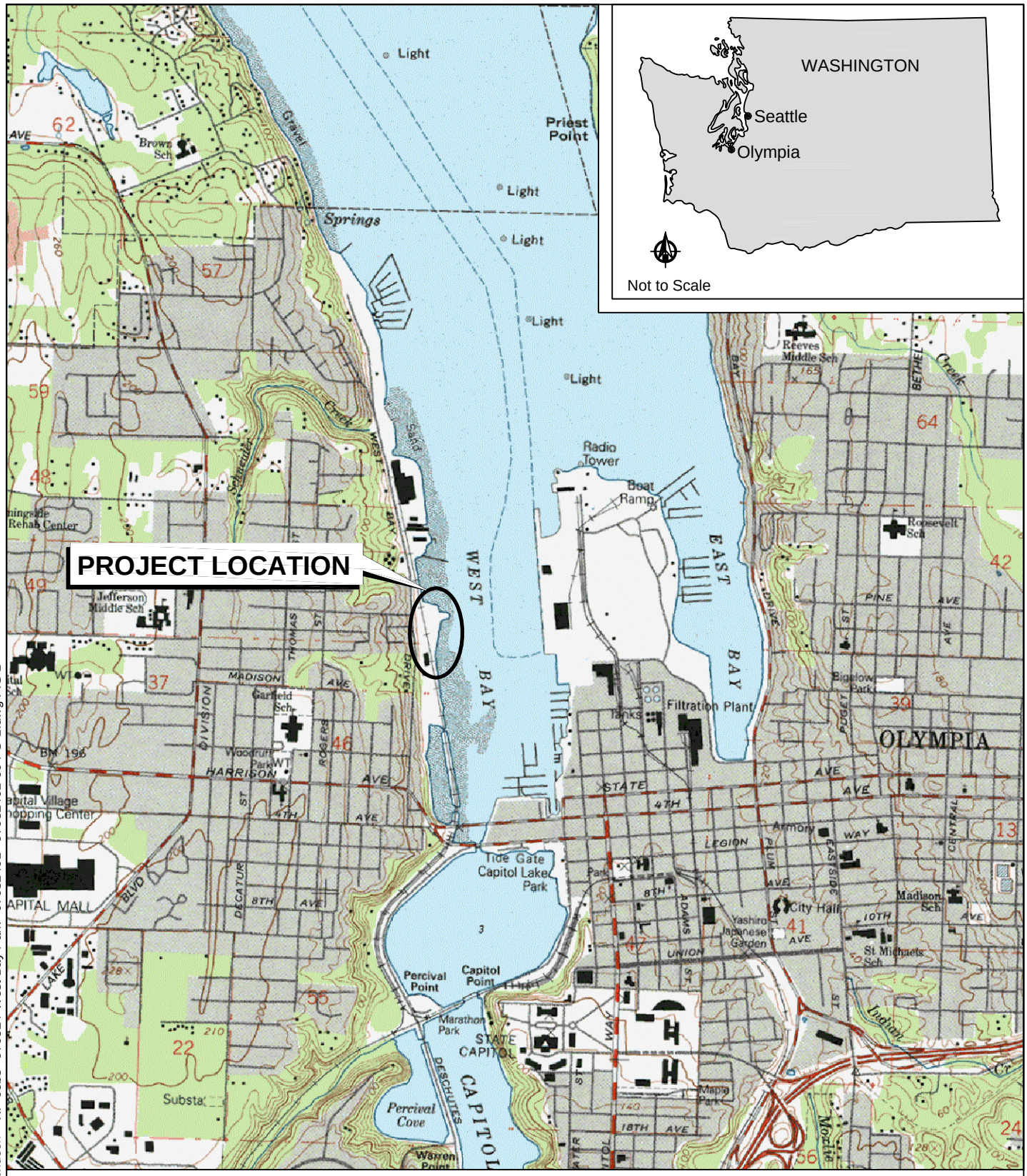
1 INTRODUCTION

The City of Olympia Parks, Arts, and Recreation Department (City) is currently in the process of developing plans for the West Bay Park Phase I Improvements Project (Project) located in the City of Olympia, Thurston County, Washington. The City is proposing improvements to allow for public use of West Bay Park property (Property), including partial development and creation of park space. The Property included in this report is an approximately 16.8-acre parcel of land with approximately 2,400 linear feet of shoreline bordering Budd Inlet of Puget Sound in Section 15, Township 18 North, Range 2 West (Figure 1). Approximately 4 acres of the Property are included in Phase I for park improvements.

This Existing Conditions report is intended to support the Project by providing information regarding the presence of Environmentally Critical Areas (ECAs) within the Property, specifically streams and important riparian areas, wetlands, important habitats and species, and landslide hazard areas. ECAs are defined in *Chapter 18.32 Critical Areas* of the Unified Development Code of the City of Olympia Municipal Code (OMC) (Olympia 2007). The intent of the Critical Areas chapter is to implement the State of Washington Growth Management Act and its guidelines, the Countywide Planning Policies, and the Olympia Comprehensive Plan by means detailed in section 18.32.100 – General Provisions – Purpose and Intent (Ord. 6356 §5, 2005).

Anchor Environmental, L.L.C. (Anchor) conducted a review of the Critical Areas chapter of the OMC , gathered and reviewed existing information, and visited the Property on May 10, 2007 to conduct a delineation of wetlands and the ordinary high water (OHW) line of the marine shoreline in addition to gathering information on natural resources within the Property. Establishing the OHW line is important because any development of an area within a 200-foot setback measured from the OHW mark is required to be consistent with the Shoreline Master Program, the Shoreline Management Act of 1971, the OMC, and permit requirements of all other agencies having jurisdiction within the designated environment.

The following sections of this report describe the methods used in the field investigations, literature review, and Anchor's findings. Documentation for information collected as the basis of those findings is presented in the appendices.



Note: Base map prepared from Terrain Navigator Pro USGS 7.5 minute quadrangle map of Tumwater, WA.

Jun 20, 2007 11:54am cdavidson K:\Jobs\070324-West Bay Park\07032401\07032401-004-G-1.dwg FIG 1

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 1
Vicinity Map
West Bay Park Phase I Project
Natural Resources Existing Conditions Report

1.1 Review of Existing Information

As part of the analysis to identify natural resources and critical areas in the Project area, Anchor ecologists reviewed the following sources of information to support field observations:

- *United States Fish and Wildlife Service [USFWS] Wetlands Mapper for National Wetlands Inventory [NWI] Map Information* (USFWS 2007a)
- Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA 2007)
- *NRCS Hydric Soils of Thurston County* (USDA 2001)
- *Soil Survey of Thurston County* (USDA 1990)
- *Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) Maps* (WDFW 2007)
- Aerial photographs
- Topographic/bathymetric survey of the Project site by Duncanson Company, Inc. (April 29, 2007)

1.2 Description of the Property

Four acres of the approximately 16.8-acre Property currently owned by the City are proposed to be restored to enhance shoreline habitat, wildlife viewing and related recreational activities as part of this project. The Property is not open to the public and does not currently contain facilities for public use such as parking, lawn areas, benches, and tables. The three access driveways to the Property are currently closed with gates to prevent vehicle access. During the site visit, several people were observed within the Property, usually walking dogs on the beach. Existing conditions within the Property include paved access driveways from West Bay Drive NW, existing asphalt, an abandoned railroad line, relic concrete foundations and debris on the uplands and shorelines, patches of vegetation, relic pilings and the marine shoreline of Puget Sound (see Photograph 3 in Section 4). Historically, the site was used as a wood products manufacturing facility by multiple owners over many years. The Property is bordered by West Bay Drive NW to west with residential property located west of West Bay Drive NW. The east boundary of the property is the marine shoreline of Puget Sound. Marine shoreline continues north and south of the Property with residential and commercial land use along the beaches. An aerial photograph of the Property is provided on Figure 2.

1.2.1 Topography

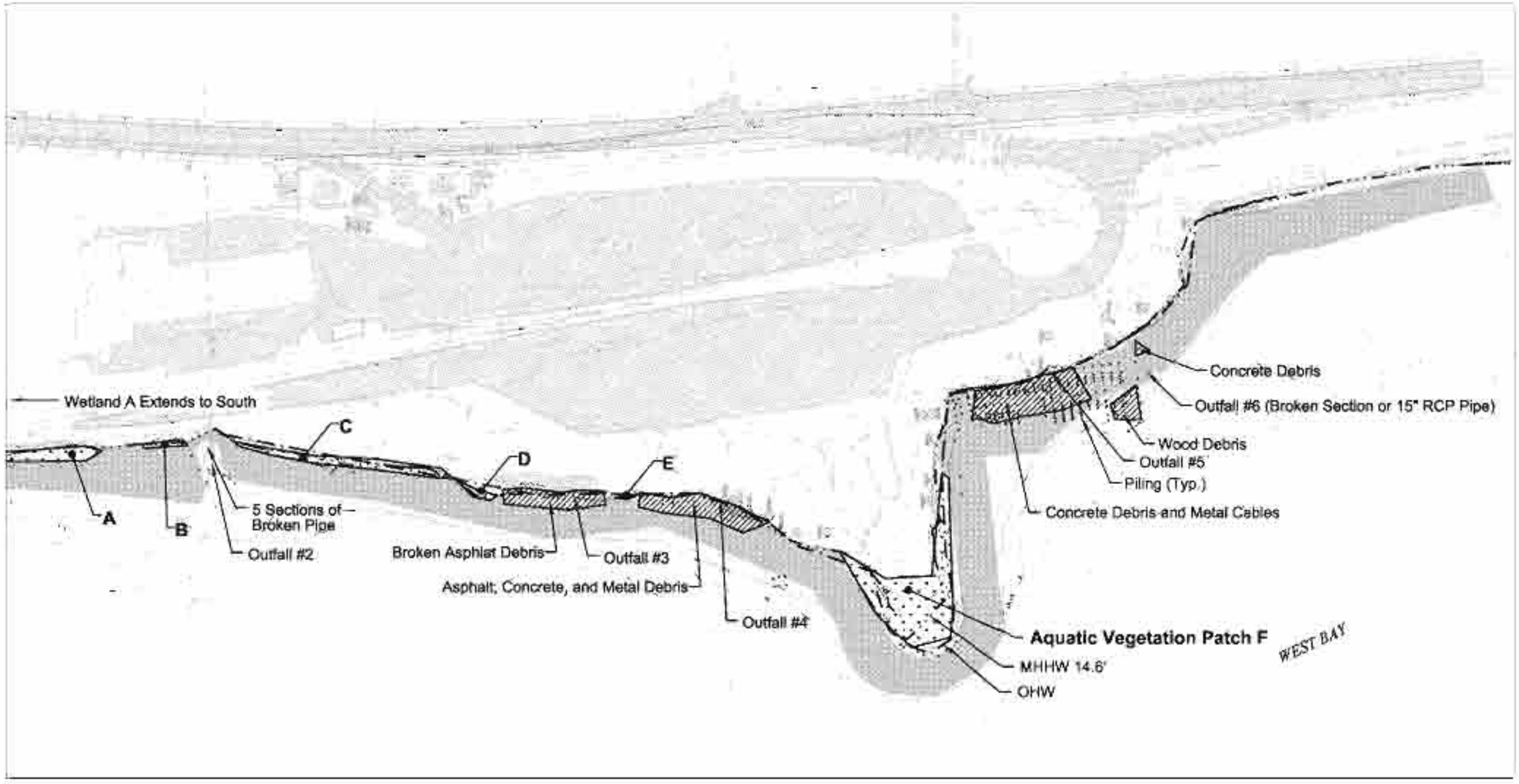
In general, West Bay Drive NW is built into and paralleling a sloping hillside above the Property. Most of the Property is dominated by a degraded asphalt surface that is relatively level. Relatively steep slopes 15 to 20 feet high occur along the west side of the property between the asphalt areas and West Bay Drive NW. A steep slope 4 to 6 feet high also occurs from the east end of the asphalt down the beach along the shoreline of Puget Sound (Figures 2 and 3). For more detailed information on topography, see Section 2, Landslide Hazard Areas.

