Salmon Program
State Recovery Projects
Application Project Summary

TITLE: WRIA 9 Duwamish Gardens Estuary Restoration 2013

NUMBER: 13-1099
TYPE: (Restoration)
STATUS: Application Submitted

APPLICANT: City of Tukwila

CONTACT: Ryan Larson
(206) 431-2456

COSTS:

RCO	$1,333,388	44 %
Local	$1,715,000	56 %
Total	$3,048,388	100 %

SPONSOR MATCH:

Appropriation \ Cash	$100,000
Grant - Local	$1,615,000

DESCRIPTION:

Duwamish Gardens is a restoration project that will create valuable shallow water habitat and restore native riparian vegetation on a 2.16 acre site (and on adjacent WADNR aquatic lands) on the right bank of the Duwamish River immediately downstream of river mile 7.0, in the City of Tukwila.

The site is in the high priority Duwamish Estuary "transition zone" between fresh and salt water, where juvenile salmonids transition to salt water. Off channel and shallow water habitats in this stretch of the Duwamish will provide opportunities for juvenile Chinook to move out of the main channel to habitats where they can feed and rear. Longer residence times in the estuary allow for larger, healthier smolts prior to ocean migration, and thus, improved survival.

The property is among the largest available site for habitat restoration remaining in the Duwamish corridor. When restored, it will fill the need for a large off-channel habitat between the Codiga Farms restoration at RM 8.5 and North Wind's Weir restoration at RM 6.4.

The new habitat will be created by excavating 45,000 cubic yards of material to establish approximately one acre of shallow water mudflat and marsh habitat, and an acre of restored riparian area.

Pedestrian access to the site will be from East Marginal Way and will consist of a small parking lot , trail, and viewpoint. Interpretive signs and/or art work will be provided and will focus on the cultural history of the area and ecological features of the site.

LOCATION INFORMATION:

LEAD ENTITY ORG: WRIA 9 LE (King County)

COUNTY: King

WRIA: Duwamish-Green (9)

SCOPE (WORK TYPES):

- Architectural & Engineering (A&E)
- Creation of new estuarine area
- Cultural resources
- Estuarine planting or native plant establishment.
- Exclusion devices
- Obtain permits
- Restoration fencing and gates
- Restoration signs
- Traffic control

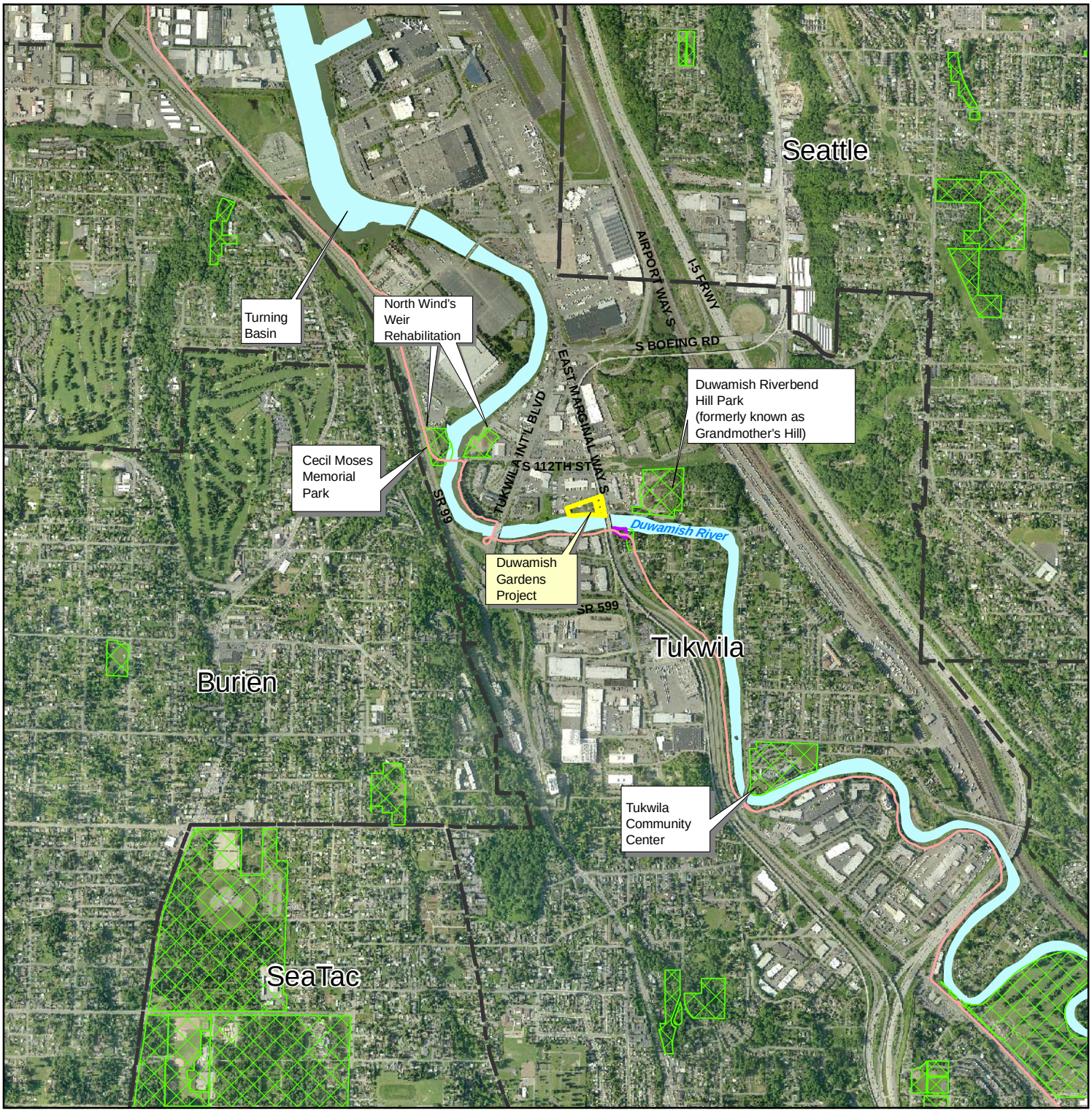
PERMITS ANTICIPATED:

- Aquatic Lands Use Authorization
- Building Permit
- Clear & Grade Permit
- Cultural Assessment [Section 106]
- Dredge/Fill Permit [Section 10/404 or 404]
- Endangered Species Act Compliance [ESA]
- Hydraulics Project Approval [HPA]
- SEPA

SALMON INFORMATION: (* indicates primary)

Species Targeted

- Bull Trout
- Chinook Salmon-Puget Sound ESU
- Chum Salmon-Puget Sound/Strait of Georgia ESU
- Coho Salmon-Puget Sound/Strait of Georgia ESU
- Cutthroat
- Pink Salmon-Odd year ESU
- Rainbow
- Searun Cutthroat
- Steelhead-Puget Sound DPS



Duwamish Gardens Subregional Location Map

Duwamish Gardens Estuary Rehabilitation
RCO Project 10-1605

April 27, 2010

N

1,000 500 0 1,000 2,000 Feet

klinkat \\dnrp1\projects\wlrd\10056\Duwamish_Gardens.mxd

- Duwamish Gardens Project
- Parks
- Open Space Easement
- Duwamish River
- Municipal Boundaries
- Green RiverTrail

Date of Photography: 2009

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
Attachment #17, DSCN1691

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
Attachment #19, DSCN1693

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
Attachment #15, DSCN1694

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
Attachment #16, DSCN1695

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
Attachment #18, DSCN1698

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
07/19/2009, Attachment #3, WRIA 9 Duwamish Gardens View from Rail Line - Photo

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
05/15/2009, Attachment #4, WRIA 9 Duwamish Gardens View of Shoreline Vegetation - Photo