Last Updated March 17, 2006. For changes, call Jonathon Turlove, 753-8068.

Jul 02, 2007 1:29pm ddavidson K:\Jobs\070324-West Bay Park\070324\01\070324d01-010.dwg FIG 2

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 2
Project Analysis Area and Outfall Locations
West Bay Park Phase I Project
Natural Resources Existing Conditions Report



Legend

- Wetland
- Debris
- Piling
- Ordinary High Water (OHW)
- Mean Higher High Water (MHHW)

0 100
Scale in Feet

Note:
Horizontal Datum: NAD 83 WA State Plane South
Vertical Datum: MLLW = 0.0

Jul 02, 2007 1:31pm cdavidson K:\Jobs\070324-West Bay Park\070324010703240301-069.dwg Fig 3

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 3
Shoreline Survey Data
West Bay Park Phase I Project
Natural Resources Existing Conditions Report

1.2.2 Soils

There are three soil types mapped by the NRCS in the project area: Xerorthents, with 0 to 5 percent slopes; Alderwood gravelly sandy loam, with 15 to 30 percent slopes; and Dystric Xerorthents, with 60 to 90 percent slopes (USDA 2007). Almost the entire Property is mapped by NRCS as Xerorthents, which are described as deep, moderately well drained to somewhat excessively drained soils on uplands and tidelands. They formed in sandy and loamy cut and fill material. The Alderwood series consists of somewhat acidic, moderately deep, well-drained soils formed on glacial till in upland contexts. Dystric Xerorthents are composed of deep well-drained soils formed in glacial till and situated on the sidewalls of drainages (USDA 1990). None of the three soil series is classified as hydric soils according to *Hydric Soil List of Thurston County, Washington* (USDA 2001).

Historic map information from a topographic map of Budd Inlet indicates that the entire project site below West Bay Drive was originally a mudflat (US Coast and Geodetic Survey, 1873). Therefore it appears that the upland portion of the site was constructed on fill material. Layers of wood fiber material were observed in several areas along the shoreline near the OHW line, typically where the shoreline has vertical banks. These layers ranged in thickness from a few inches to more than a foot. In some areas the layers were located near the ground surface while in other areas they were observed more than two feet below ground. Soils near the OHW line are described to a depth of 18 inches in the sample plot soil profiles in Section 5.2 and presented in the field data forms in Appendix A. A summary of soils data collected at each sampling plot is presented in Appendix C.

1.2.3 Hydrology

The study area is located in the Deschutes Basin Water Resource Inventory Area (WRIA) 13 (Ecology 2007b). Hydrologic characteristics at the site are influenced by the following factors: regional groundwater, direct precipitation, surface water runoff, and tidal patterns of Puget Sound. At least five drainages are piped or naturally flowing beneath the ground at the Property and outfall at the marine shoreline below the OHW line. Stream and drainages are described in Section 3. For the purpose of this study, the individual contribution of each factor to the hydrologic regime could not be determined,

although due to the Property location on Puget Sound, and the fact that only estuarine and not freshwater wetlands were identified in the areas studied for this report, daily tidal fluctuations of Puget Sound have the most significant influence on the hydrology of Wetlands on the Property.

Sample plot hydrology is described in Section 5.2 and presented in the field data forms in Appendix A. A summary of hydrology data collected at each sampling plot is presented in Appendix C.

1.2.4 Plant Communities

The *USFWS Wetlands Mapper for National Wetlands Inventory Map Information* (USFWS 2007a) identifies E2US wetland habitat along the entire shoreline of the Property. Wetland vegetation community types identified during the delineation also include E2US wetland systems. Wetland vegetation includes salt tolerant emergent species. Upland vegetation at the Property includes a variety of native and non-native invasive or ornamental tree, shrub, grass, and herbaceous species. Upland vegetation in the investigated area is described in Section 4 and presented in the field data sheets in Appendix A. Wetland vegetation in the investigated area is described in Section 5.2 and presented in the field data sheets in Appendix A. Plant species observed in upland and wetland communities are summarized in Appendix C.

1.2.5 Habitat

In general, wildlife habitat on the Property is limited under existing conditions because most of the Property is paved and non-native invasive and ornamental vegetation are the dominant plant species in the upland areas (see Section 4). Surrounding habitat includes fragmented and disturbed areas associated with residential development and the aquatic habitat of Puget Sound. Puget Sound provides quality habitat for a variety of species that rely on aquatic habitat for breeding and foraging. There are no freshwater wetlands in the areas studied for this report to provide potential habitat for amphibians. Drainages that outfall onto the beach do not appear to provide access for fish use (see Section 3). No evidence of rare, uncommon, or unique wildlife or wildlife habitat is apparent at this site. Wildlife use of this area likely includes a variety of native and non-native species typical of populated residential areas in Thurston County. The

WDFW PHS database does not identify any priority habitats or documented presence of protected species within the Property, with the exception of fish and salmon use of Puget Sound (WDFW 2007). A review of WDFW PHS Database information is provided in Section 6.

2 LANDSLIDE HAZARD AREAS (OMC 18.32.605 THROUGH OMC 18.32.645)

The Property is characterized by sloping banks from the existing West Bay Drive NW down to the park, and within the park along the shoreline. The typical slope between West Bay Drive NW and the park is 2 horizontal to 1 vertical (2H:1V), or 50 percent, with a change in elevation of 15 to 20 feet between the road and the park. Shoreline slopes range from 5H:1V to near vertical in some areas, with a change in elevation of less than 10 feet between the top of the slope and the beach below.

The OMC defines Landslide Hazard Areas in Ordinance Chapter 18.32.600. Briefly, Landslide Hazard Areas are those areas with:

- Slopes greater than 40 percent, and heights greater than 10 feet or
- Slopes of impermeable soil greater than 15 percent, showing seeps during the wet season, and greater than 10 feet in height or
- Areas with historic landslide evidence.

Constructed slopes built using accepted construction standards are not part of this definition. The OMC specifies development buffers in Landslide Hazard Areas, and provides exemptions for specific development activities, such as provision of beach or shoreline access. Buffers of 10 feet at the base of slopes would likely be adequate to satisfy the requirements of the OMC. At the top of the slopes, buffers ranging from 5 to 7 feet would satisfy OMC provisions.

Based on review of the existing survey, the slopes between the relatively level core area of the Property and West Bay Drive are considered Landslide Hazard Areas. Based on the observed condition of the access roadways, it appears that these areas were built in accordance with accepted construction standards and thus are exempt from designation as Landslide Hazard Areas per OMC 18.32.605.B. In addition, the shoreline slopes between the core area and the tideflat are not considered Landslide Hazard Areas.

3 STREAMS AND DRAINAGE CHANNELS (OMC 18.32.410 THROUGH OMC 18.32.440)

During the May 10, 2007 site visit, Anchor ecologists identified stream and drainage channels in the Project area. Stream typing and upstream sources of drainages were not identified as part of this investigation. The City of Olympia Municipal Code defines Streams in Ordinance Chapter 18.32.410.

3.1 Results

Six drainage outfalls were observed during the investigation, identified as Outfalls 1, 2, 3, 4, 5, and 6. Two of the drainage channels are piped (2 and 6), and four are naturally flowing from beneath the ground (seeps) and emerge below the OHW line of Puget Sound. The outfall locations are shown on Figure 3.

All six outfalls were actively flowing during the site visit. Outfalls 1 and 2 had defined scour channels in the upper intertidal area of the beach. Outfall 2 flows from a broken culvert (see Photograph 1) and is the terminus of Garfield Creek. Garfield Creek flows through open channel in a wooded ravine west of West Bay Drive NW. It is culverted below West Bay Drive NW and the Property. The flows of Outfalls 3, 4, and 5 consisted of seeps with sheet flow patterns with no discernable scouring (see Photograph 2). Outfall 6 flows from a broken culvert that is exposed in the upper intertidal area about 50 feet below the OHW line and is therefore beneath water during much of the tidal cycles. Outfalls 1, 3, 4, and 5 are seeps with no exposed pipes or culverts identifying the source of the flows.

Photograph 1. Outfall 2

Photograph 2. Outfall 3

4 VEGETATION COMMUNITIES

During the May 10, 2007 site visit, Anchor ecologists documented general information regarding dominant plant species and communities while walking through the Property. A description of upland vegetation communities on the Property is provided in this section. Wetland habitats and salt tolerant vegetation are described in Section 5.

4.1 Results

Tree, shrub, and herbaceous vegetation in the upland area of the Property include a variety of native and non-native invasive or ornamental species. Salt tolerant vegetation is located along the shoreline of Puget Sound. No freshwater wetland habitats were observed in the areas studied for this report. All of the vegetation communities within the upland area are fragmented and located between roads, paved surfaces, and relic concrete foundations and rubble (see Photograph 3). Vegetation was frequently observed growing between cracks in the pavement and in soil layers several inches thick located on top of pavement. A list of vegetation species observed during the site visit is provided in Table 1. An aerial photograph of the Property is provided on Figure 2.

Photograph 3. Upland Vegetation

Dominant tree species include ornamental cherry (*Prunus* sp.) and the non-native species Black locust (*Robinia pseudoacacia*). Additional tree species observed include the native species big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), and Pacific madrona (*Arbutus menziesii*). Trees on the Property are relatively young with no mature trees observed.

Shrub species communities are dominated by the non-native invasive plant species Himalayan blackberry (*Rubus armeniacus*), Scot's broom (*Cytisus scoparius*), and Japanese knotweed (*Polygonum cuspidatum*), with twinberry (*Lonicera involucrate*) also occurring.

Grass and herbaceous plant species within the Property include a variety of native and non-native species that are common in Thurston County and western Washington. Dominant grass and herbaceous species include common velvet-grass (*Holcus lanatus*), Canadian thistle (*Cirsium arvense*), tall fescue (*Festuca arundinacea*), and common dandelion (*Taraxacum officinale*). The non-native invasive species English ivy (*Hedra helix*) was frequently observed as a dominant ground cover and growing up the trunks of trees.

Dominant salt tolerant vegetation located along the beach intertidal area include sea plantain (*Plantago maritima*) and pickleweed (*Salicornia virginica*), as described in the Wetland Delineation section of this report (Section 5).

Table 1
Vegetation Species Observed during the Site Visit

Scientific Name	Common Name	Indicator Status[1]
Trees		
Acer macrophylum	Big-leaf maple	FACU
Alnus rubra	Red alder	FAC
Arbutus menziesii	Pacific madrona	UPL
Prunus sp.	Ornamental cherry	UPL
Robinia pseudoacacia	Black locust	FACU-
Shrubs		
Cytisus scoparius	Scot's broom	UPL
Lonicera involucrate	Twinberry	FAC+
Polygonum cuspidatum	Japanese knotweed	FACU
Rubus armeniacus	Himalayan blackberry	FACU
Grass and Herbaceous		
Atriplex patula	Fat-hen saltbush	FACW
Cirsium arvense	Canadian thistle	FACU+
Convolvulvus arvensis	Orchard morning glory	UPL
Equisetum arvense	Field horsetail	FAC
Festuca arundinacea	Tall fescue	FAC-
Festuca rubra	Red fescue	FAC+
Hedera helix	English ivy	FACU
Holcus lanatus	Common velvet grass	FAC
Juncus effuses	Soft rush	FACW
Plantago major	Common plantain	FACU+
Plantago maritime	Sea plantain	FACW+
Poa pratensis	Kentucky bluegrass	FAC
Puccinellia nutkaensis	Pacific alkali grass	OBL
Rumex crispus	Curly dock	FAC+
Salicornia virginica	Pickleweed	OBL
Taraxacum officinale	Common dandelion	FACU
Vicia americana	American vetch	FAC

1 These categories, referred to as the "wetland indicator status" (from the wettest to driest habitats) are as follows: obligate wetland (OBL) plants, facultative wetland (FACW) plants, facultative (FAC) plants, facultative upland (FACU) plants, and obligate upland (UPL) plants.

5 WETLAND DELINEATION (OMC 18.32.505 THROUGH OMC 13.32.595).

On May 10, 2007, Anchor ecologists performed a wetland delineation, wetland rating, and functional analysis of wetland habitat on the Property. All wetland habitats on the Property are estuarine wetlands associated with the marine shoreline of Puget Sound. No freshwater wetlands were identified within portions of the Property studied during the investigation. As part of the wetland analysis, all salt tolerant vegetation on the Property was flagged and surveyed. Five wetlands (Wetlands A, B, C, D, and E) were identified within the Project area. One additional area with salt tolerant vegetation, identified as Aquatic Vegetation Patch F, does not appear to meet the criteria for wetland habitat. Aquatic Vegetation Patch F is discussed following the wetland delineation results section (Section 5.3). Upland vegetation communities on the Property are described in Section 4.

5.1 Methods

This section describes the methodology used to perform the wetland delineation, including the review of existing information and field investigation procedures. These methods are consistent with current federal and state agency, and local jurisdiction requirements for performing wetland delineations and identifying protective wetland buffer widths.

5.1.1 Wetland Delineation Methods

As specified by the OMC (Olympia 2007), wetlands were delineated according to the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Washington State Wetland Identification and Delineation Manual* (Ecology 1997). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994). The U.S. Army Corps of Engineers (Corps) (Environmental Laboratory 1987), the Washington State Shoreline Management Act (SMA) (Ecology 2007a), and the Washington State Growth Management Act (GMA) (Access Washington 2007), all define wetlands as: "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

The method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is defined as the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. Hydric soils are those soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper soil layer. Wetland hydrology encompasses all of the hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season (Ecology 1997). Data collection methods for each of these parameters are described below.

To document wetland and upland conditions at each wetland, information on vegetation, soils, and hydrology was collected at sample data plots and recorded on field data sheets. Additionally, each wetland was photographed to document site conditions. Wetland boundaries were determined based upon sample plot data and visual observations of each wetland. Each wetland boundary was flagged and subsequently surveyed by a professional surveyor to establish and verify the wetland's size. Wetland data sheets are provided in Appendix A.

5.1.1.1 Vegetation

Plant species occurring in each plot were recorded on field data sheets, one data sheet per plot. Percent cover was estimated in the plot for each plant species and dominant species were determined. At each plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot were identified and recorded on a data sheet. A list of common and scientific plant names of plant species observed in the Project area is provided in Section 4.

A plant indicator status, designated by the USFWS (Reed 1988 and 1993), was assigned to each species and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50 percent of the dominant species, with 20 percent or greater cover, must have an

indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC or FAC+). Table 2 shows the wetland indicator status categories.

Table 2
Wetland Plant Indicator Definitions

Indicator Status	Description
Obligate wetland (OBL)	Plant species occur almost always in wetlands (estimated probability greater than 99 percent) under natural conditions.
Facultative wetland (FACW)	Plant species usually occur in wetlands (estimated probability 67 percent to 99 percent), but occasionally found in non-wetlands.
Facultative (FAC)	Plant species equally likely to occur in wetlands or non-wetlands (estimated probability 34 percent to 66 percent).
Facultative upland (FACU)	Plant species usually occur in non-wetlands (estimated probability 67 percent to 99 percent), but occasionally found in wetlands.
Obligate upland (UPL)	Plant species occur almost always in non-wetlands (estimated probability greater than 99 percent) under natural conditions.

5.1.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 16 inches or greater, and all profiles were photographed. Hydric soil indicators include low soil matrix chroma, gleying, and redoximorphic features (such as mottles). Mottles are spots of contrasting color occurring within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2 (with mottles) or less (with or without mottles) are positive indicators of hydric soils (Environmental Laboratory 1987).

5.1.1.3 Hydrology

Wetland hydrology was evaluated at each plot. Field observations of saturation and inundation, and other indicators of wetland hydrology, such as water stained leaves and drainage patterns in wetlands, were recorded.

5.1.2 Wetland Classifications

Wetlands were classified according to the USFWS classification developed by Cowardin et al. (1979) for use in the NWI. This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (trees, shrubs, grass,

etc.) and how much, and where, water is present in the wetland. The Cowardin classification system provides a classification for every known wetland type that occurs throughout the United States and, under this system, a wetland can be classified as having one or more wetland classification types. Specifically, the wetland community type found in the Project area includes estuarine intertidal unconsolidated shore (E2US) wetlands; these wetlands consist of tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land.

5.1.3 Wetland Ratings

Wetlands in the Project area were also rated according to the OMC regulatory requirements for wetlands and their associated buffers (Olympia 2007). The OMC classifies wetlands into four categories (Category I, Category II, Category III, and Category IV) based on the *Washington State Wetlands Rating System – Western Washington: Revised* (Ecology 2004).

At the state level, wetlands are categorized by applying the most current version of the rating system developed by the Washington State Department of Ecology (Ecology): *Washington State Wetlands Rating System – Western Washington: Revised* (Ecology 2004), and *Washington State Wetland Rating Form – Western Washington, version 2* (Ecology 2006). Ecology developed this system to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, our ability to replace them, and the beneficial functions they provide to society.

The Ecology rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed: water quality improvement, flood and erosion control, and wildlife habitat. Ratings are based on a point system where points are given if a wetland meets specific criteria related to the wetland's potential and opportunity to provide certain benefits.

Per Ecology's rating system, wetlands are categorized according to the following criteria and on points given:

- Category I wetlands (70 to 100 points) represent a unique or rare wetland type, or are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- Category II wetlands (51 to 69 points) are difficult, though not impossible, to replace, and provide high levels of some functions.
- Category III (30 to 50 points) wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- Category IV wetlands (0 to 29 points) have the lowest levels of functions and are often heavily disturbed.

Under Ecology's rating system estuary wetlands can only have a Category I, Category II, or Dual Category I/II wetland rating. Project Ecology wetland rating forms are provided in Appendix B.

5.1.4 Wetland Buffers Conditions

Wetlands in the study area are situated between Puget Sound and the upland areas of the Property. Upland wetland buffer habitat is generally poor due to the presence of paved surfaces and the dominance of non-native invasive and ornamental plant species (see Section 4).

5.2 Wetland Delineation Results

Five wetlands were identified within the Property and are shown in Figure 3. Wetlands on the Property were identified as Wetlands A, B, C, D, and E. All of the wetland boundaries are located within the Property. A complete description of the wetlands identified on the Property is provided in the following discussion. One additional area with salt tolerant vegetation, identified as Aquatic Vegetation Patch F, which does not appear to meet the criteria for wetland habitat, is discussed in Section 5.3.

5.2.1 Wetland A

Wetland A is a 0.26-acre (approximate), regularly exposed E2US wetland system associated with the marine environment of Puget Sound (Figure 3). Wetland A is the largest wetland in the Project area, covering an approximately 300 foot length of beach in the south portion of the Property (see Photograph 4). The inland boundary of Wetland A corresponds with the OHW line (Figure 3). Wetland A is dominated by the salt tolerant emergent species sea plantain, with pickleweed and fat-hen saltbush (*Atriplex patula*) also occurring. Dominant buffer vegetation of Wetland A includes Scot's broom, Himalayan blackberry, red fescue (*Festuca rubra*), and common dandelion.

Photograph 4. Wetland A

The soils are common beach substrate consisting of brown (10YR 4/3) to dark grayish brown (10YR 4/2) sand to loamy sand with a high density of gravel and cobbles to more than 18 inches in depth. Soils in the upland plot were dark yellowish brown (10YR 4/4) loamy sand with a lower concentration of gravel and cobbles than the beach habitat.

Soil saturation was at the surface in Wetland A. No freestanding water was observed in the sample plot during the delineation, which occurred during a low tide. Water depths

within Wetland A fluctuate daily due to tidal influence of Puget Sound. No saturation or standing water was observed in the upland plot.

Data was collected at two samples plots, SPA-1Wet and SPA-2Up (Appendices A and C). SPA-1Wet contained indicators of hydrophytic vegetation and wetland hydrology. Wetland A soils include 2 and 3 chromas with no mottles, which is consistent with highly porous conditions of beach soils (sand with gravel and cobbles). The upland plot (SPA-2Up) lacked hydrophytic vegetation and indicators of wetland hydrology and hydric soils. Twenty-seven flags were used to identify the Wetland A boundary.

5.2.2 Wetland B

Wetland B is a 0.004-acre (approximate), regularly exposed E2US wetland system associated with the marine environment of Puget Sound (Figure 3). Wetland B is a small patch of vegetation located north of Wetland A (see Photograph 5). The inland boundary of Wetland B corresponds with the OHW line (Figure 3). Wetland B is dominated by the salt tolerant emergent species sea plantain, with pickleweed and fat-hen saltbush also occurring. Dominant buffer vegetation of Wetland B includes black locust, Scot's broom, Himalayan blackberry, and common velvet-grass.

Photograph 5. Wetland B

The soils are common beach substrate consisting of brown (10YR 4/3) to dark grayish brown (10YR 4/2) sand to loamy sand with a high density of gravel and cobbles to more than 18 inches in depth. Soils in the upland plot were dark yellowish brown (10YR 4/4) loamy sand with a lower concentration of gravel and cobbles than the beach habitat.

Soil saturation was at the surface in Wetland B. No freestanding water was observed in the sample plot during the delineation, which occurred during a low tide. Water depths within Wetland B fluctuate daily due to tidal influence of Puget Sound. No saturation or standing water was observed in the upland plot.

Data was collected at two samples plots, SPB-1Wet and SPB-2Up (Appendices A and C). SPB-1Wet contained indicators of hydrophytic vegetation and wetland hydrology. Wetland B soils include 2 and 3 chromas with no mottles, which is consistent with highly porous conditions of beach soils (sand with gravel and cobbles). The upland plot (SPB-2Up) lacked hydrophytic vegetation and indicators of wetland hydrology and hydric soils. Four flags were used to identify the Wetland B boundary.

5.2.3 Wetland C

Wetland C is a 0.03-acre (approximate), regularly exposed E2US wetland system associated with the marine environment of Puget Sound (Figure 3). Wetland C is a small patch of vegetation located north of Wetland B (see Photograph 6). The inland boundary of Wetland C corresponds with the OHW line (Figure 3). Wetland C is dominated by the salt tolerant emergent species sea plantain, with pickleweed and fat-hen saltbush also occurring. Dominant buffer vegetation of Wetland C includes black locust and Himalayan blackberry.

Photograph 6. Wetland C

The soils are common beach substrate consisting of dark grayish brown (10YR 4/2) sand to loamy sand with a high density of gravel and cobbles to more than 18 inches in depth. Soils in the upland plot were dark yellowish brown (10YR 4/4) loamy sand with a lower concentration of gravel and cobbles than the beach habitat. Small pieces of broken asphalt were also present within the upland soil plot.

Soil saturation was at the surface in Wetland C. No freestanding water was observed in the sample plot during the delineation, which occurred during a low tide. Water depths within Wetland C fluctuate daily due to tidal influence of Puget Sound. No saturation or standing water was observed in the upland plot.

Data was collected at two samples plots, SPC-1Wet and SPC-2Up (Appendices A and C). SPC-1Wet contained indicators of hydrophytic vegetation and wetland hydrology. Wetland C soils include 2 chromas with no mottles, which is consistent with highly porous conditions of beach soils (sand with gravel and cobbles). The upland plot (SPC-2Up) lacked hydrophytic vegetation and indicators of wetland hydrology and hydric soils. Eleven flags were used to identify the Wetland C boundary.