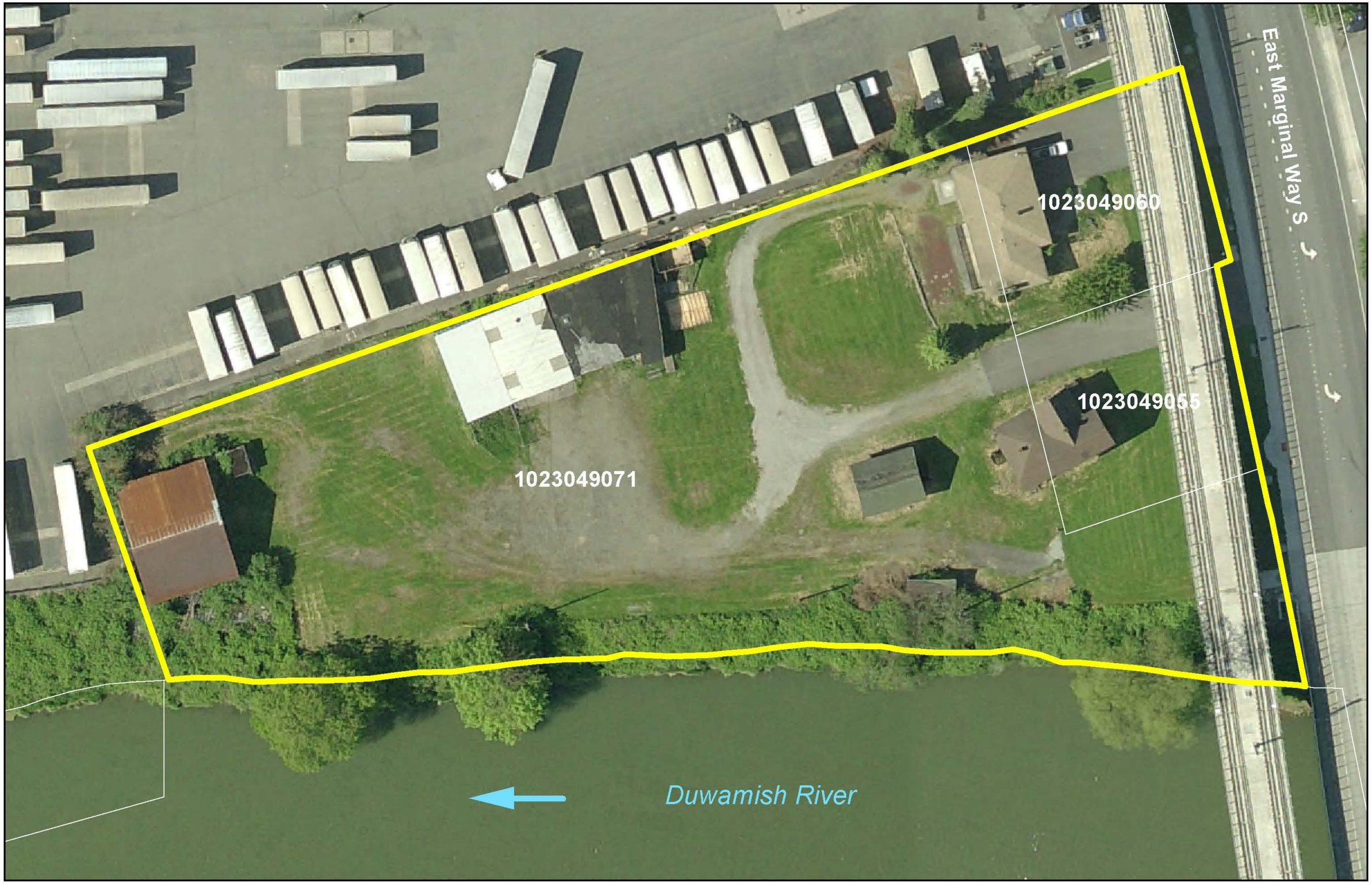


Photo Date: 2009

Project Area

60 30 0 60

Feet

Scale: 1" = 60'

Duwamish Gardens Site Location Map

Duwamish Gardens Estuary Restoration

Disclaimer: The location of features and boundaries are approximate and are intended for reference only.

Tukwila City of; WRIA 9 Duwamish Gardens Estuary Restoration 2013 (#13-1099)
Worksite: #1, Duwamish Gardens
06/30/2009, Attachment #2, WRIA 9 Duwamish Gardens Site Aerial Photo

Puget Sound Acquisition and Restoration - High Priority Capital Projects Proposal

WRIA 9 Duwamish Gardens Estuary Restoration

August 31, 2012

Project Details

Organization name: City of Tukwila
EIN/Tax ID: 91-6001519
City: Tukwila
State: WA
Primary contact name: Ryan Larson
Primary contact title: Senior Surface Water Management Engineer
Telephone: (206) 431-2456
Email: Ryan.Larson@TukwilaWA.gov
Project name (as used in Prism/HWS): WRIA 9 Duwamish Gardens Estuary Restoration
Watershed/Lead Entity: WRIA 9 – Green/Duwamish and Central Puget Sound Watershed, King County
Grant amount being requested: $2.5 million
Total matching contributions: Up to $1,100,000 ($500,000 – King Flood Control District, secured; $100,000 – City of Tukwila, secured; $500,000 – ALEA – pending)

Narrative

1. Project overview:
   A. Describe the primary goal and objectives of this project.

The main goal of this project is to improve the ecological function of the Duwamish estuary by restoring habitat that is critical to the recovery of threatened Chinook salmon in the Green/Duwamish watershed. To this end, the City of Tukwila will construct approximately1.3 acres of shallow water habitat on the 2.16 acre site on the right bank of the Duwamish River immediately downstream of river mile 7.0. The project site is in the high priority Duwamish Estuary "transition zone" between fresh and salt water, which provides the appropriate range of salinities for juvenile salmonids to transition from fresh water to salt water. Off-channel and shallow water habitats in the transition zone are limited, and only 3 percent of the historic estuarine wetland habitats remain. Research shows that lack of shallow water habitat in the Duwamish transition zone is a primary factor limiting Chinook productivity in the watershed. This project will create new habitat that will allow juvenile fish to move out of the main channel to an area where they can feed and rear. Longer residence times in the estuary allow for larger, healthier smolts prior to ocean migration. The property is among the largest available sites for habitat restoration remaining in the Duwamish corridor. When restored, it will be the largest off-channel habitat between the Codiga Farms restoration at RM 8.5 and North Wind's Weir restoration at RM 6.4.

The new shallow water habitat will be created by excavating an estimated 55,000 cubic yards of material to establish approximately 1.3 acres of shallow water mudflat and marsh habitat and approximately 0.8 acre of riparian area planted with native vegetation. Public access will be encouraged on the site, with a small parking lot, upland trail, and interpretive signs. The site is adjacent to Sound Transit's Link Light Rail line, with viewing opportunities by the public in trains that go by every 10-15 minutes.

   B. Describe the location of the project in the watershed, including the name of the water body(ies),upper and lower extent of the project, and habitat type (nearshore, estuary, main stem, tributary, off channel, or other location). Include vicinity and project maps as attachments

This project is located in WRIA 9, the Green/Duwamish and Central Puget Sound watershed (see attached vicinity map). The site is within the Duwamish subwatershed, which encompasses the lower 11

miles of the Green/Duwamish River. The project area is located along the right bank of the Duwamish Estuary at approximately river mile 6.9 – 7.0. Approximately 1.3 acres of shallow water mudflat and marsh habitat and approximately 0.8 acre of uplands planted with native vegetation will be created. The project will include approximately 0.6 acres of the river channel (WADNR property). This project will create off channel habitat along the mainstem of the Duwamish.

C. Provide an overview of the current project site conditions and the nature, source, and extent of salmon recovery problem(s) that the project will address.

This site is in the tidally influenced "transition zone" of the Green/Duwamish River. The Duwamish estuary transition zone is where fresh water and saltwater mix, and extends between river miles 9 and 3. Transition zone habitat is particularly important for juvenile Chinook and chum smolts making the physiological transition to salt water. In particular, off-channel shallow water habitats provide areas for juvenile fish to take refuge from high flows, rest and feed.

The Duwamish subwatershed is highly industrialized and altered from its historic condition. Records indicate that before European settlement, there were 1,310 acres of wetlands in the watershed; today there are less than 35 acres. The Duwamish estuary was straightened and dredged, and flow from two major tributary rivers (the Cedar River and the White River) was diverted elsewhere, leaving the river with approximately 1/3 of its previous flow. The limited availability of rearing habitat for juvenile salmonids in this subwatershed is thought to be a key limiting factor for their productivity. Land in the subwatershed is limited in availability and quality due to over 100 years of industrialization, and this project site was one of the largest remaining under-developed parcels available for restoration. This project would create approximately 1.3 acres of shallow water, off channel rearing habitat for juvenile salmonids, and the only such area between river miles 8.5 and 6.4 within the critical transition zone habitat. This represents 26% of the 10-year target for the WRIA 9 Salmon Habitat Plan of 5 acres of off-channel habitat in the Duwamish.

The site itself is 2.16 acres. The upland project area consists of industrial-zoned land. The soil is largely historic alluvium with approximately three to four feet of fill on the southern edge of the property along the bank. The topography is flat. Along the south property boundary is approximately 500 feet of 15-foot tall river bank that is relatively steep (>2:1 slope). The shoreline has some concrete debris in places but no designed or constructed armoring. Most of the riverbank is covered by a dense thicket of Himalayan blackberry (*Rubus armeniacus*). Approximately 15 feet below the top of the bank, there is an unvegetated mudflat that slopes down to the Duwamish River. There are several trees on the site that will be salvaged and used as large woody debris.

The project site was historically part of a farm called Duwamish Gardens and its past uses have included agriculture, residential, and small business. The two houses, a bunkhouse, and barn will be removed prior to construction. The site is currently fenced off and not used. Investigations indicate that the site has pockets of shallow (1-4 feet deep), low level contamination, primarily PAHs.

Cultural investigations are still ongoing, but preliminary investigations showed some native pre-contact use at the site. Pre-contact Native American evidence was detected about 3 feet below surface, and may be fairly extensive, and the design team is working with permitting agencies and tribes on next steps for mitigation and data recovery.

D. Provide a detailed description of the project, including project size, scope, design, and how it will address the problems described above.