5.2.4 Wetland D

Wetland D is a 0.004-acre (approximate), regularly exposed E2US wetland system associated with the marine environment of Puget Sound (Figure 3). Wetland D is a small patch of vegetation located north of Wetland C. The inland boundary of Wetland D corresponds with the OHW line (Figure 3). Wetland D is dominated by the salt tolerant emergent species sea plantain, with pickleweed also occurring. Dominant buffer vegetation of Wetland B includes black locust, Japanese knotweed, and Himalayan blackberry.

The soils are common beach substrate consisting of dark grayish brown (10YR 4/2) sand to loamy sand with a high density of gravel and cobbles to more than 18 inches in depth. Soils in the upland plot were dark yellowish brown (10YR 4/4) loamy sand with a lower concentration of gravel and cobbles than the beach habitat.

Soil saturation was at the surface in Wetland D. No freestanding water was observed in the sample plot during the delineation, which occurred during a low tide. Water depths within Wetland D fluctuate daily due to tidal influence of Puget Sound. No saturation or standing water was observed in the upland plot.

Data was collected at two samples plots, SPD-1Wet and SPD-2Up (Appendices A and C). SPD-1Wet contained indicators of hydrophytic vegetation and wetland hydrology. Wetland D soils include 2 chromas with no mottles, which is consistent with highly porous conditions of beach soils (sand with gravel and cobbles). The upland plot (SPD-2Up) lacked hydrophytic vegetation and indicators of wetland hydrology and hydric soils. Five flags were used to identify the Wetland D boundary.

5.2.5 Wetland E

Wetland E is a 0.0008-acre (approximate), regularly exposed E2US wetland system associated with the marine environment of Puget Sound (Figure 3). Wetland E is a small patch of vegetation located north of Wetland D (see Photograph 7). The inland boundary of Wetland E corresponds with the OHW line (Figure 3). Wetland E is dominated by the salt tolerant emergent species sea plantain. Dominant buffer vegetation of Wetland E includes black locust and Himalayan blackberry.

Photograph 7. Wetland E

The soils are common beach substrate consisting of dark grayish brown (10YR 4/2) sand to loamy sand with a high density of gravel and cobbles to more than 18 inches in depth. Soils in the upland plot were dark yellowish brown (10YR 4/4) loamy sand with a lower concentration of gravel and cobbles than the beach habitat. Small pieces of broken asphalt were also present within the upland soil plot.

Soil saturation was at the surface in Wetland E. No freestanding water was observed in the sample plot during the delineation, which occurred during a low tide. Water depths within Wetland E fluctuate daily due to tidal influence of Puget Sound. No saturation or standing water was observed in the upland plot.

Data was collected at two samples plots, SPE-1Wet and SPE-2Up (Appendices A and C). SPE-1Wet contained indicators of hydrophytic vegetation and wetland hydrology. Wetland B soils include 2 chromas with no mottles, which is consistent with highly porous conditions of beach soils (sand with gravel and cobbles). The upland plot (SPD-2Up) lacked hydrophytic vegetation and indicators of wetland hydrology and hydric soils. Four flags were used to identify the Wetland E boundary.

5.3 Aquatic Vegetation Patch F

A prominent feature of the Property is a piece of land that extends out into Puget Sound farther than the rest of the beach (Figures 2 and 3) and is referred to by the City as "Rotary Point." On this point of land is an approximately 2-foot-tall semi-circular concrete wall from past wood products manufacturing operations. Salt tolerant vegetation, identified as Aquatic Vegetation Patch F, does not appear to meet the criteria for estuary wetland habitat. The top of the concrete wall is above or very near the OHW line. Salt tolerant vegetation in this area (pickleweed and sea plantain) occurs in small patches intermixed with bare ground. The vegetation appears stressed and the growth is stunted compared to aquatic vegetation in Wetlands A through E. Plant species associated with upland habitat in the Project, area such as common dandelion and various grass species, were also observed growing amongst the salt tolerant vegetation. Soils in the majority of this area resemble compact fill material with the surface impenetrable for more than a few inches with a shovel. Accessed soils are brown (10YR 4/3) to dark yellowish brown (10YR 4/4) loamy sand with gravel and cobbles. No saturation in the soil material was observed. Inland of the bulkhead there are sparse patches of pickleweed and sea plantain mixed with patches of bare ground, sloping down toward the upper intertidal habitat that bear a resemblance to Wetlands A through E. The entire boundary of Aquatic Vegetation Patch F was flagged and surveyed if the City chooses to recognize all aquatic vegetation in the Project area in the same manner. Conditions of Aquatic Vegetation Patch F are shown on Photographs 8 and 9.

Photograph 8. Aquatic Vegetation Patch F

Photograph 9. Aquatic Vegetation Patch F

5.4 Regulatory Framework

In order to determine the wetland classification, guidelines from USFWS, the City, and Ecology were used. Information and excerpts of the specific guidance language are provided below.

5.4.1 USFWS Classification

The wetlands identified on the Property have been classified using the system developed by Cowardin et al. (1979) for use in the NWI. As described previously, all five wetlands are E2US wetland systems associated with Budd Inlet of Puget Sound. Because of the tidal influence of Puget Sound, water levels within and adjacent to the wetlands fluctuate daily.

5.4.2 Ecology and City of Olympia Wetland Classification and Rating

According to the OMC (Olympia 2007), wetland ratings are determined using Ecology's *Washington State Wetland Rating System for Western Washington: Revised* (Ecology 2004), *Wetland Rating Form: Western Washington: Revised* (Ecology 2006). Under the Ecology system, all five of the wetlands are Saltwater Tidal Fringe wetlands. Saltwater Tidal Fringe wetlands are rated as estuarine wetlands and are categorized based on special characteristics. Rating options for estuary wetlands are limited to Category I, Category II, or Dual Rating Category I/II. Any estuarine wetland smaller than 1 acre, or those that are disturbed and larger than 1 acre are Category II wetlands. Undisturbed buffer is also an important characteristic in determining the category of estuary wetlands. While buffer conditions were not a factor in categorizing wetlands on the Property due to their small size, if wetlands on the Property were larger than 1 acre, then the poor buffer habitat conditions would contribute to a lower rating. All five wetlands would be rated as Category II wetlands. Under Ecology's methods, estuary wetlands are rated as one unit when patches of salt tolerant vegetation are separated along a shore by less than 100 feet of cobble or sand beaches. Therefore, Wetlands A through E were rated accordingly. Ecology Wetland Rating forms are included in Appendix B.

Appropriate minimum wetland buffers have been identified according to the current OMC (Olympia 2007). The City will determine the final wetland ratings and minimum buffers. Wetland ratings and City buffer widths are provided on Table 3.

Table 3
City of Olympia Wetland Ratings and Standard Buffer Distance

Wetland	Ecology and City Rating	OMC Buffer Width (Feet)
A	Category II	150
B	Category II	150
C	Category II	150
D	Category II	150
E	Category II	150

Source: OMC (Olympia 2007)

5.5 Standard Limitations

Wetland identification is an inexact science and differences of professional opinion often occur between trained individuals. Final determinations are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin or 3 years pass before the proposed project is undertaken, another wetland survey should be conducted.

The results and conclusions expressed herein represent our professional judgment based on the information available. No other warranty, expressed or implied, is made.

6 PRIORITY SPECIES AND HABITATS

6.1 Olympia Municipal Code Review (OMC 18.32.305 through OMC 18.32.330)

Section 18.32 of the OMC (Olympia 2007) allows the City to restrict the uses and activities of a development proposal that lie within 1,000 feet of an important habitat or species location. Important habitats and species are defined in the OMC as those that are:

- Designated as endangered or threatened species identified under the Endangered Species Act, or are state designated endangered, threatened, or sensitive species identified by WDFW and the habitat primarily associated with those species.
- Species and habitats known to occur in Thurston County and that may be found within the City, and that are not already protected by another critical area category in the OMC (e.g. Streams, Wetlands, or Landslide Hazard Areas).

If necessary, the City can require an Important Habitats and Species Management Plan to be prepared for the protection of these species, which provides specific information (described in Code Section 18.32.330) that identifies how the development impacts from the proposed project will be mitigated. The City may choose to waive this plan when consultation with the WDFW staff indicates that such a plan is not needed. Additionally, buffers for these habitats and species can be established on a case-by-case basis as described in the plan.

6.2 Results

Priority species and habitats that may be found in or near (within 1,000 feet) the Property were identified based on federal agency information and the WDFW PHS Database (WDFW 2007). Federally listed species that may be present in the marine waters of Puget Sound include threatened Chinook salmon (*Oncorhynchus tschawytscha*) and threatened steelhead (*O. mykiss*), as well as threatened bull trout (*Salvelinus confluentus*) (NMFS 2007 and USFWS 2007b). Delisted as threatened bald eagle (*Haliaeetus leucocephalus*) may forage in Puget Sound or occupy nearby terrestrial habitat (USFWS 2007b).

The WDFW PHS Database indicates that there are no priority habitats or documented occurrences of priority species located within the Property (WDFW 2007). The Property is located approximately 1 mile from the nearest bald eagle nesting territory, which is located at Capitol Lake (approximately 1 mile south). The Capitol Lake area is described by WDFW (2007) as priority habitat type "urban natural open space" due to remnant wooded

shoreline. Just south and offshore of the Property, within the 1,000-foot distance, there is a priority wetland containing regular concentrations of shorebirds and waterfowl. State priority species that may occur within approximately half a mile of the Property, but are not documented within 1,000 feet, include purple martin (*Progne subis*), great egret (*Ardea alba*), green heron (*Butorides virescens*), Vaux's swift (*Chaetura vauxi*), peregrine falcon (*Falco peregrinus*), and mink (*Mustelidae*). Priority anadromous fish that may be present in Puget Sound include federally listed fish described above, as well as Deschutes River Chinook, chum (*O. gorbuscha*), and coho salmon (*O. kisutch*), and steelhead. The nearest streams bearing Chinook, chum, and coho salmon includes the Deschutes River which drains into Budd Inlet, and the Moxlie, Indian, Percival, and Schneider Creeks, which are located more than 1 mile from the Property.

7 MARINE OHW DELINEATION

During the May 10, 2007 site visit, Anchor ecologists performed a delineation of the OHW line of the marine shoreline within the Project area. The OHW boundary was flagged by Anchor and subsequently surveyed by a professional surveyor. The OHW line is defined in Chapter 173-22 of the Washington Administrative Code as:

> "Ordinary high water line" means the mark on the shores of all waters that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual and so long continued in ordinary years, as to mark upon the soil or vegetation a character distinct from that of the abutting upland: Provided, that in any area where the ordinary high water line cannot be found the ordinary high water line adjoining saltwater shall be the line of mean higher high water and the ordinary high water line adjoining freshwater shall be the elevation of the mean annual flood. The following criteria clarify this mark on tidal waters:
>
> (a) Tidal waters.
>
> (i) In high energy environments where the action of waves or currents is sufficient to prevent vegetation establishment below mean higher high tide, the ordinary high water mark is coincident with the line of vegetation. Where there is no vegetative cover for less than one hundred feet parallel to the shoreline, the ordinary high water mark is the average tidal elevation of the adjacent lines of vegetation. Where the ordinary high water mark cannot be found, it is the elevation of mean higher high tide;
>
> (ii) In low energy environments where the action of waves and currents is not sufficient to prevent vegetation establishment below mean higher high tide, the ordinary high water mark is coincident with the landward limit of salt tolerant vegetation. "Salt tolerant vegetation" means vegetation which is tolerant of interstitial soil salinities greater than or equal to 0.5 parts per thousand."

The Project area is located in a low energy environment. As described in the Wetland Delineation section (Section 5), salt tolerant vegetation associated with Wetlands A, B, C, D, and E are located at or below the OHW line. Salt tolerant vegetation is also located above the OHW line in one area, identified as Aquatic Vegetation Patch F. Salt tolerant vegetation in this area is located within a cement bulkhead-type structure. See the Wetland Delineation section (Section 5) for a discussion of this area. The OHW line is shown on Figure 3.

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APPENDIX A

FIELD DATA SHEETS

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland A Plot ID: SP1 Wet

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Plantago maritima	H	90	FACW+				
Salicornia virginica	H	20	OBL				
Atriplex patula	H	5	FACW				

HYDROPHYTIC VEGETATION INDICATORS: H=110/110=100%

% of dominants OBL, FACW, & FAC: 110/110=100%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☒ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks: 100% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None (low tide) inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: At surface	FAC Neutral: ☒ Yes ☐ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks: Saturation at surface, below marine OHW line, low tide

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/2 & 4/3	None	None	Sand to loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Located below OHW line in beach upper intertidal area

Wetland Determination

Hydrophytic vegetation present?	☒ **Yes**	☐ **No**
Hydric soils present?	☒ **Yes**	☐ **No**
Wetland hydrology present?	☒ **Yes**	☐ **No**
Is the sampling point within a wetland?	☒ **Yes**	☐ **No**

Rationale/Remarks: 3 of 3 parameters

NOTES: Estuary wetland in upper intertidal area, sandy beach soils

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland A Plot ID: SP2 Up

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Cytisus scoparius	S	50	UPL	*Taraxacum officinale*	H	30	FACU
Festuca rubra	H	30	FAC+	*Vicia americana*	H	20	FAC
Holcus lanatus	H	20	FAC				
Plantago lanceolata	H	10	FAC				
Rubus armeniacus	S	20	FACU				

HYDROPHYTIC VEGETATION INDICATORS: S=0/70=0%, H=70/100=70

% of dominants OBL, FACW, & FAC: 70=170=41%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks: 41% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: None 18 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/4	None	None	Loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks: No hydric features, inland of OHW line.

Wetland Determination

Hydrophytic vegetation present?	☐ **Yes**	☒ **No**
Hydric soils present?	☐ **Yes**	☒ **No**
Wetland hydrology present?	☐ **Yes**	☒ **No**
Is the sampling point within a wetland?	☐ **Yes**	☒ **No**

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland B Plot ID: SP1 Wet

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Plantago maritima	H	60	FACW+				
Salicornia virginica	H	30	OBL				
Atriplex patula	H	10	FACW				

HYDROPHYTIC VEGETATION INDICATORS: H=90/90=100%

% of dominants OBL, FACW, & FAC: 90/90=100%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☒ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks: 100% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None (low tide) inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: At surface	FAC Neutral: ☒ Yes ☐ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks: Saturation at surface, below marine OHW line, low tide

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/2 & 4/3	None	None	Sand to loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Located below OHW line in beach upper intertidal area

Wetland Determination

Hydrophytic vegetation present?	☒ **Yes**	☐ **No**
Hydric soils present?	☒ **Yes**	☐ **No**
Wetland hydrology present?	☒ **Yes**	☐ **No**
Is the sampling point within a wetland?	☒ **Yes**	☐ **No**

Rationale/Remarks: 3 of 3 parameters

NOTES: Estuary wetland in upper intertidal area, sandy beach soils

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland B Plot ID: SP2 Up

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Robinia pseudoacacia	T	90	FACU-				
Cytisus scoparius	S	30	UPL				
Rubus armeniacus	S	60	FACU				
Holcus lanatus	H	30	FAC				

HYDROPHYTIC VEGETATION INDICATORS: T=0/90=0%, S=0/90=0%, H=30/30=100%

% of dominants OBL, FACW, & FAC: 30/180=14%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks: 14% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: None 18 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/4	None	None	Sandy loam with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks: No hydric features, inland of OHW line.

Wetland Determination

Hydrophytic vegetation present?	☐ **Yes**	☒ **No**
Hydric soils present?	☐ **Yes**	☒ **No**
Wetland hydrology present?	☐ **Yes**	☒ **No**
Is the sampling point within a wetland?	☐ **Yes**	☒ **No**

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland C Plot ID: SP1 Wet

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Plantago maritima	H	80	FACW+				
Salicornia virginica	H	20	OBL				
Atriplex patula	H	5	FACW				

HYDROPHYTIC VEGETATION INDICATORS: H=100/100=100%

% of dominants OBL, FACW, & FAC: 100/100=100%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☒ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks: 100% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None (low tide) inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: At surface	FAC Neutral: ☒ Yes ☐ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks: Saturation at surface, below marine OHW line, low tide

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/2	None	None	Sand to loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Located below OHW line in beach upper intertidal area

Wetland Determination

Hydrophytic vegetation present?	☒ **Yes**	☐ **No**
Hydric soils present?	☒ **Yes**	☐ **No**
Wetland hydrology present?	☒ **Yes**	☐ **No**
Is the sampling point within a wetland?	☒ **Yes**	☐ **No**

Rationale/Remarks: 3 of 3 parameters

NOTES: Estuary wetland in upper intertidal area, sandy beach soils

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland C Plot ID: SP2 Up

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Robinia pseudoacacia	T	60	FACU-				
Rubus armeniacus	S	90	FACU				

HYDROPHYTIC VEGETATION INDICATORS: T=0/60=0%, S=0/90=0%

% of dominants OBL, FACW, & FAC: 0/150=0%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks: 0% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: None 18 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/4	None	None	Sandy loam with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks: No hydric features, inland of OHW line.

Wetland Determination

Hydrophytic vegetation present?	☐ **Yes**	☒ **No**
Hydric soils present?	☐ **Yes**	☒ **No**
Wetland hydrology present?	☐ **Yes**	☒ **No**
Is the sampling point within a wetland?	☐ **Yes**	☒ **No**

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland D Plot ID: SP1 Wet

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Plantago maritima	H	90	FACW+				
Salicornia virginica	H	10	OBL				

HYDROPHYTIC VEGETATION INDICATORS: H=90/90=100%

% of dominants OBL, FACW, & FAC: 90/90=100%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☒ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks: 100% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None (low tide) inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: At surface	FAC Neutral: ☒ Yes ☐ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks: Saturation at surface, below marine OHW line, low tide

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/2	None	None	Sand to loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Located below OHW line in beach upper intertidal area

Wetland Determination

Hydrophytic vegetation present?	☒ **Yes**	☐ **No**
Hydric soils present?	☒ **Yes**	☐ **No**
Wetland hydrology present?	☒ **Yes**	☐ **No**
Is the sampling point within a wetland?	☒ **Yes**	☐ **No**

Rationale/Remarks: 3 of 3 parameters

NOTES: Estuary wetland in upper intertidal area, sandy beach soils

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland D Plot ID: SP2 Up

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Robinia pseudoacacia	T	30	FACU-	*Holcus lanatus*	H	10	FAC
Polygonum cuspidatum	S	40	FACU	*Plantago major*	H	10	FACU+
Rubus armeniacus	S	30	FACU				

HYDROPHYTIC VEGETATION INDICATORS: T=0/30=0%, S=0/70=0%

% of dominants OBL, FACW, & FAC: 0=100=0%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks: 0% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: None 18 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/4	None	None	Loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks: No hydric features, inland of OHW line.

Wetland Determination

Hydrophytic vegetation present?	☐ **Yes**	☒ **No**
Hydric soils present?	☐ **Yes**	☒ **No**
Wetland hydrology present?	☐ **Yes**	☒ **No**
Is the sampling point within a wetland?	☐ **Yes**	☒ **No**

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland E Plot ID: SP1 Wet

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Plantago maritima	H	100	FACW+				

HYDROPHYTIC VEGETATION INDICATORS: H 100/100=100%

% of dominants OBL, FACW, & FAC: 100/100=100%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☒ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks: 100% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None (low tide) inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: At surface	FAC Neutral: ☒ Yes ☐ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks: Saturation at surface, below marine OHW line, low tide

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/2	None	None	Sand to loamy sand with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Located below OHW line in beach upper intertidal area

Wetland Determination

Hydrophytic vegetation present?	☒ **Yes**	☐ **No**
Hydric soils present?	☒ **Yes**	☐ **No**
Wetland hydrology present?	☒ **Yes**	☐ **No**
Is the sampling point within a wetland?	☒ **Yes**	☐ **No**

Rationale/Remarks: 3 of 3 parameters

NOTES: Estuary wetland in upper intertidal area, sandy beach soils

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: West Bay Park Applicant/owner: City of Olympia Investigator(s): C. Douglas	Date: May 10, 2007 County: Thurston State: WA S/T/R: 15/18N/2W
Do normal circumstances exist on the site? ☒ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No Is the area a potential problem area? ☐ Yes ☒ No Explanation of atypical or problem area:	Community ID: Transect ID: Wetland E Plot ID: SP2 Up

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Robinia pseudoacacia	T	90	FACU-				
Rubus armeniacus	S	70	FACU				

HYDROPHYTIC VEGETATION INDICATORS: T=0/90=0%, S=0/70=0%

% of dominants OBL, FACW, & FAC: 0/160=0%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks: 0% dominant wetland vegetation

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No on	Sediment Deposits: ☐ Yes ☒ No
Based on: ☐ Soil temp (record temp) ☒ Other (explain) May	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None to 18 inches Depth to saturated soil: None 18 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase) : Xerorthents

Drainage Class

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0 to 18		10YR 4/4	None	None	Sandy loam with gravel and cobbles	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks: No hydric features, inland of OHW line.

Wetland Determination

Hydrophytic vegetation present?	☐ **Yes**	☒ **No**
Hydric soils present?	☐ **Yes**	☒ **No**
Wetland hydrology present?	☐ **Yes**	☒ **No**
Is the sampling point within a wetland?	☐ **Yes**	☒ **No**

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

APPENDIX B

WETLAND RATING FIELD DATA FORMS

Wetland name or number A, B,C, D, and E

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): A, B, C, D, E (All 5 estuary wetlands close together along beach) Date of site visit: May 10, 2007

Rated by: C. Douglas Trained by Ecology? Yes X No Date of training: May 2007

SEC: 15 TWNSHP: 18N RNGE: 2W Is S/T/R in Appendix D? Yes No X

Map of wetland unit: Figure Estimated size

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I II X III IV

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	NA (estuarine)
Score for Hydrologic Functions	NA (estuarine)
Score for Habitat Functions	NA (estuarine)
TOTAL Score for Functions	NA (estuarine)

Category based on SPECIAL CHARACTERISTCS of Wetland I II X Does not apply

Final Category (choose the "highest" category from above") II

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	X
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Wetland HGM Class used for Rating	
Depressional	
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet)..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___**
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area..... points = 0 **Map of Cowardin vegetation classes**	**Figure ___**
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	**Figure ___**
	Total for D 1 *Add the points in the boxes above*	
D 2	**Does the wetland have the opportunity to improve water quality?**	*(see p. 44)*
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ____ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet)..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft..... points = 0	
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit ..... points = 5 • The area of the basin is 10 to 100 times the area of the unit ..... points = 3 • The area of the basin is more than 100 times the area of the unit..... points = 0 • Entire unit is in the FLATS class ..... points = 5	
	Total for D 3 *Add the points in the boxes above*	
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?**	*(see p. 49)*
	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	Multiplier _____

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other _____ YES multiplier is 2 NO multiplier is 1	
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	

Comments:

Wetland name or number A, B,C, D, and E _____

R	Riverine and Freshwater Tidal Fringe Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland ..... points = 8 • Depressions cover > 1/2 area of wetland ..... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland. ..... points = 2 • No depressions present ..... points = 0	**Figure ___**
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit ..... points = 8 • Trees or shrubs > 1/3 area of the wetland ..... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___**
	Add the points in the boxes above	
R 2	**Does the wetland have the opportunity to improve water quality?** *(see p. 53)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ____ Residential, urban areas, golf courses are within 150 ft. of wetland ____ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ____ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1***	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	**Does the wetland have the potential to reduce flooding and erosion?** *(see p.54)*	
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 ..... points = 9 • If the ratio is between 10 – 20 ..... points = 6 • If the ratio is 5- <10 ..... points = 4 • If the ratio is 1- <5 ..... points = 2 • If the ratio is < 1 ..... points = 1 **Aerial photo or map showing average widths**	**Figure ___**
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4 • Vegetation does not meet above criteria ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___**
	Add the points in the boxes above	
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** *(see p.57)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ____ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ____ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ____ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then ***add score to table on p. 1***	