The project site is 2.16 acres, adjacent to the Duwamish River at approximately river mile 6.9-7.0, which is critical transition zone habitat for juvenile Chinook salmon migrating to Puget Sound. The site configuration includes 500 feet of river bank. Design plans call for excavating 1.3 acres of off channel shallow water habitat that will be influenced by tides, yet sheltered from the fast flow of the main channel. The length of waterfront means a large opening will be created, giving salmon ample opportunity to enter the area. Projects with wide openings to the river appear to be more successful than those with narrow openings. Similar completed sites both upstream and downstream of this location have demonstrated food production and Chinook use within the restored off channel habitat was higher than the main channel.

The existing bank, including 3-4 feet of fill material, will be removed to create a gentle slope supporting mud flats, marsh, and riparian habitats. Elevations will be lowered as much as 25 feet from the existing bank height. Native trees, shrubs and groundcovers suited to the dry, upland conditions will be planted in the riparian habitat (approximately 0.8 acres). Marsh species including bulrush and sedges will be planted and protected from grazing by geese. Slopes will be constructed to be compatible with the highest tides without the use of armor or other structural means.

E. Discuss how this project fits within the Puget Sound Chinook or Hood Canal Summer Chum recovery plans, three year work plans and/or local lead entity strategy to restore or protect salmonid habitat in the watershed (i.e., does the project address a priority action, occur in a priority area, address a key limiting factor)?

This project improves riparian habitat and adds 1.3 acres of shallow water, off channel habitat in the Duwamish at River Miles 6.9-7.0. In the WRIA 9 Salmon Habitat Plan, which was incorporated into the Puget Sound Chinook recovery plan, Project Duw-7 calls for creating up to 20 acres of shallow water habitat between river miles 7.0 and 5.5. The overall 10-year plan target is functioning habitats representing 30% of historical habitat area, including 173 acres of estuarine habitat in the Duwamish.

This project is on the WRIA 9 3-year work plan. Because the project addresses a key limiting factor in the Green/Duwamish watershed, it is strongly supported by the 17 jurisdictions in WRIA 9. Specifically, this project addresses the limiting factor of the lack of rearing habitat for migrating smolts in the Duwamish estuary.

F. Has any part of this project previously been reviewed or funded by the SRFB? If yes, please provide the project name and SRFB project number.

This project has been reviewed by SRFB, and funds were awarded for design. Projects included:
10-1605 – Duwamish Gardens Estuarine Rehabilitation Design
10-1105 – Duwamish Gardens Estuary Rehabilitation Concept

G. Does this project have any opposition or barriers to execution outside of funding? Have members of the community, recreational user groups, adjacent landowners, or others been contacted about this project?

Outside of funding, there is no known opposition to project completion. Members of the community have been notified through updates to the city's web site and articles in the local paper, the Tukwila Reporter. An article published in the Tukwila Reporter in March 2012 announced the project and formed a citizen group to provide input on project design.

In general, habitat restoration projects along the Duwamish have received strong community support. Twelve different sites along the Duwamish are tended regularly by nonprofit groups and volunteers, and

since 2006, Duwamish Alive! has brought thousands of volunteers to clean up sites, remove invasive plants, and restore native vegetation. The city plans to partner with this program for ongoing maintenance and community support.

2. How does this project make progress toward a Puget Sound Action Agenda (PSAA) target for protection or restoration of habitat (e.g. shoreline armoring, eelgrass, land cover and land development, flood plains, estuaries, or water quantity)? Describe which target(s) are impacted and how much progress will be made through implementing this project using the metrics (acres, miles, etc) provided in the attached Puget Sound Ecosystem Recovery Targets document.

   - **Estuaries** – The 10-year salmon recovery goal for the Duwamish estuary is to restore 173 acres of off-channel habitat for Chinook salmon (WRIA 9 Salmon Habitat Plan). This project would contribute approximately 1.3 acres towards that goal, and towards the overall PSAA target of 7,380 quality acres restored. While 1.3 acres may seem small, it is one of the largest parcels still available for restoration in the critical estuarine transition zone, which juvenile Chinook salmon rely on to feed and grow while they acclimate to saltwater on their way to Elliot Bay. It is also a significant addition to the 3.5 acres that have been restored since the WRIA 9 plan was implemented in 2005.
   - **Land Cover and Land Development**—This site was formerly a small business and residence, with very few trees or native plants. The riparian bank of the Duwamish along this 500 foot stretch is dominated by invasive, non-native plants. Riparian vegetation on this parcel will be restored, contributing to the PSAA target of 268 miles. This will also contribute to the 10-year WRIA 9 target of restoring 3 miles of shoreline bank; only 0.75 miles have been restored since 2005.
   - **Chinook Salmon** – This project, by addressing a key limiting factor for productivity in Chinook salmon in the Green/Duwamish watershed, is intended to improve productivity and help reverse declines.
   - **Toxics in Fish**—The top one to four feet of soil on the site are slightly contaminated with PAHs. Much of this contaminated soil will be removed, and some will be capped. The result is that less contamination will reach fish in Puget Sound through groundwater leaching. The exact amount of progress towards this target cannot be estimated at this time.

3. How does this project address VSP parameters for listed salmon populations? Please describe the expected results to an improvement in abundance, productivity, diversity and/or spatial distribution for one or more populations from listed ESUs.

Duwamish Gardens will address VSP parameters for Chinook spatial structure (rearing habitat), diversity (juvenile life history), and productivity. This project will create approximately 1.3 acres of off channel rearing area where none currently exists. This directly addresses one of the highest priority conservation hypotheses from the WRIA 9 Salmon Habitat Plan, Duw-3: "Enlarging the Duwamish River estuarine transition zone habitat by expanding the shallow water and slow water areas will enhance habitat quantity and quality of this key Chinook salmon rearing area, leading to greater juvenile salmon residence time, greater growth, and higher survival." Due to the loss of historic estuarine habitat, the Duwamish estuary/transition zone is believed to be a bottleneck for the productivity of the Chinook population, specifically for fry and smolts that rear in the lower part of the river. Rearing habitat for juvenile Chinook in the Duwamish transition zone was the top priority for funding in the WRIA 9 Salmon Habitat Plan because of its potential to contribute to VSP parameters.

This project will high create high quality off-channel marsh and riparian habitat that will increase prey resources. Sampling by King County (2010) indicated that lack of prey resources may be limiting growth

of natural origin Chinook in the transition zone. The site will also provide much needed flood refuge habitat for overwintering juvenile salmonids and early hatched salmonids in a reach where fish have almost no ability to get out of the mainstem during flooding. Sampling in 2001-2003 in Elliot Bay near the mouth of the Duwamish found button-up fry that had been flushed downriver into the Bay. The increased habitat is expected to allow juvenile fish to spend more time feeding and growing in the estuary, which should lead to increased survival and life-history diversity. Post-construction sampling at similar projects in the transition zone showed they were used by juvenile Chinook.

4. Describe the listed salmon and steelhead populations that would benefit from this project, including species, life history present at the site, ESA status, and life history targets for the project site.

Only the fall Chinook population remains in the Green/Duwamish River; it is listed as threatened under the ESA. Spring Chinook have been extirpated. This project will target the juveniles of the fall Chinook population by providing a sheltered, productive shallow water habitat where they will encounter abundant food and few predators. There are five known juvenile life history trajectories in WRIA 9; the potential impact of this project on each is shown in the table below.

Juvenile Life History Trajectory	Current Status	Project's Potential Impact
Estuarine-reared fry	Common	Benefit
Marine-direct fingerling	Common	Slight benefit
Lower river-reared fry	Uncommon	Benefit
Marine-direct fry	Uncommon	No impact
Yearling	Rare	No impact

Steelhead are listed as threatened in Puget Sound. Steelhead occur in WRIA 9, but it is not known whether this project would benefit them. Bull trout are also listed as threatened under the ESA. Bull trout have been encountered in the lower Duwamish during sampling efforts that occurred between 2000 and 2005. There is no known spawning population in the Green River system, but it is believed that they use the system for foraging. The impact of this project on bull trout is unknown at this time.

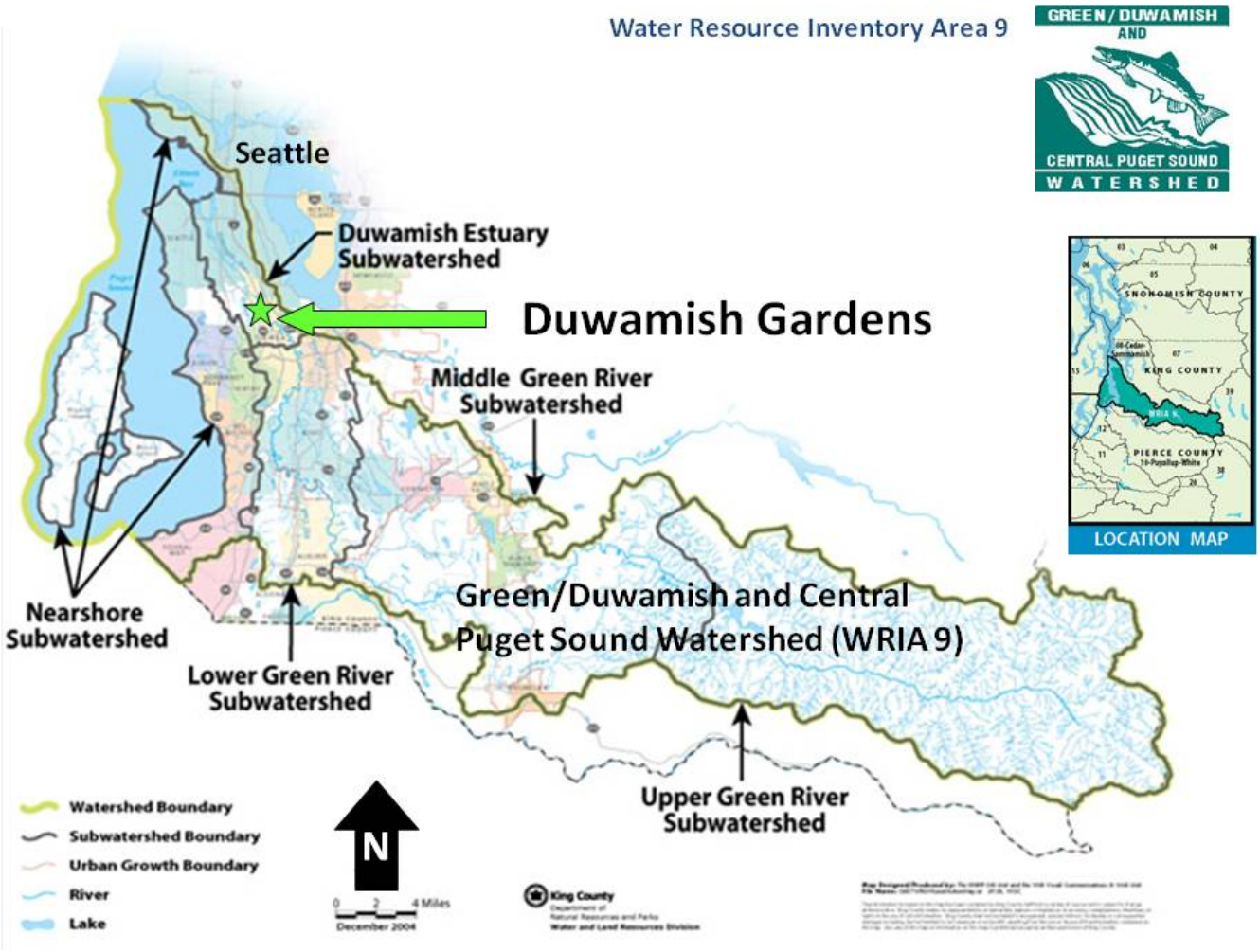
5. For restoration projects, describe the level of design work that has been completed for the project. Refer to definitions of conceptual, preliminary and final design provided in Appendix D of Manual 18 for Salmon Recovery Funding Board Salmon Recovery Grants as you describe your level of design. What design work is still needed prior to construction? How confident are you in the cost estimate provided?

Conceptual design for this project was completed in 2011. A design and permit consultant team was hired in fall 2011. For this project, we intend to complete final design prior to going to construction. The cost estimate could fluctuate as much as $500,000 depending on archaeological findings, final design, and construction bids. Final design and permitting will be completed in June 2013. Construction is planned for 2014.

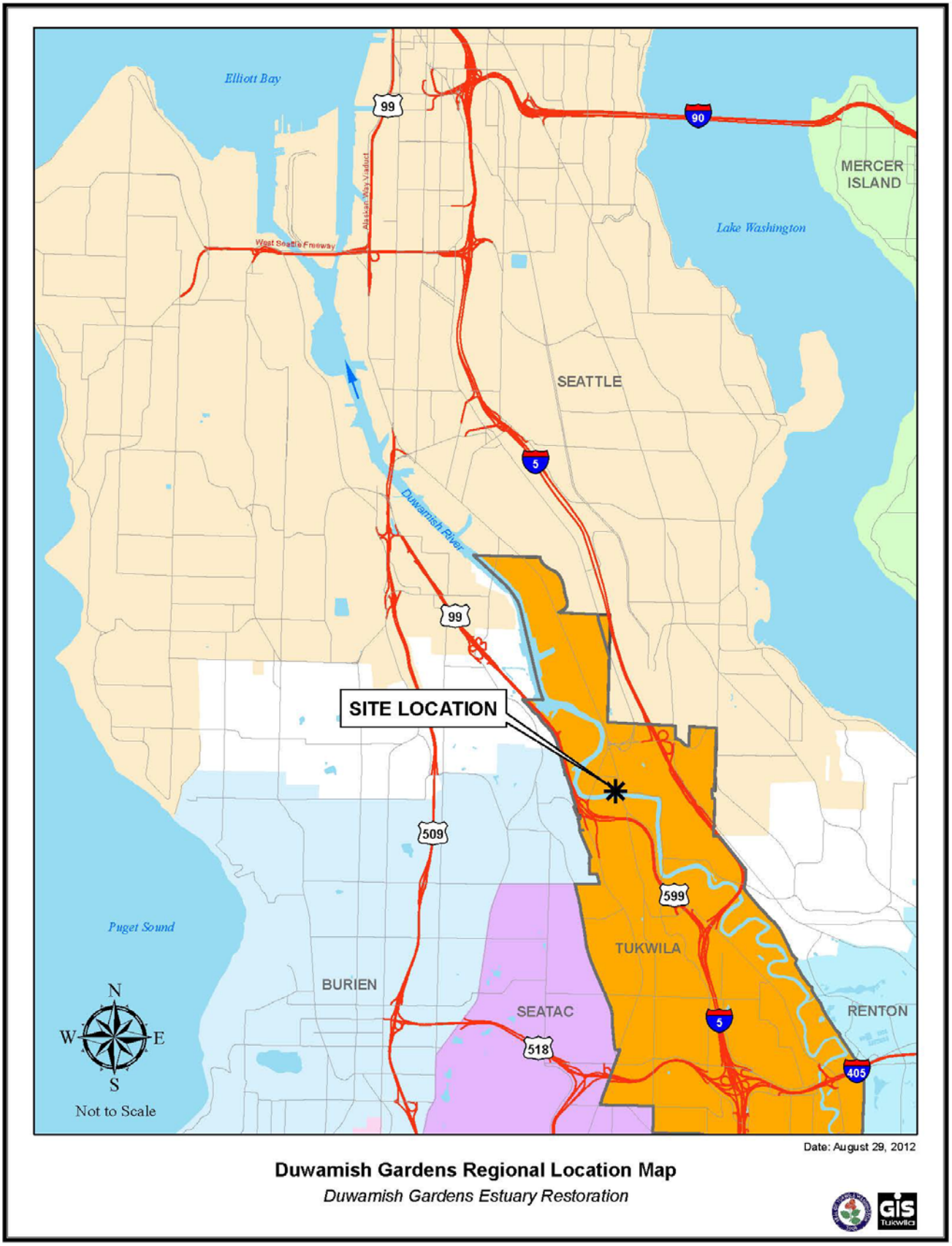
5. What level of match funding is available? This table gives details of each matching contribution:

Match Amount	Type	Source	Status	Notes
$100,000	Cash	City of Tukwila	Secured	Project Sponsor Match
$500,000	Grant	King Flood Control District	Secured, may expire 2015	Cooperative Watershed Management grant
$500,000	Grant	ALEA	Pending, would expire 2015	Aquatic Lands Enhancement Fund

Vicinity Map – WRIA 9 Duwamish Gardens Estuary Restoration



Project Map – WRIA 9 Duwamish Gardens Estuary Restoration



DETERMINATION OF ELIGIBILITY FORM – EZ2

FOR THE NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY / CLIENT NAME: Carosino - Farmhouse

Address: (in rural areas also include section, Township, and range) 11269 E. Marginal Way S.

City: Tukwila **County:** King

Built Date: c. 1882 **Information source:** 'Site Documentation for the Ray-Carrossino Farmstead" by Grulich Architecture + Planning Services for Sound Transit (August 2004)

Optional Information: (property description, list of alterations, historic significance, historic use, etc…)

From the above-reference report: "The Carrossino [sic] Farmhouse is a small wood-framed, two-storey dwelling with a full basement. It is comprised of a series of small rooms on two floors. The farmhouse is similar to many small historic homes. The exterior is clad with a composition covering of an imitation brick design. The imitgation brick siding was installed in 1946. . . The foundation has been replaced in recent times. . . The current basement is constructed with concrete perimeter walls and a concrete slab floor. . . The lack of an interior access to the basement supports the theory that a basement was not part of the original design and was added at a later date. . . Due to the general condition of the building, we assume no structural improvements have been made to the building since its construction in c. 1882. . . The interior has received minor and reversible alterations over time. The structure does not exhibit signs of distortion or failure. The interior surfaces appear to be generally intact with most deterioration caused by over a hundred years of general usage. . . Some areas are carpted and the kitchen and bath have modern vinyl flooring. The fireplace and associated chimney may have been reconstructed when the basement was added. The chimney has been terminated below the roofline and therefore does not represent the proper historic appearance. The roof has been patched in the area of the chimney which indicates the chimney was altered in the recent past. The attic spaces are not accessible and there is a possibility that serious damage may have occurred, due to moisture and the lack of ventilation to the space. The overall style of the farmhouse is difficult to determine due to the covering of the original surfaces. However, the form of the building suggests the design is that of a late 19th centry dwelling with modest Victorian details."