Comments:

Wetland name or number A, B,C, D, and E _____

L	Lake-fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score per box)
L 1	**Does the wetland unit have the potential to improve water quality?** *(see p.59)*	
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): • Vegetation is more than 33 ft. (10m) wide ..... points = 6 • Vegetation is more than 16 ft.(5m) wide and < 33 ft ..... points = 3 • Vegetation is more than 6 ft. (2m) wide and < 16 ft ..... points = 1 • Vegetation is less than 6 ft. wide ..... points = 0 **Map of Cowardin classes with widths marked**	**Figure ___**
	L 1.2 Characteristics of the vegetation in the wetland: *Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.* • Cover of herbaceous plants is > 90% of the vegetated area..... points = 6 • Cover of herbaceous plants is > 2/3 of the vegetated area..... points = 4 • Cover of herbaceous plants is > 1/3 of the vegetated area..... points = 3 • Other vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit ..... points = 3 • Other vegetation that is not aquatic bed in > 1/3 vegetated area ..... points = 1 • Aquatic bed cover and open water > 2/3 of the unit..... points = 0 **Map with polygons of different vegetation types**	**Figure ___**
	Add the points in the boxes above	
L 2	**Does the wetland have the opportunity to improve water quality?** *(see p.61)* Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Wetland is along the shores of a lake or reservoir that does not meet water quality standards ____ Grazing in the wetland or within 150 ft ____ Polluted water discharges to wetland along upland edge ____ Tilled fields or orchards within 150 ft. of wetland ____ Residential or urban areas are within 150 ft. of wetland ____ Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore) ____ Power boats with gasoline or diesel engines use the lake ____ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Water Quality Functions** Multiply the score from L1 by L2; then ***add score to table on p. 1***	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.	
L 3	**Does the wetland have the potential to reduce shoreline erosion?** *(see p.62)*	
	L 3 Average width and characteristics of vegetation along the lakeshore *(do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland)* • 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide ..... points = 6 • 3/4 of distance is shrubs or forest at least 6 ft. (2m) wide. ..... points = 4 • 1/4 of distance is shrubs or forest at least 33 ft. (10m) wide. ..... points = 4 • Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed)..... points = 2 • Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) ..... points = 0 **Aerial photo or map with Cowardin vegetation classes**	**Figure ___**
	Record the points in the boxes above	
L 4	**Does the wetland have the opportunity to reduce erosion?** *(see p. 64)* Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.* ____ There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. ____ There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. ____ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Hydrologic Functions** Multiply the score from L3 by L4; then ***add score to table on p. 1***	

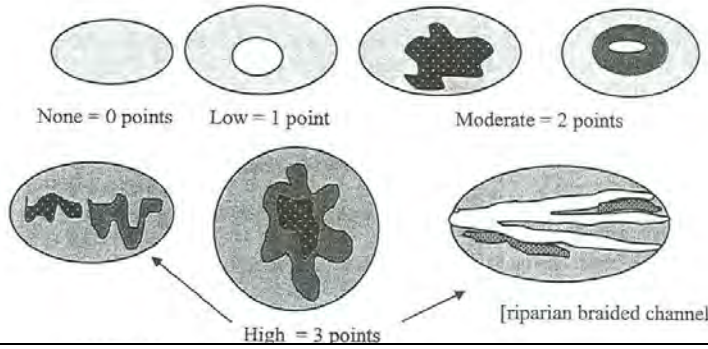
Comments:

Wetland name or number A, B,C, D, and E _____

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
S 1	**Does the wetland have the potential to improve water quality?** *(see p.64)*	
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3 • Slope is 1% - 2% ..... points = 2 • Slope is 2% - 5%. ..... points = 1 • Slope is greater than 5% ..... points = 0	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).* YES = 3 points NO = 0 points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3 • Dense, woody, vegetation > 1/2 of area..... points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1 • Does not meet any of the criteria above for vegetation ..... points = 0 **Aerial photo or map with vegetation polygons**	**Figure ___**
	Total for S 1 *Add the points in the boxes above*	
S 2	**Does the wetland have the opportunity to improve water quality?** *(see p. 67)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields, logging, or orchards within 150 ft. of wetland ____ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ____ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1***	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the potential to reduce flooding and stream erosion?** *(see p.68)*	
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland..... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid ..... points = 0	
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	**Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 70)* Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ____ Wetland has surface runoff that drains to a river or stream that has flooding problems ____ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* YES multiplier is 2 NO multiplier is 1	Multiplier _____
◆	**TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	

Comments:

Wetland name or number A, B,C, D, and E _____

These questions apply to wetlands of all HGM classes.		**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____ Aquatic Bed ____ Emergent plants ____ Scrub/shrub (areas where shrubs have > 30% cover) ____ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more..... points = 4 3 structures..... points = 2 2 structures..... points = 1 1 structure ..... points = 0	**Figure ___**
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ____ Permanently flooded or inundated 4 or more types present points = 3 ____ Seasonally flooded or inundated 3 or more types present.....points = 2 ____ Occasionally flooded or inundated 2 types present.....points = 1 ____ Saturated only 1 type present .....points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ **Lake-fringe wetland..... = 2 points** ____ **Freshwater tidal wetland..... = 2 points** **Map of hydroperiods**	**Figure ___**
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species..... points = 1 List species below if you want to: < 5 species ..... points = 0 _____ _____ _____ _____	
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___**
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ____ Standing snags (diameter at the bottom > 4 inches) in the wetland ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	

H 2	**Does the wetland have the opportunity to provide habitat for many species?**	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).....**points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....**points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....**points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....**points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .....**points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ____ Heavy grazing in buffer .....**points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ____ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure ___**
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	

Comments:

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):

Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

____ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

____ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft.

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

____ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point
If wetland has 2 priority habitats.....= 3 points No habitats..... = 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile .....points = 2
- There are no wetlands within 1/2 mile.....points = 0

H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*

TOTAL for H 1 from page 8

◆ **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? X The dominant water regime is tidal, X Vegetated, and X With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO _____	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO _____ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover*)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = ____ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO _____ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO _____ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**II**

Comments: All five wetlands (A, B, C, D, E) located along beach shoreline with small breaks of beach substrate between them.

APPENDIX C

SAMPLE PLOT DATA SUMMARY

Table C-1
Summary of Sample Plot Vegetation Data

Sample Plot	Scientific Name	Common Name	Indicator Status[1]	Cover %
A1Wet	*Atriplex patula*	Fat-hen saltbush	FACW	5%
	Plantago maritima	Sea plantain	FACW+	90%
	Salicornia virginica	Pickleweed	OBL	20%
A2Up	*Cytisus scoparius*	Scot's broom	UPL	50%
	Festuca rubra	Red fescue	FAC+	30%
	Holcus lanatus	Common velvet grass	FAC	20%
	Plantago lanceolata	English plantain	FAC	10%
	Rubus armeniacus	Himalayan blackberry	FACU	20%
	Taraxacum officinale	Common dandelion	FACU	30%
	Vicia americana	American vetch	FAC	20%
B1Wet	*Atriplex patula*	Fat-hen saltbush	FACW	10%
	Plantago maritima	Sea plantain	FACW+	60%
	Salicornia virginica	Pickleweed	OBL	30%
B2Up	*Cytisus scoparius*	Scot's broom	UPL	30%
	Holcus lanatus	Common velvet grass	FAC	30%
	Robinia pseudoacacia	Black locust	FACU-	60%
	Rubus armeniacus	Himalayan blackberry	FACU	90%
C1Wet	*Atriplex patula*	Fat-hen saltbush	FACW	5%
	Plantago maritima	Sea plantain	FACW+	80%
	Salicornia virginica	Pickleweed	OBL	20%
C2Up	*Robinia pseudoacacia*	Black locust	FACU-	60%
	Rubus armeniacus	Himalayan blackberry	FACU	90%
D1Wet	*Plantago maritima*	Sea plantain	FACW+	90%
	Salicornia virginica	Pickleweed	OBL	10%
D2Up	*Holcus lanatus*	Common velvet grass	FAC	10%
	Plantago major	Common plantain	FACU+	10%
	Polygonum cuspidatum	Japanese knotweed	FACU	40%
	Robinia pseudoacacia	Black locust	FACU-	30%
	Rubus armeniacus	Himalayan blackberry	FACU	30%
E1Wet	*Plantago maritima*	Sea plantain	FACW+	100%
E2Up	*Robinia pseudoacacia*	Black locust	FACU-	90%
	Rubus armeniacus	Himalayan blackberry	FACU	70%

Notes:

1 These categories, referred to as the "wetland indicator status" (from the wettest to driest habitats) are as follows: obligate wetland (OBL) plants, facultative wetland (FACW) plants, facultative (FAC) plants, facultative upland (FACU) plants, and obligate upland (UPL) plants.

Table C-2
Summary of Sample Plot Hydrology Data

Sample Plot	Hydrology
A1Wet	Saturation at surface, low tide during data collection.
A2Up	No saturation or freestanding water to 18 inches.
B1Wet	Saturation at surface, low tide during data collection.
B2Up	No saturation or freestanding water to 18 inches.
C1Wet	Saturation at surface, low tide during data collection.
C2Up	No saturation or freestanding water to 18 inches.
D1Wet	Saturation at surface, low tide during data collection.
D2Up	No saturation or freestanding water to 18 inches.
E1Wet	Saturation at surface, low tide during data collection.
E2Up	No saturation or freestanding water to 18 inches.

Table C-3
Summary of Sample Plot Soils Data

Sample Plot	Soil Horizon (inches)	Matrix Color	Mottle Color	Texture
A1Wet	0 to 18	10YR 4/2 & 4/3	None	Sand to loamy sand with gravel and cobbles, beach upper intertidal substrate
A2Up	0 to 18	10YR 4/4	None	Loamy sand with gravel and cobbles, inland of OHW
B1Wet	0 to 18	10YR 4/2 & 4/3	None	Sand to loamy sand with gravel and cobbles, beach upper intertidal substrate
B2Up	0 to 18	10YR 4/4	None	Loamy sand with gravel and cobbles, inland of OHW
C1Wet	0 to 18	10YR 4/2	None	Sand to loamy sand with gravel and cobbles, beach upper intertidal substrate
C2Up	0 to 18	10YR 4/4	None	Loamy sand with gravel and cobbles, inland of OHW
D1Wet	0 to 18	10YR 4/2	None	Sand to loamy sand with gravel and cobbles, beach upper intertidal substrate
D2Up	0 to 18	10YR 4/4	None	Loamy sand with gravel and cobbles, inland of OHW
E1Wet	0 to 18	10YR 4/2	None	Sand to loamy sand with gravel and cobbles, beach upper intertidal substrate
E2Up	0 to 18	10YR 4/4	None	Loamy sand with gravel and cobbles, inland of OHW

Table C-5
Summary of Sample Plot Data and Wetland Determination

Sample Plot	Vegetation	Soils	Hydrology	Determination
A1Wet	Hydrophytic	Hydric	Positive	Wetland
A2Up	Non-hydrophytic	Non-hydric	Negative	Upland
B1Wet	Hydrophytic	Hydric	Positive	Wetland
B2Up	Non-hydrophytic	Non-hydric	Negative	Upland
C1Wet	Hydrophytic	Hydric	Positive	Wetland
C2Up	Non-hydrophytic	Non-hydric	Negative	Upland
D1Wet	Hydrophytic	Hydric	Positive	Wetland
D2Up	Non-hydrophytic	Non-hydric	Negative	Upland
E1Wet	Hydrophytic	Hydric	Positive	Wetland
E2Up	Non-hydrophytic	Non-hydric	Negative	Upland

APPENDIX B

TRAFFIC ANALYSIS TECHNICAL MEMORANDUM

TECHNICAL MEMORANDUM

Project: West Bay Park Phase 1

Subject: Traffic Impact Analysis

Date: December 7, 2007

Author: Tod S. McBryan, P.E., Principal
Heffron Transportation, Inc.

This memorandum presents traffic generation estimates, access analyses, and information to support the State Environmental Policy Act (SEPA) checklist being prepared for the proposed West Bay Park Phase 1 project in Olympia, Washington. The scope and methodology for the analyses were coordinated with City of Olympia Transportation review staff. Please contact me (206-527-8410) with any questions regarding this analysis.

Project Description

The City of Olympia Parks, Arts and Recreation Department (OPARD) proposes to implement the first phase of a new waterfront park, which will integrate public access and recreation opportunities with shoreline and habitat restoration on the site of a former lumber mill on West Bay (part of Budd Inlet). The site's western boundary is West Bay Drive, which provided access during its former use for milling operations. The site extends about 360 feet north of Brawne Avenue NW, and about 360 feet south of Giles Avenue NW. Activity at the site was discontinued and most upland and shoreline structures have been demolished. The site is currently vacant and has three existing narrow vehicle entry points from West Bay Drive that are closed with locked gates to prevent public access. The park site is partially paved and includes concrete, asphalt, metal, and brick debris, derelict piling, paved roads/asphalt, areas of erosion and non-native vegetation. The upland portion of the site has large paved areas that are bisected by decommissioned railroad tracks.

The planned West Bay Park Phase 1 improvements would occur on 3.97 acres of property that was purchased by the City of Olympia in 2006 from the Port of Olympia and from the BNSF railroad. Olympia's Rotary Club is sponsoring a portion of this project, which will include a viewing area at Rotary Point, a launch for hand-carried boats (e.g. canoes and kayaks), trails, meadow areas and landscaping. Construction of the Phase 1 park improvements would include removal of existing debris, site grading, construction of park improvements, installation of vegetation, and shoreline restoration. The following lists the key components of West Bay Park Phase 1; Figure 1 (attached) shows the proposed site plan).

- A new full-access driveway would be constructed at the south end of the park, leading to a vehicle turnaround and 10-stall parking area in the central portion of the park. All vehicular access to the park would occur to and from this driveway; a sidewalk would be constructed along the southeast edge of this access driveway to allow for pedestrian access between the park and West Bay Drive.

- Two pedestrian/bicycle access points would be created using the two existing northern vehicular driveways. Vehicular access would not occur at these locations and bollards would be installed to limit access to pedestrians and bicyclists.
- Marked and signed crosswalks are proposed on West Bay Drive in two locations—one immediately south of the proposed vehicular access driveway, and a second immediately east of the Giles Avenue NW intersection at the central pedestrian/bicycle access point.
- New walking/bike trails of asphalt pavement would be constructed to encircle the Rotary Point area and lead to a beach access point with steps on the south side of Rotary Point.
- A launch for hand-carried boats, and a walking ramp, would be constructed on the north side of Rotary Point.
- Signage, fixed and removable bollards, handrails, a bicycle shelter with bike racks, trash receptacles, and benches in the upland park area would be included.
- Native plants, topsoil, upland plantings (including native trees and shrubs, and Ecology lawn meadows) and irrigation would be installed.

Project Traffic Volumes

Trip generation for the proposed West Bay Park Phase 1 was determined using rates published in *Trip Generation* (Institute of Transportation Engineers [ITE], 7th Edition, 2003). This reference summarizes the results of numerous traffic studies throughout the country for a variety of land-use types. As coordinated with City of Olympia Transportation review staff, rates published for a Regional Park (Land Use Code 417) were applied to the proposed project. Table 1 summarizes the proposed project's total estimated vehicle trip generation for an average weekday.

As shown, the proposed project is estimated to generate 18 vehicle trips on an average weekday and 1 trip during the morning and afternoon peak commute hours on an average weekday. This relatively low level of activity is expected based on average conditions. On summer days when the weather is warmer, the number of trips would likely be somewhat higher; on days in the winter when weather is colder and wet, the number of trips will likely be lower. Overall, the limited number of parking spaces and the relatively small amount of amenities will restrict the volume of traffic at the site.

Table 1. **Vehicle Trips** Generated by the Proposed West Bay Park Phase 1

	Proposed	Daily	AM Peak Hour			PM Peak Hour		
Land Use	Size	Trips	In	Out	Total	In	Out	Total
Regional Park [1]	3.97 acres	18	1	0	1	0	1	1

Source: Heffron Transportation, Inc., December 2007.

1. Estimated using rates for Regional Park (LU Code 417) from Trip Generation *(ITE, 7th Edition, 2003).*

Site Access

Site access plans for West Bay Park Phase 1 were developed considering both the City of Olympia design standards, and the recommendations and preferred alternative identified in the *West Bay Drive*

Corridor Study.[1] The *West Bay Drive Corridor Study* indicates that future widening along the park property would occur to provide sidewalks and bike lanes on both sides of the street. City staff indicated that the widening of West Bay Drive would occur on the east side of the road due to slope on the west side and since the right-of-way would already be owned by the City on the east side along the park frontage. As a result, the design for the park's driveway assumed that the future roadway configuration will keep the western sidewalk and curb in its current location. The site's design considers the City's planned improvements to West Bay Drive that would include the existing sidewalk on the west side of the road, a 5-foot southbound bike lane, two 11-foot travel lanes, a 5-foot northbound bike lane, and a 6-foot sidewalk on the east side of roadway.

It should also be noted that the *West Bay Drive Corridor Study* provides guidance for future improvements to the West Bay Drive/Brawne Avenue intersection, which is adjacent to the proposed park. The *West Bay Corridor Study* recommends future corridor improvements provide a northbound-to-westbound left-turn lane for the intersection and a landscaped pedestrian crossing island on the north leg of the intersection.

Vehicular Access

Vehicular site access onto West Bay Drive is proposed to occur from a single driveway at the southwest end of the Phase 1 park improvements. The driveway would be located at approximately the same location as the existing southernmost access that served prior uses on the site. However, the access driveway would be reconfigured to meet City of Olympia design standards outlined in *Chapter 4H – Access Points and Intersection Criteria* of the City's *Engineering Design & Development Standards* (November 2004, Chapter 4 updated in 2007). In addition, to help determine specific requirements, a new machine count documenting existing vehicle trips and their speed was performed by the City of Olympia in May 2007. The existing weekday traffic volume on West Bay Drive is about 6,000 vehicles per day with 85th-percentile speeds of about 36 mph[2]. Using these data, the park's planned access has been designed to meet the referenced design standards. As outlined in section 4H.140.A.2:

> *"The angle between the extended centerline of a driveway and the centerline of the street being accessed shall be 90 degrees or as close to 90 degrees as feasible. In no case shall an angle of less than 60 degrees or more than 120 degrees be allowed."*

As a result, the existing driveway approach has been realigned to meet West Bay Drive at a 90-degree angle. Other specific design requirements for the driveway outlined in the updated Chapter 4 of the *Engineering Design & Development Standards* were applied including:

- Driveways are to be constructed of Portland cement concrete.
- Grade breaks, including the tie to the roadway will be constructed as smooth vertical curves. The maximum change in driveway grade will be 8 percent within any 10 feet of distance on a crest and 12 percent within any 10 feet of distance in a sag vertical curve.
- Maximum driveway width for a two-way access drive onto an arterial or collector shall be 30 feet for commercial uses.

[1] Final Report, May 2005, City of Olympia – prepared by: Thurston Regional Planning Council
[2] Source: City of Olympia machine traffic volume and speed studies, May 16 thru 20, 2007.

- For commercial development where access by trucks with trailers is not expected to be routine, the geometric design of access points shall be based primarily on the turning characteristics of passenger cars (defined by AASHTO "P" design vehicle). This standard would apply to the park access drive.
- The access drive shall intersect the street with a continuous smooth grade, not interrupted by curb, gutter, sidewalks, or any rough, bumpy, or off-grade feature.
- Since the park is expected to generate less than 75 vehicle trips during the park's peak hour, the conditions for a low-volume access point apply. As a result, the driveway has been designed and constructed according to Plan No. 4-7, Cement Concrete Driveway included in the *Engineering Design & Development Standard*. Standard Plan 4-7D is attached for reference.

The intersection would not meet volume warrants for any additional turn channelization (such as left-turn or right-turn pockets); therefore, none are proposed. Based on field observations, the sight lines from all three driveways are unobstructed by vertical or horizontal curves.

All movements to and from the park's proposed access driveway are expected to operate at level of service (LOS) B or better during peak hours, based on the volume of traffic passing the site on West Bay Drive. The project is not expected to result in adverse impacts to traffic operations.

Pedestrian Access

The *West Bay Drive Corridor Study* also provides guidance and recommendations for crosswalks. The study notes that pedestrian crossings occur legally at the intersection of any two streets, whether a crosswalk is marked or not. The City marks crosswalks at locations based on vehicle volumes, width of street, speed of vehicles, and number of pedestrians. Crosswalks are typically marked to draw driver's attention to the crossing as well as to direct pedestrians to a particular crossing point. Since crosswalks require regular repainting or remarking, they are not marked at every intersection. In locations where crosswalks alone are not sufficient for safe pedestrian crossings, other devices are installed to improve crossing safety. In the West Bay Drive corridor, crossing islands are planned at key intersections along West Bay Drive where high concentrations of pedestrians are anticipated.

The proposed West Bay Park Phase 1 improvements include two marked and signed crosswalks on West Bay Drive. These crosswalks would be provided for pedestrians using the sidewalk on the west side of the roadway to access the park's planned pedestrian access paths. They would also help connect the park to the residential properties to the west of West Bay Drive. Based on field observations, the traffic flow volume along West Bay Drive appears adequately low to allow regular gaps for pedestrian crossings. As mentioned previously, the 85th-percentile speed along the roadway was about 36 mph. Some vehicles currently travel at higher speeds. Due to the higher existing speeds, it is recommended that the Parks, Arts, and Recreation Department work closely with the City's Public Works Department to confirm the best location for marked and signed crosswalks along West Bay Drive and to ensure that appropriate signage and markings are installed. The crosswalk locations may be interim facilities until the full West Bay Drive Corridor improvements are completed and center pedestrian medians can be installed. Enforcement of speed limits and pedestrian crossing laws for drivers should be conducted regularly after the park is opened.

Parking Conditions

Typically, parking demand for new development projects is estimated using rates and equations published in *Parking Generation.*[3] However, that publication contains no data for any parks similar to the one proposed. Parking demand for the proposed West Bay Park Phase 1 was determined based on traffic generation estimates presented previously. As described, the park is expected to generate a relatively small volume of vehicular traffic on an average weekday. Based on the total daily traffic estimates and based on the proposed parking supply, peak parking demand would likely be 8 to 10 vehicles—filling the planned lot. Peak demand is most likely to occur on Saturdays. Because West Bay Drive is currently a two lane roadway, there is not opportunity for additional demand to occur on-street, adjacent to the park. The planned park is not expected to result in adverse impacts to parking conditions in the local area.

Transportation Information for the SEPA Checklist

Transit – Intercity Transit does not provide fixed route service on West Bay Drive at the current time. There are no plans to add service along this stretch of roadway in the immediate future.

Parking – The proposed project would provide 10 parking spaces and eliminate none. There are no current parking spaces on the site as it is currently unused.

New Roads – The project will not require any new roads or streets, or improvements to existing roads or streets, other than the planned changes to access.

Water, Rail or Air Transportation – The project will provide access for hand-launched boats (such as canoes and kayaks) to access the West Bay area of Budd Inlet. The project would remove abandoned rail tracks purchased from the BNSF Railway. The project will not use or occur in the immediate vicinity of air transportation.

Trip Generation – The proposed project is anticipated to generate about 18 trips per day and about 1 trip during the morning and afternoon peak hours on an average weekday. Peak activity would likely occur at the site midday on summer weekend days.