Funding Agency:

Manager Name:	Adam Cole
Organization:	Recreation and Conservation Office
Address:	P.O. Box 40917
City, State, Zip:	Olympia Zip: 98504
Phone:	360-902-3084

PLEASE ATTACH ONE OR TWO CLEAR PHOTOS OF BUILDING

(You may use 35mm film, Polaroid or a digital image. Photocopies of images are not acceptable)

STATE HISTORIC PRESERVATION OFFICER OPINION

(To be completed by the Department of Archaeology and Historic Preservation)

I understand that the above said agency/jurisdiction is requesting the opinion of the State Historic Preservation Officer concerning the eligibility of the listed property for inclusion in the National Register of Historic Places. This statement confirms that I have consulted with the State Historic Preservation Office (SHPO) as required by the National Historic Preservation Act of 1966.

☐ (1) In my opinion, the property is eligible for inclusion in the National Register. As such further review by the SHPO is required for any alteration to the property. Please fill out Building Rehabilitation Worksheet completely and return to the SHPO office for further review.

☐ (2) In my opinion, the property is <u>not eligible</u> for inclusion in the National Register. No further review is required by the SHPO.

Signed: _____
Representative of State Historic Preservation Officer

Date: _____ Log #: _____

Looking west toward farmhouse

Looking east toward farmhouse

Looking southeast toward farmhouse

Mail this form to: Department of Archaeology and Historic Preservation or E-mail to: Russell Holter
1063 S. Capitol Way, Suite 106
Preservation Design Reviewer
P.O. Box 48343
(360) 586-3533
Olympia, WA 98504-8343
russell.holter@dahp.wa.gov

(Within 30 days DAHP will mail their opinion back to you.)

DETERMINATION OF ELIGIBILITY FORM – EZ2

FOR THE NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY / CLIENT NAME: Carosino - Barn

Address: (in rural areas also include section, Township, and range) 11269 E. Marginal Way S.

City: Tukwila **County:** King

Built Date: unknown **Information source:** 'Site Documentation for the Ray-Carrossino Farmstead" by Grulich Architecture + Planning Services for Sound Transit (August 2004)

Optional Information: (property description, list of alterations, historic significance, historic use, etc…)

From the above-reference report: "The Carrossino [sic] Barn is a two-storey, wooden barn with a single gable roof. This is the largest structure on the property. It is a timber-framed structure with the main level elevated above the ground. The barn has approximately 2100 square feet of space on the gorund floor and approximately 1800 square feet on the second level, the haymow. The barn has board and batten siding on all exterior elevations with significant deterioration at the lower portion of each elevation. . . Over time, as columns were weakened by rot or other forms of deterioration, they were replaced with other posts. . . The barn is located in an area where it is difficult to observe and inspect the conditions of the exterior siding. . . The barn has several structural deficiencies. The floor framing is less than adequate for any type of load. The roof framing is less than adequate for modern codes. With the ground floor raised above the ground, it is not possible to inpsect the ground floor framing nor the foundations of each support column. . . . Because of the lack of interor walls, the building lacks lateral bracing and the floors and roof have no diaphragms."

Funding Agency:

Manager Name:	Adam Cole
Organization:	Recreation and Conservation Office
Address:	P.O. Box 40917
City, State, Zip:	Olympia Zip: 98504
Phone:	360-902-3084

PLEASE ATTACH ONE OR TWO CLEAR PHOTOS OF BUILDING

(You may use 35mm film, Polaroid or a digital image. Photocopies of images are not acceptable)

STATE HISTORIC PRESERVATION OFFICER OPINION

(To be completed by the Department of Archaeology and Historic Preservation)

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☐ (2) In my opinion, the property is not eligible for inclusion in the National Register. No further review is required by the SHPO.

Signed: _____

Representative of State Historic Preservation Officer

Date: _____ Log #: _____

Looking west toward barn

Mail this form to:

Department of Archaeology and Historic Preservation
1063 S. Capitol Way, Suite 106
P.O. Box 48343
Olympia, WA 98504-8343

or E-mail to:

Russell Holter
Preservation Design Reviewer
(360) 586-3533
russell.holter@dahp.wa.gov

(Within 30 days DAHP will mail their opinion back to you.)

DETERMINATION OF ELIGIBILITY FORM – EZ2

FOR THE NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY / CLIENT NAME: Carosino - Bunkhouse

Address: (in rural areas also include section, Township, and range) 11269 E. Marginal Way S.

City: Tukwila **County:** King

Built Date: c. 1920s **Information source:** 'Site Documentation for the Ray-Carrossino Farmstead" by Grulich Architecture + Planning Services for Sound Transit (August 2004)

Optional Information: (property description, list of alterations, historic significance, historic use, etc…)
From the above-reference report: "The Carrossino [sic] bunkhouse is a small, rectangular, one-storey, wood-framed building with a basement. . . The interior of the building is organized with a central hall extending from the south entrance to the north exterior wall. There are two rooms on each side of the hall. . . The building is thought to have been constructed in circa 1920s. . . The bunkhouse is in a deteriorated state. A large section of the north half of the roof is damaged and exposes the interior to the weather. Sections of the interior floor are rotted and the entry stoop and step are beyond salvage and must be replaced."

Funding Agency:

Manager Name:	Adam Cole
Organization:	Recreation and Conservation Office
Address:	P.O. Box 40917
City, State, Zip:	Olympia Zip: 98504
Phone:	360-902-3084

PLEASE ATTACH ONE OR TWO CLEAR PHOTOS OF BUILDING

(You may use 35mm film, Polaroid or a digital image. Photocopies of images are not acceptable)

STATE HISTORIC PRESERVATION OFFICER OPINION

(To be completed by the Department of Archaeology and Historic Preservation)

Date: _____ Log #: _____

I understand that the above said agency/jurisdiction is requesting the opinion of the State Historic Preservation Officer concerning the eligibility of the listed property for inclusion in the National Register of Historic Places. This statement confirms that I have consulted with the State Historic Preservation Office (SHPO) as required by the National Historic Preservation Act of 1966.

☐ (1) In my opinion, the property is eligible for inclusion in the National Register. As such further review by the SHPO is required for any alteration to the property. Please fill out Building Rehabilitation Worksheet completely and return to the SHPO office for further review.

☐ (2) In my opinion, the property is not eligible for inclusion in the National Register. No further review is required by the SHPO.

Signed: _____
Representative of State Historic Preservation Officer

Looking southwest toward the bunkhouse

Looking west toward barn

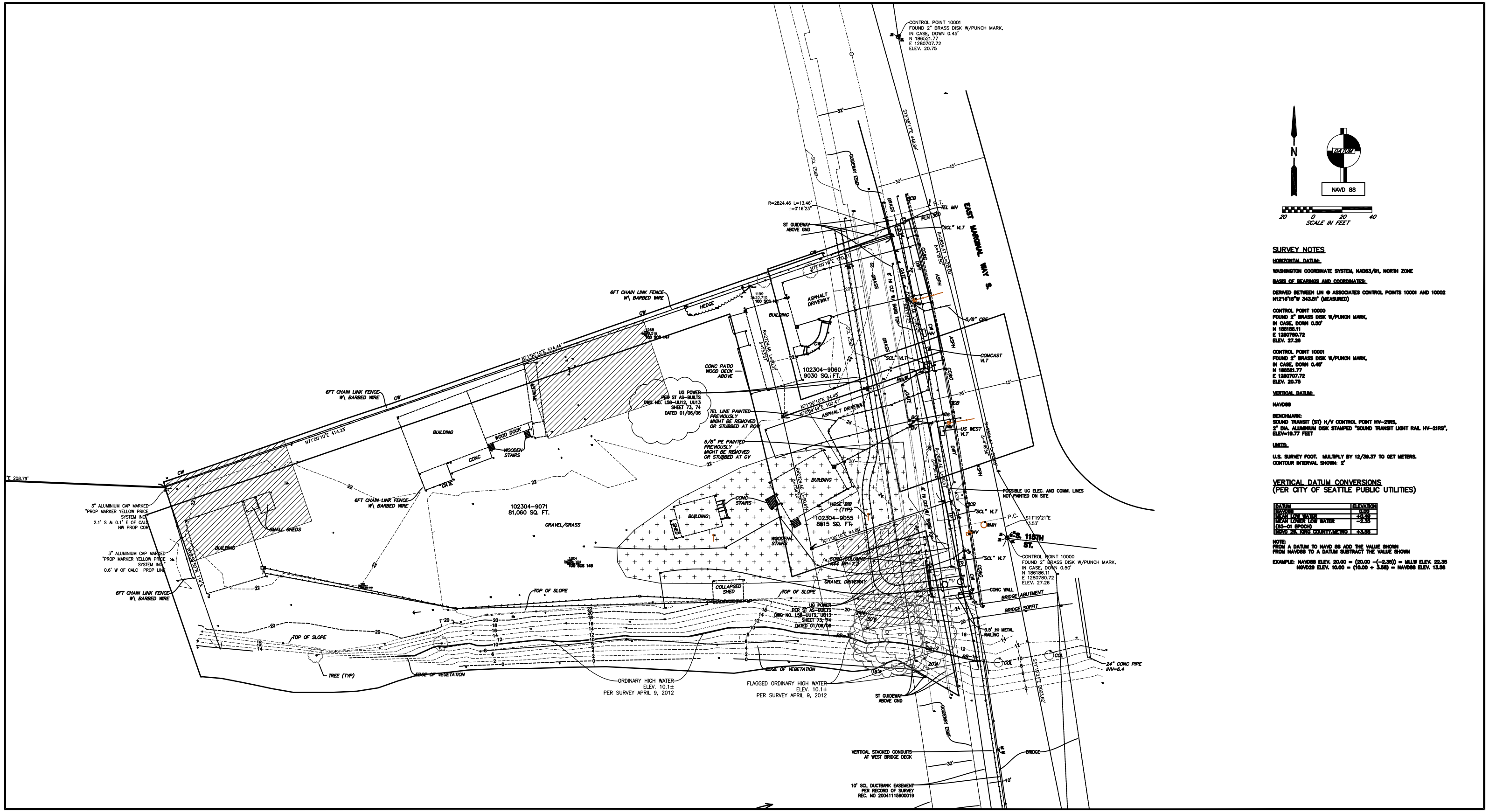
Mail this form to:

Department of Archaeology and Historic Preservation
1063 S. Capitol Way, Suite 106
P.O. Box 48343
Olympia, WA 98504-8343

or E-mail to:

Russell Holter
Preservation Design Reviewer
(360) 586-3533
russell.holter@dahp.wa.gov

(Within 30 days DAHP will mail their opinion back to you.)



SURVEY NOTES

HORIZONTAL DATUM:

WASHINGTON COORDINATE SYSTEM, NAD83/91, NORTH ZONE

BASIS OF BEARINGS AND COORDINATES:

DERIVED BETWEEN LIN & ASSOCIATES CONTROL POINTS 10001 AND 10002
N12°16'16"W 343.81' (MEASURED)

CONTROL POINT 10000
FOUND 2" BRASS DISK W/PUNCH MARK,
IN CASE, DOWN 0.50'
N 186186.11
E 1280780.72
ELEV. 27.26

CONTROL POINT 10001
FOUND 2" BRASS DISK W/PUNCH MARK,
IN CASE, DOWN 0.45'
N 186521.77
E 1280707.72
ELEV. 20.75

VERTICAL DATUM:

NAVD88

BENCHMARK:
SOUND TRANSIT (ST) H/V CONTROL POINT HV-21RS,
2" DIA. ALUMINIUM DISK STAMPED "SOUND TRANSIT LIGHT RAIL HV-21RS",
ELEV=19.77 FEET

UNITS:

U.S. SURVEY FOOT. MULTIPLY BY 12/39.37 TO GET METERS.
CONTOUR INTERVAL SHOWN: 2'

VERTICAL DATUM CONVERSIONS
(PER CITY OF SEATTLE PUBLIC UTILITIES)

DATUM	ELEVATION
NAVD88	0.00
MEAN HIGH WATER	4.42
MEAN LOWER LOW WATER	−2.35
(83-01 EPOCH)	
NGVD 29, KING COUNTY METRO	+3.58

NOTE:
FROM A DATUM TO NAVD 88 ADD THE VALUE SHOWN
FROM NAVD88 TO A DATUM SUBTRACT THE VALUE SHOWN

EXAMPLE: NAVD88 ELEV. 20.00 = (20.00 −(−2.35)) = MLLW ELEV. 22.35
NGVD29 ELEV. 10.00 = (10.00 + 3.58) = NAVD88 ELEV. 13.58

SURVEY AND BASE INFO

CITY OF TUKWILA

March 28, 2013

DUWAMISH GARDENS HABITAT PROJECT

j.a. brennan associates, PLLC
in association with
Shannon & Wilson, Inc.
CardnoTEC, Inc.
Chris Webb & Associates
CASCADE Interpretive Consulting
ESA Paragon