Measures to reduce transportation impacts – The project will reconfigure the vehicular site access driveway to meet City of Olympia design standards and will limit access to one location. The project will limit the number of on-site parking spaces and will provide pedestrian and bicycle access facilities to encourage non-motorized access to the site.

Conclusions and Recommendations

The proposed West Bay Park Phase 1 would not result in adverse impacts to transportation conditions in the site vicinity. The proposed vehicular access driveway would be designed consistent with City of Olympia design standards, and has been designed to consider future widening of West Bay Drive.

The following measures are recommended to enhance safety of pedestrian crossings planned for West Bay Drive at the park's entry points:

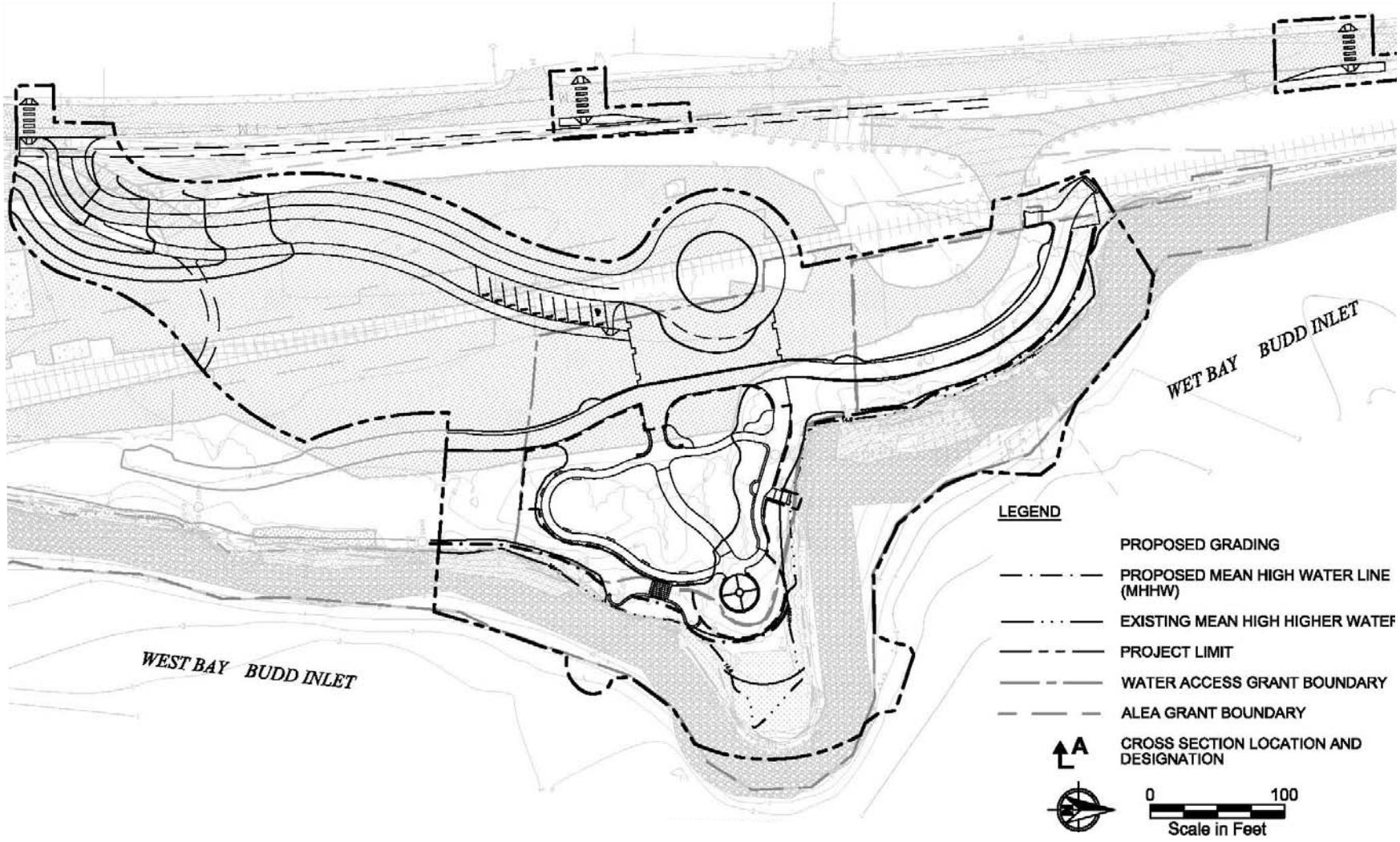
[3] Institute of Transportation Engineers, 3rd Edition, 2004.

- Work closely with the City's Public Works Department to confirm the best location for marked and signed crosswalks along West Bay Drive and to ensure that appropriate signage and markings are installed. The crosswalk locations may be interim facilities until the full West Bay Drive Corridor improvements are completed and center pedestrian medians can be installed.
- Enforce speed limits and pedestrian crossing laws for drivers regularly after the park is complete and opened.

Attachments: Figure 1. Site Plan

TSM/tsm

West Bay Park Traffic Analysis - DRAFT



City of Olympia
West Bay Park Phase 1

Figure 1

SITE PLAN AND ACCESS POINTS

heffron transportation, inc.

8/10/06

APPENDIX C*

Work plan for Remedial Investigation and Feasibility Study

*The revised work plan is available as Appendix B in the Agreed Order. The original version of the work plan which was attached to the SEPA checklist has been revised.

APPENDIX D

PILING REMOVAL BMPS

Washington Department of Natural Resources
Puget Sound Initiative – Derelict Creosote Piling Removal

Best Management Practices
For Pile Removal & Disposal

The following Best Management Practices (BMPs) are adapted from EPA guidance (2005), Washington State Department of Transportation (WSDOT) methods and conservation activities as included in Joint Aquatic Resources Protection Application (JARPA) 2005, and Washington State Department of Resources (WADNR) "Standard Practice for the Use and Removal of Treated Wood and Pilings on and from State-Owned Aquatic Lands" 2005.

The purpose of these BMPs is to control turbidity and sediments re-entering the water column during pile removal, and prescribe debris capture and disposal of removed piles and debris.

BMP 1. PILE REMOVAL

A. Vibratory extraction

1) This is the preferred method of pile removal.

2) The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The hammer is activated to loosen the piling by vibrating as the piling is pulled up. The hammer is shut off when the end of the piling reaches the mudline. Vibratory extraction takes approximately 15 to 30 minutes per piling depending on piling length and sediment condition.

3) Crane operator shall be trained to remove pile slowly. This will minimize turbidity in the water column as well as sediment disturbance.

4) Operator will "Wake up" pile to break up bond with sediment.

- Vibrating breaks the skin friction bond between pile and soil.
- Bond breaking avoids pulling out a large block of soil – possibly breaking off the pile in the process.
- Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases material may be attached to the pile tip, in line with the pile.

B. Direct Pull

1) This method is optional if the contractor determines it to be appropriate for the substrate type and structural integrity of the piling.

2) Pilings are wrapped with a choker cable or chain that is attached at the top to a crane. The crane pulls the piling directly upward, removing the piling from the sediment.

C. Clamshell Removal

1) Broken and damaged pilings that cannot be removed by either the vibratory hammer or direct pull shall be removed with either a clamshell bucket or environmental clamshell.

2) A clamshell is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up.

3) The size of the clamshell bucket will be minimized to reduce turbidity during piling removal.

4) The clamshell bucket will be emptied of material onto a contained area on the barge before it is lowered into the water.

D. Cutting

1) Is required if the pile breaks off at or near the existing substrate and cannot be removed using a clamshell bucket.

2) Prior to commencement of the work the contractor will assess the condition of the pilings. Contractors will create a log outlining the location and number of pilings that need to be cut or broken off and have this log available to the agencies upon request.

3) Washington State Department of Fish and Wildlife (WDFW) will be consulted to determine if this is the preferred option at any specific site.

4) Every attempt will be made to completely remove the piling in its entirety before cutting. If a pile is broken or breaks above the mudline during extraction, one of the methods listed below should be used to cut the pile.

a. A chain should be used, if practical, to attempt to entirely remove the broken pile. (BMP 1-C)

b. If the entire pile cannot be removed, the pile should be cut at or below the mudline by using a pneumatic underwater chainsaw. Project-specific requirements for cutoff will be set by the project manager in consultation with WDFW and Washington Department of Ecology considering the mudline elevation and the presence of contaminants in the sediment. Generally, in subtidal areas with contaminated sediments, pilings should be cut off at the mudline to minimize disturbance of the sediment. In dry, intertidal areas, piling should be cut off at least 1 foot below the mudline. In uncontaminated, subtidal areas, piling should be cut off at least 1 foot below the mudline.

c. Piles shall be cut off at lowest practical tide condition and at slack water. This is intended to reduce turbidity due to reduced flow and short water column through which pile must be withdrawn.

d. In deep subtidal areas, if the piling is broken off below mudline greater than 1 foot, the piling may remain. In intertidal and shallow subtidal areas, seasonal raising and lowering of the beach could expose the pilings above the mudline and leach out PAH's or other contaminants. In this case, the piling should be cut off at least two feet below the mudline if it is accidentally broken off during removal.

e. Depending on future use, the removal contractor will provide the location of the broken pile using GPS. This will be necessary as part of debris characterization should future dredging be a possibility in the area of piling removal.

BMP 2. BARGE OPERATIONS, WORK SURFACE, CONTAINMENT

A. Barge grounding will not be permitted within project areas over eelgrass beds.

B. Work surface on barge deck or pier shall include a containment basin for pile and any sediment removed during pulling.

1) Containment basin may be constructed of durable plastic sheeting with sidewalls supported by hay bales or support structure to contain all sediment. Water run off can return to the waterway.

2) Work surface on barge deck and adjacent pier shall be cleaned by disposing of sediment or other residues along with cut off piling as described in BMP #3.C below.

3) Containment basin shall be removed and disposed in accordance with BMP #3.C below or in another manner complying with applicable federal and state regulations.

4) Upon removal from substrate the pile shall be moved expeditiously from the water into the containment basin. The pile shall not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.

BMP 3. DISPOSAL OF PILING, SEDIMENT AND CONSTRUCTION RESIDUE

A. Pulled pile shall be placed in a containment basin to capture any adhering sediment. This should be done immediately after the pile is initially removed from the water.

1) Utilize basin set up on the barge deck or adjacent pier

2) Basin may be made of hay bales and durable plastic sheeting.

B. Piling shall be cut into 4' lengths with standard chainsaw.
1) All sawdust and cuttings shall be contained in the container.

C. Cut up piling, sediments, construction residue and plastic sheeting from containment basin shall be packed into container. For disposal, ship to Rabanco/Regional Disposal Subtitle D Landfill in Roosevelt, Washington.

BMP 4. DEBRIS CAPTURE IN WATER

A. A floating surface boom shall be installed to capture floating surface debris. Debris will be collected and disposed of along with cut off piling as described in BMP #3.C above.

B. The floating surface boom shall be equipped with absorbent pads to contain any oil sheens. Absorbent pads will be disposed as described in BMP #3.C above.

BMP 5. RESUSPENSION/TURBIDITY

A. Crane operator shall be trained to remove pile from sediment slowly.

B. Work shall be done in low water and low current, to the extent possible.

C. Removed piles shall be placed in a containment facility.

D. Sediments spilled on work surfaces shall be contained and disposed of with the pile debris at permitted upland disposal site.

E. Holes remaining after piling removal shall not be filled.

BMP 6. PROJECT OVERSIGHT

A. WADNR will have a project manager or other assigned personnel on site. Oversight responsibilities will include, but are not limited to the following:

1) Water quality monitoring to ensure turbidity levels remain within required parameters.

2) Ensure contractor follows BMPs

3) Ensure contractor is in compliance with contract and permit requirements

4) Ensure correct structures are removed

5) Maintain contact with regulatory agencies should issues or emergencies arise