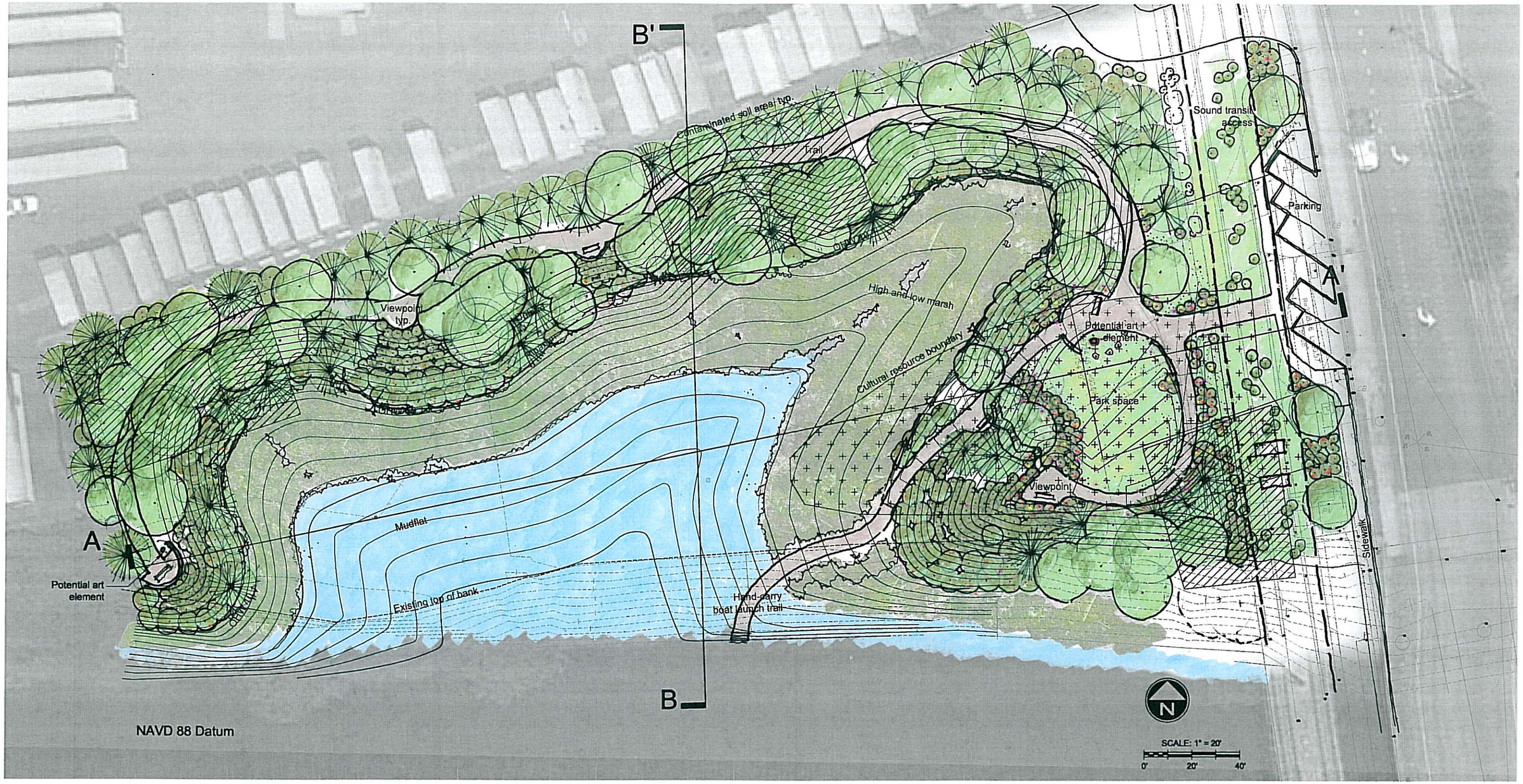
DUWAMISH GARDENS PRELIMINARY PLANT LIST

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	COMMENTS
CONIFEROUS TREES							
PS		PICEA SITCHENSIS	SITKA SPRUCE	2 GAL.	B&B/CONTAINER	10' O.C.	T
PM		**PSEUDOTSUGA MENZIESII**	**DOUGLAS FIR**	**2 GAL.**	**B&B/CONTAINER**	**10' O.C.**	**U**
TP		THUJA PLICATA	WESTERN RED CEDAR	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
TH		TSUGA HETEROPHYLLA	WESTERN HEMLOCK	2 GAL.	B&B/CONTAINER	10' O.C.	U
DECIDUOUS TREES							
AC		*ACER CIRCINATUM*	*VINE MAPLE*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*T*
AM		ACER MACROPHYLLUM	BIG LEAF MAPLE	2 GAL.	B&B/CONTAINER	10' O.C.	U
AR		ALNUS RUBRA	RED ALDER	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
BT		BETULA PAPYRIFERA	PAPER BIRCH	2 GAL.	B&B/CONTAINER	10' O.C.	W, T, U
CN		*CORNUS NUTTALLII*	*PACIFIC DOGWOOD*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*T, U*
FL		*FRAXINUS LATIFOLIA*	*OREGON ASH*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*W*
PT		POPULUS TRICHOCARPA	BLACK COTTONWOOD	2 GAL.	B&B/CONTAINER	10' O.C.	W
LARGE SHRUBS							
AA		AMELANCHIER ALNIFOLIA	SERVICEBERRY	1 GAL.	CONTAINER	4' O.C.	T, U
CS		**CORNUS STOLONIFERA**	**RED OSER DOGWOOD**	**1 GAL.**	**CONTAINER**	**4' O.C.**	**W**
HD		HOLODISCUS DISCOLOR	OCEANSPRAY	1 GAL.	CONTAINER	4' O.C.	T, U
LI		LONICERA INVOLUCRATA	TWINBERRY	1 GAL.	CONTAINER	4' O.C.	T, U
PN		PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	1 GAL.	CONTAINER	4' O.C.	W
RI		RIBES SANGUINEUM	RED FLOWERING CURRANT	1 GAL.	CONTAINER	4' O.C.	U
SB		RUBUS SPECTABILIS	SALMONBERRY	1 GAL.	CONTAINER	4' O.C.	T
SR		SAMBUCUS RACEMOSA	RED ELDERBERRY	1 GAL.	CONTAINER	4' O.C.	T
VE		VIBURNUM EDULE	HIGHBUSH CRANBERRY	1 GAL.	CONTAINER	4' O.C.	W
SMALL SHRUBS/FERNS							
MN		MAHONIA NERVOSA	LOW OREGON GRAPE	1 GAL.	CONTAINER	2' O.C.	T, U
SF		POLYSTICHUM MUNITUM	SWORD FERN	1 GAL.	CONTAINER	4' O.C.	T, U
RN		ROSA NUTKANA	NOOTKA ROSE	1 GAL.	CONTAINER	4' O.C.	U
RP		RUBUS PARVIFLORUS	THIMBLEBERRY	1 GAL.	CONTAINER	4' O.C.	T
SAS		SYMPHORICARPOS ALBUS	SNOWBERRY	1 GAL.	CONTAINER	4' O.C.	U
EMERGENTS							
AS		AGROSTIS EXERATA	SPIKE BENTGRASS	6" MIN. CROWN	PLUG	18" O.C.	E -High Marsh
AE		ARGENTENA EGEDII	PACIFIC SILVERWEED	6" MIN. CROWN	PLUG	18" O.C.	E -High Marsh
CO		CAREX OBNUPTA	SLOUGH SEDGE	6" MIN. CROWN	PLUG	18" O.C.	E -Low Marsh
DC		DESCHAMPSIA CAEPITOSA	TUFTED HAIRGRASS	6" MIN. CROWN	PLUG	18" O.C.	E -High Marsh
JA		JUNCUS ARTICULATUS	JOINTED RUSH	6" MIN. CROWN	PLUG	18" O.C.	E-High Marsh
JB		JUNCUS BALTICUS	BALTIC RUSH	6" MIN. CROWN	PLUG	18" O.C.	E
SA		SCIRPUS ACUTUS	HARDSTEM BULRUSH	6" MIN. CROWN	PLUG	18" O.C.	E
SV		SCIRPUS VALIDUS	SOFTSTEM BULRUSH	6" MIN. CROWN	PLUG	18" O.C.	E-Low Marsh
TA		TYPHA ANGUSTIFOLIA	CATTAILS	6" MIN. CROWN	PLUG	24" O.C.	E-High Marsh
LIVESTAKES							
SH		SALIX HOOKERIANA	HOOKER WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SL		SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SSW		SALIX SCOULERIANA	SCOULER'S WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SS		SALIX SITCHENSIS	SITKA WILLOW	18"	LIVESTAKE	18" O.C.	E, W

E = EMERGENTS
W = WET
T = TRANSITION
U = UPLAND

BOLD = DOMINANT SPECIES
ITALIC = MINORITY SPECIES

EMERGENTS						
CO	CAREX OBNUPTA	SLOUGH SEDGE	6" MIN. CROWN	PLUG	18" O.C.	E
JB	JUNCUS BALTICUS	BALTIC RUSH	6" MIN. CROWN	PLUG	18" O.C.	E
SA	SCIRPUS ACUTUS	HARDSTEM BULRUSH	6" MIN. CROWN	PLUG	18" O.C.	E
SL	SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SSW	SALIX SCOULERIANA	SCOULER'S WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SS	SALIX SITCHENSIS	SITKA WILLOW	18"	LIVESTAKE	18" O.C.	E, W
WET						
TP	THUJA PLICATA	WESTERN RED CEDAR	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
AR	ALNUS RUBRA	RED ALDER	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
BT	BETULA PAPYRIFERA	PAPER BIRCH	2 GAL.	B&B/CONTAINER	10' O.C.	W, T, U
FL	*FRAXINUS LATIFOLIA*	*OREGON ASH*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*W*
PT	POPULUS TRICHOCARPA	BLACK COTTONWOOD	2 GAL.	B&B/CONTAINER	10' O.C.	W
CS	**CORNUS STOLONIFERA**	**RED OSER DOGWOOD**	**1 GAL.**	**CONTAINER**	**4' O.C.**	**W**
PN	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	1 GAL.	CONTAINER	4' O.C.	W
VE	VIBURNUM EDULE	HIGHBUSH CRANBERRY	1 GAL.	CONTAINER	4' O.C.	W
SL	SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SSW	SALIX SCOULERIANA	SCOULER'S WILLOW	18"	LIVESTAKE	18" O.C.	E, W
SS	SALIX SITCHENSIS	SITKA WILLOW	18"	LIVESTAKE	18" O.C.	E, W
TRANSITION						
PS	PICEA SITCHENSIS	SITKA SPRUCE	2 GAL.	B&B/CONTAINER	10' O.C.	T
TP	THUJA PLICATA	WESTERN RED CEDAR	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
AC	*ACER CIRCINATUM*	*VINE MAPLE*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*T*
AR	ALNUS RUBRA	RED ALDER	2 GAL.	B&B/CONTAINER	10' O.C.	W, T
BT	BETULA PAPYRIFERA	PAPER BIRCH	2 GAL.	B&B/CONTAINER	10' O.C.	W, T, U
CN	*CORNUS NUTTALLII*	*PACIFIC DOGWOOD*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*T, U*
AA	AMELANCHIER ALNIFOLIA	SERVICEBERRY	1 GAL.	CONTAINER	4' O.C.	T, U
HD	HOLODISCUS DISCOLOR	OCEANSPRAY	1 GAL.	CONTAINER	4' O.C.	T, U
SB	RUBUS SPECTABILIS	SALMONBERRY	1 GAL.	CONTAINER	4' O.C.	T
SR	SAMBUCUS RACEMOSA	RED ELDERBERRY	1 GAL.	CONTAINER	4' O.C.	T
SF	POLYSTICHUM MUNITUM	SWORD FERN	1 GAL.	CONTAINER	4' O.C.	T, U
RP	RUBUS PARVIFLORUS	THIMBLEBERRY	1 GAL.	CONTAINER	4' O.C.	T
UPLAND						
PM	**PSEUDOTSUGA MENZIESII**	**DOUGLAS FIR**	**2 GAL.**	**B&B/CONTAINER**	**10' O.C.**	**U**
TH	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	2 GAL.	B&B/CONTAINER	10' O.C.	U
AM	ACER MACROPHYLLUM	BIG LEAF MAPLE	2 GAL.	B&B/CONTAINER	10' O.C.	U
BT	BETULA PAPYRIFERA	PAPER BIRCH	2 GAL.	B&B/CONTAINER	10' O.C.	W, T, U
CN	*CORNUS NUTTALLII*	*PACIFIC DOGWOOD*	*2 GAL.*	*B&B/CONTAINER*	*10' O.C.*	*T, U*
AA	AMELANCHIER ALNIFOLIA	SERVICEBERRY	1 GAL.	CONTAINER	4' O.C.	T, U
HD	HOLODISCUS DISCOLOR	OCEANSPRAY	1 GAL.	CONTAINER	4' O.C.	T, U
RI	RIBES SANGUINEUM	RED FLOWERING CURRANT	1 GAL.	CONTAINER	4' O.C.	U
SF	POLYSTICHUM MUNITUM	SWORD FERN	1 GAL.	CONTAINER	4' O.C.	T, U
RN	ROSA NUTKANA	NOOTKA ROSE	1 GAL.	CONTAINER	4' O.C.	U
SAS	SYMPHORICARPOS ALBUS	SNOWBERRY	1 GAL.	CONTAINER	4' O.C.	U



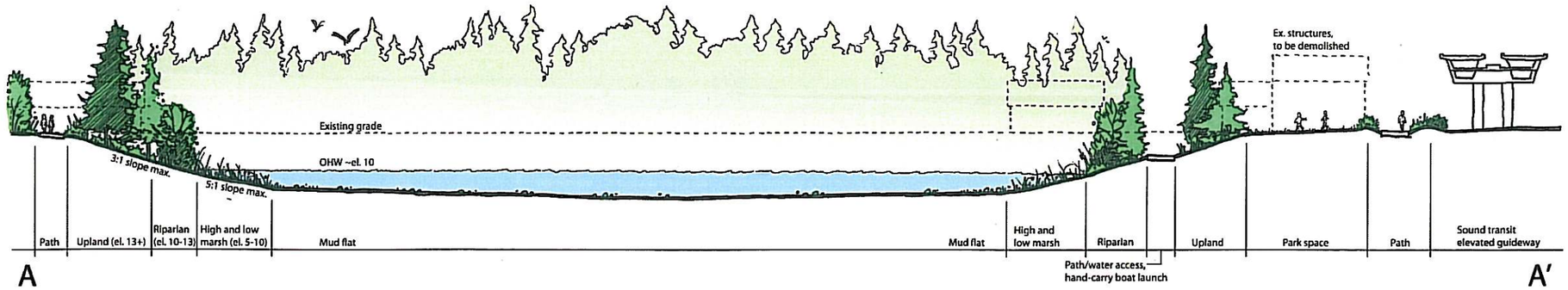
SITE PLAN

CITY OF TUKWILA

March 28, 2013

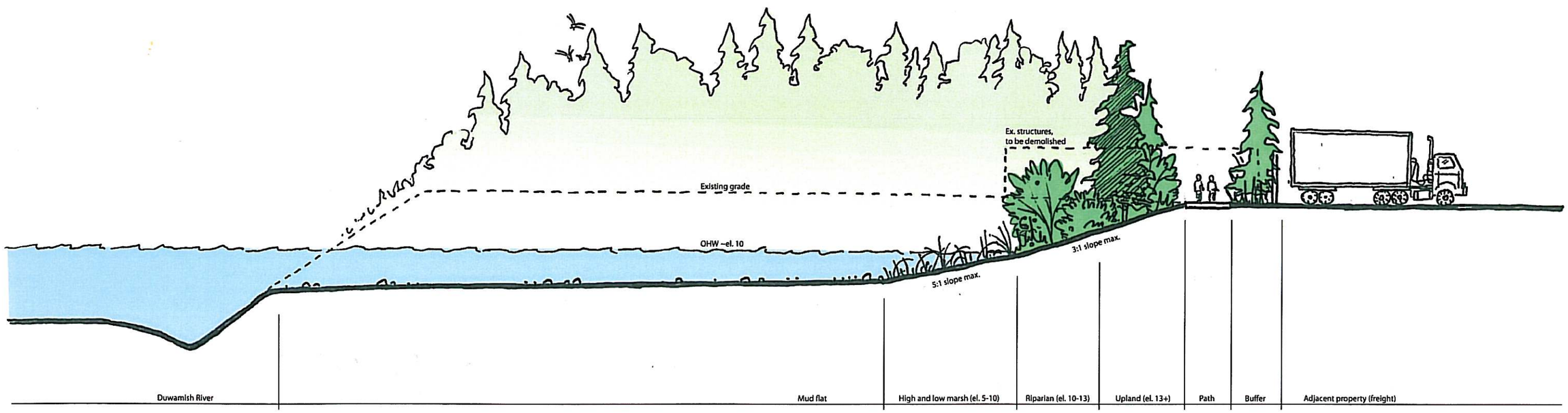
DUWAMISH GARDENS HABITAT PROJECT

j.a. brennan associates, PLLC
in association with
Shannon & Wilson, Inc.
CardnoTEC, Inc.
Chris Webb & Associates
CASCADE Interpretive Consulting
ESA Paragon



SECTION A

SCALE: 1" = 20'
0' 20' 40'



SECTION B

SCALE: 1" = 10'
0' 10' 20'

SITE SECTIONS

CITY OF TUKWILA

March 28, 2013

DUWAMISH GARDENS HABITAT PROJECT

j.a. brennan associates, PLLC
in association with
Shannon & Wilson, Inc.
CardnoTEC, Inc.
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CASCADE Interpretive Consulting
ESA Paragon

j.a. brennan associates PLLC
Landscape Architects & Planners

Restoration Cost Estimate Summary

City of Tukwila

WRIA 9 Duwamish Gardens Estuary Restoration 2013

13-1099

Restoration

Salmon State Projects

Category / Work Type	Total Cost	Description
Worksite #1, Duwamish Gardens		
Architectural & Engineering		
Architectural & Engineering (A&E)	$400,000.00	
Cultural Resources		
Cultural resources	$121,000.00	
Estuarine / Nearshore Project		
Creation of new estuarine area	$2,183,388.00	
Estuarine planting or native plant establishment.	$214,000.00	Includes estuarine and riparian plantings.
Exclusion devices	$20,000.00	
General restoration activities		
Traffic control	$65,000.00	
Restoration signs	$15,000.00	
Restoration fencing and gates	$10,000.00	
Permits		
Obtain permits	$20,000.00	All permits except one are paid for under the Design contract.
Project A&E Amount	$400,000.00	
Project Total Costs	**$3,448,388.00**	

Cost Estimates By Property

Detailed Property Information

Property Name:

Acreage to be Purchased:

Date to be Acquired:

Value Determination:

Property Grantor:

Ownership Instrument:

Purchase Type:

Term Length:

Expiration Date:

Sub-Total

Total Acquisition Cost Estimate

DATE: 4/12/2010

Project: Duwamish Gardens Estuary Rehabilitation Alt 1B

Preliminary Project Cost Estimate

Location Duwamish River downstream of E. Marginal Way S. Bridge

ESTIMATOR: Tim Kelly

4/26/10: additions by Dennis Clark

4/23/12: additions by Ryan Larson

6/21/12, 3/14/13: changes by Elissa Ostergaard

PRELIMINARY CONSTRUCTION COSTS

ITEM	ITEM DESCRIPTION (Furnished and Installed)	QUANTITY	UNITS	UNIT COST	PROJECT COST ESTIMATE	
1	Mobilization	1	%	10.0%	$180,774	
2	Construction Survey	5	Day	1,250	$6,250	
3	Cultural/Historic Investigations & Plan	1	Site	96,000	$96,000	Done
4	Cultural/Historic Data Recovery	1	Site	25,000	$25,000	
5	Existing Structure Demolition	1	LS	80,000	$80,000	paid for by CWT grant
6	Clearing and Grubbing	2.4	Ac	4,000	$9,600	
7	Contractor Provided TESC Plan	1.0	LS	10,000	$10,000	
8	TESC	1.0	LS	25,000	$25,000	
9	Traffic Control	75	Day	640	$48,000	
10	Port-a-Dam Installation and Removal	430	LF	250	$107,500	
11	Material Excavation (Excavators & Operator)	45,000	CY	3.20	$144,000	
12	Fuel Truck and Fuel	71	Day	1,100	$78,100	
13	Contaminated Soil Removal*	1	LS	150,209	$150,209	paid for by CWT grant - leave in in case more is needed.
14	Material Haul Off Site (Trucks, Operator and Fuel)	45,000	CY	7.62	$342,900	
15	Geo-Grid (Incl material and placement)	320	LF	43	$13,760	
16	Log Cluster Installation (Material and Placement)	115	Each	500	$57,500	
17	Water quality monitoring	71	Day	255	$18,105	
18	BMP placement	1	LS	3,000	$3,000	
19	Hog Fuel (Material)	422	CY	12.0	$5,064	
20	Dust Control Incl Sweeper, Water Truck & Operators	75	Day	1,150	$86,250	
21	Hydroseeding	1	LS	4,500	$4,500	
22	Soil Amendment (Delivered to site)	1	LS	7,000	$7,000	
23	Planting	20000	SF	10	$200,000	
24	Benches (Large flat rocks or equivalent)	3	Each	2,500	$7,500	
25	Split rail fence (500 linear feet)	1	LS	7,500	$7,500	
26	Interpretive walkway	1	LS	20,000	$20,000	
27	Raised View Deck	1	LS	10,000	$10,000	
28	Parking Area	1	LS	25,000	$25,000	
29	Temporary Irrigation System	1	LS	15,000	$15,000	
30	Interpretive sign and concrete pad	1	LS	15,000	$15,000	
31	Boat Launch/River Access Trail	1	LS	20,000	$20,000	
32	10-Year Site Maintenance	10	Year	2,000	$20,000	
33	3-Year Site Monitoring	3	LS	50,000	$150,000	
		SUBTOTAL:			$1,988,511	
		SALES TAX:		9.50%	$188,909	
		SUBTOTAL:			$2,177,420	
		CONSTRUCTION ENGINEER		15.00%	$326,613	
		CONTINGENCY:		25%	$544,355	
		CONSTR. TOTAL:			$3,048,388	