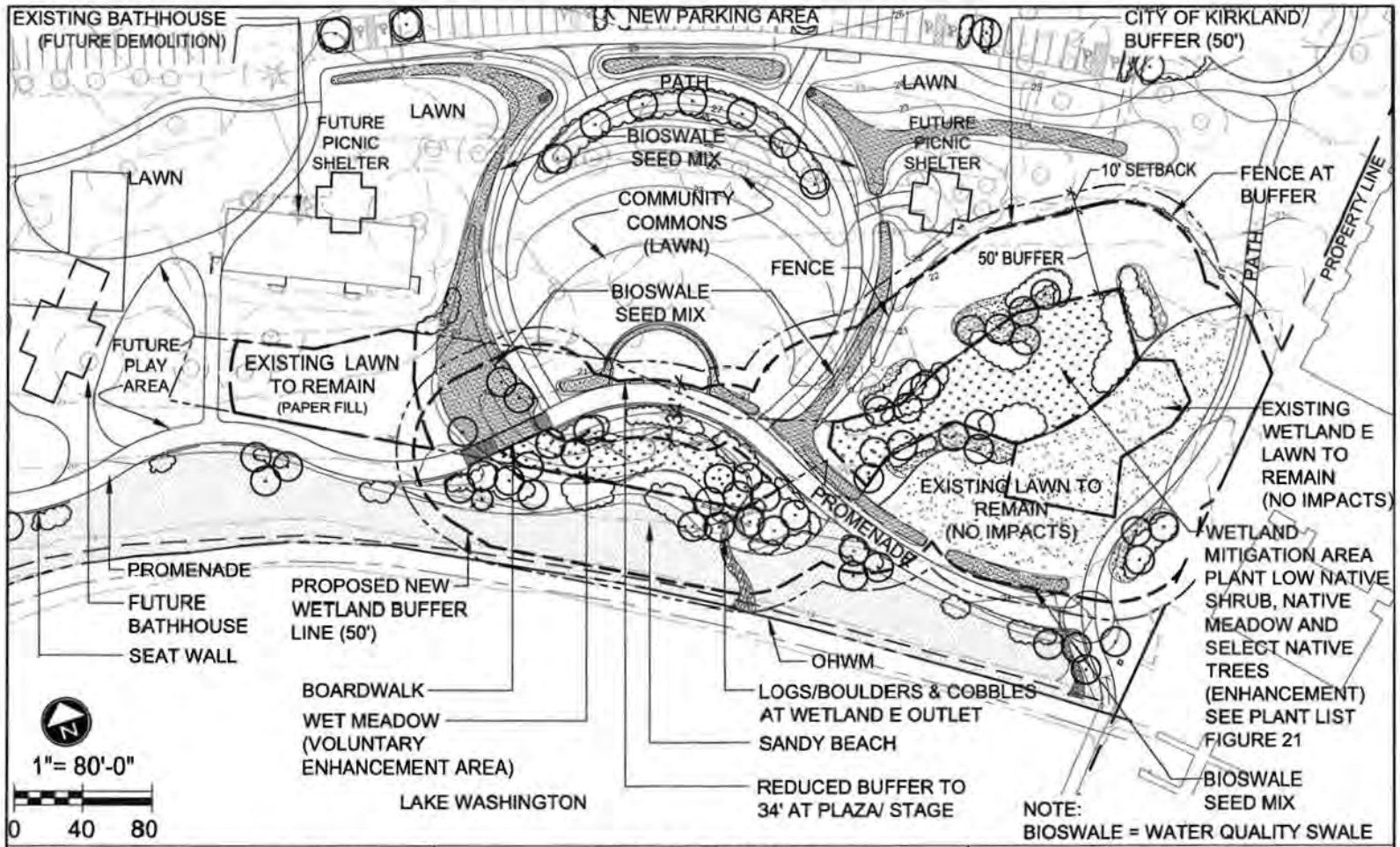


PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

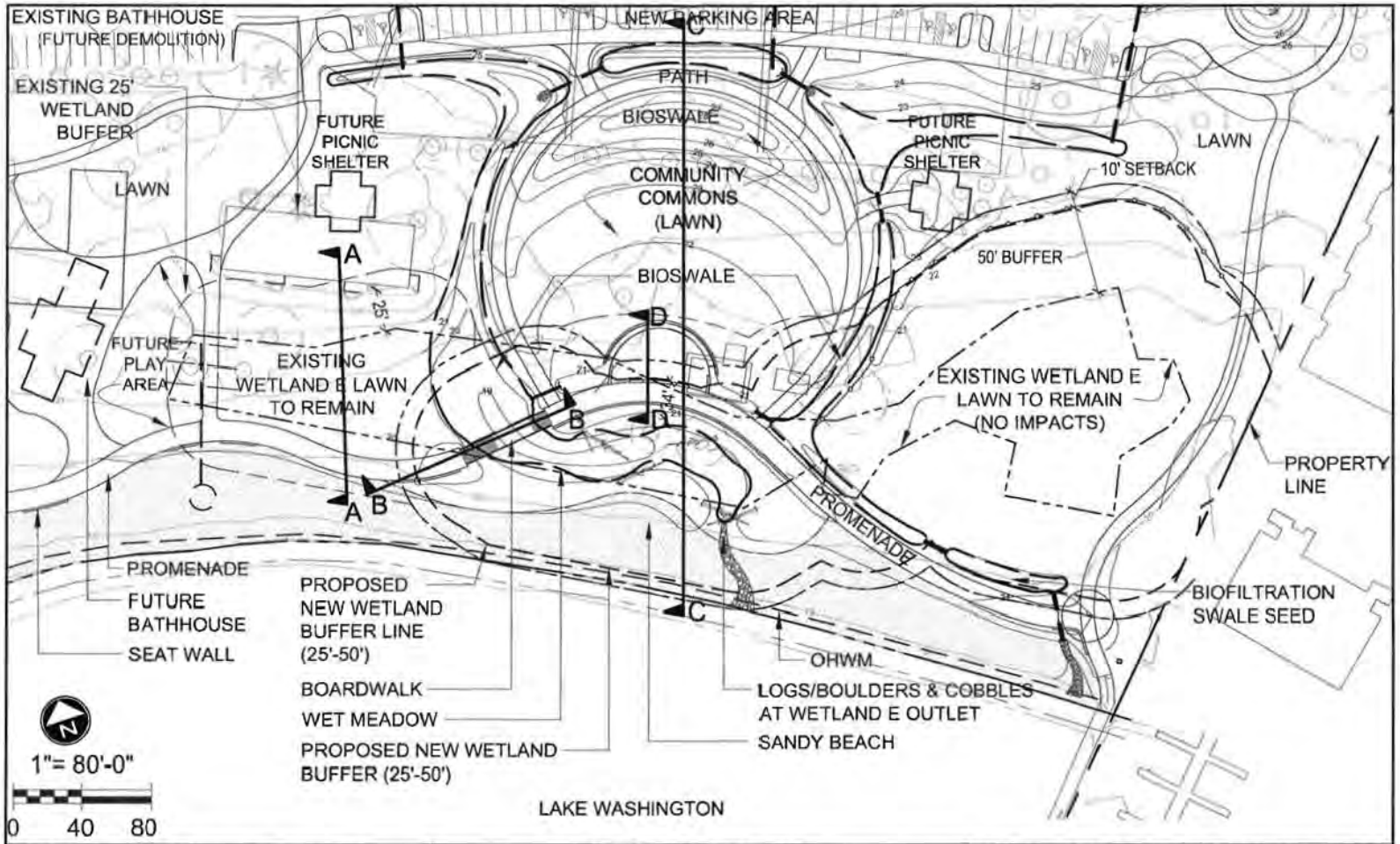
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 17 OF 25: WETLAND E PLANTING PLAN
CITY OF KIRKLAND JURISDICTION

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009 & JUNE 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC



PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

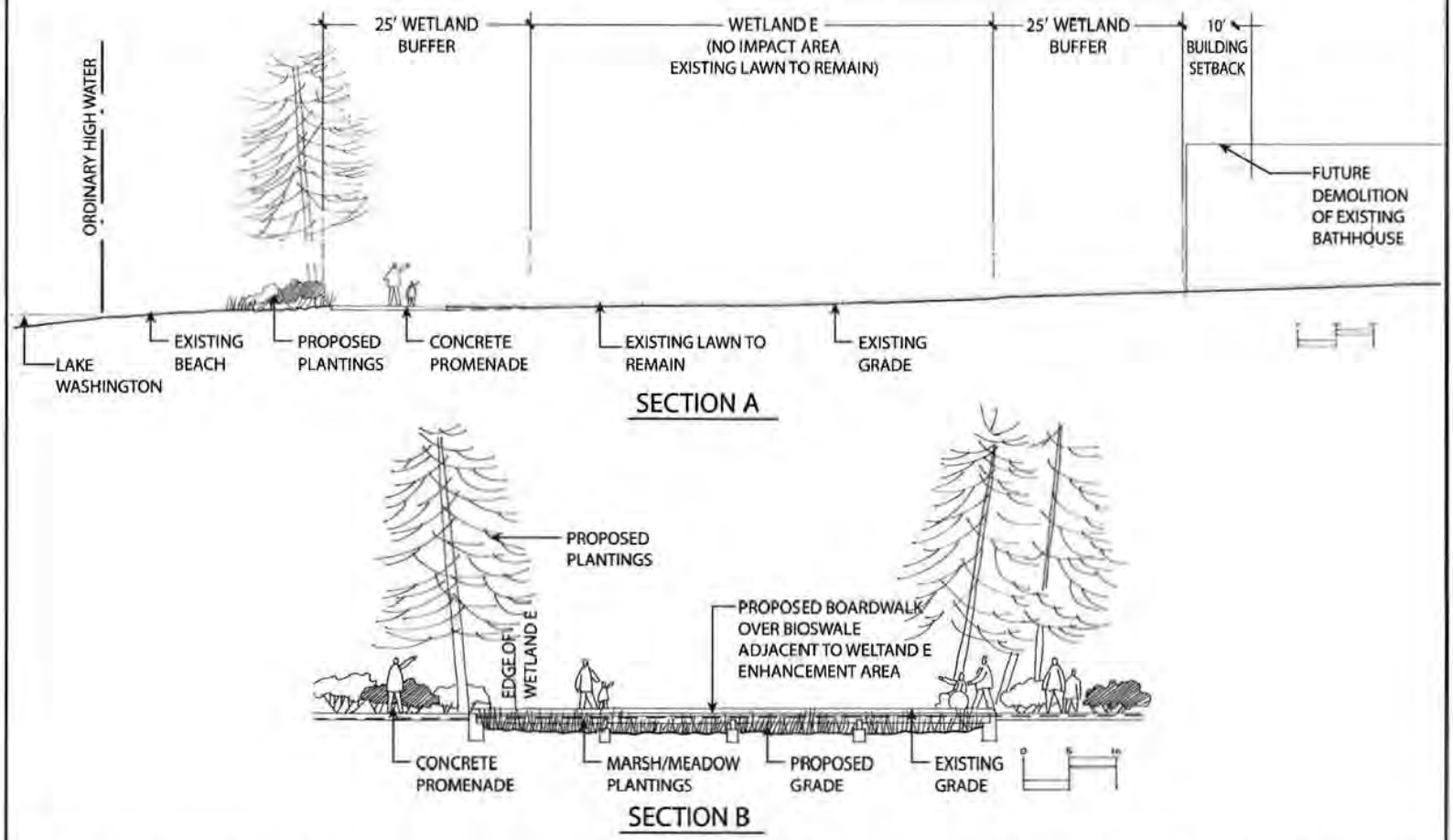
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr
Kirkland, WA 98034

FIGURE 18 OF 25: WETLAND E SECTION MAP
USACE JURISDICTION

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009 & JUNE 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC



PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

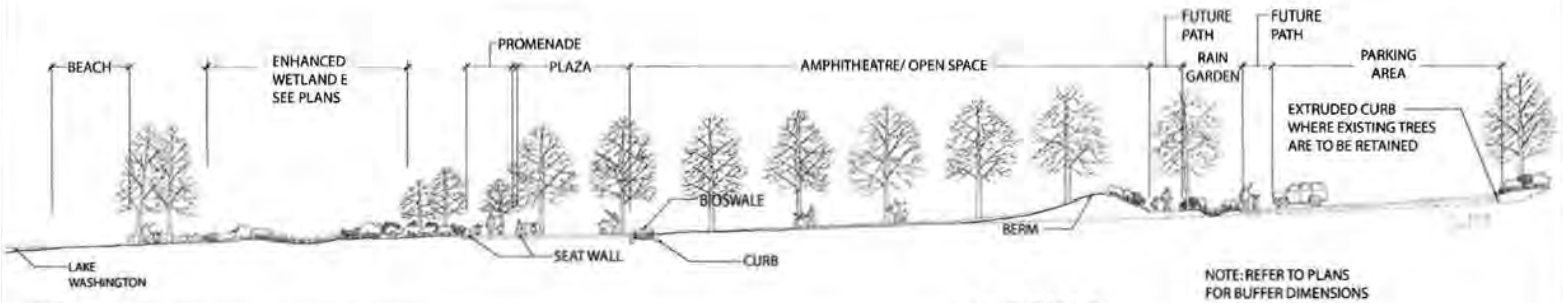
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

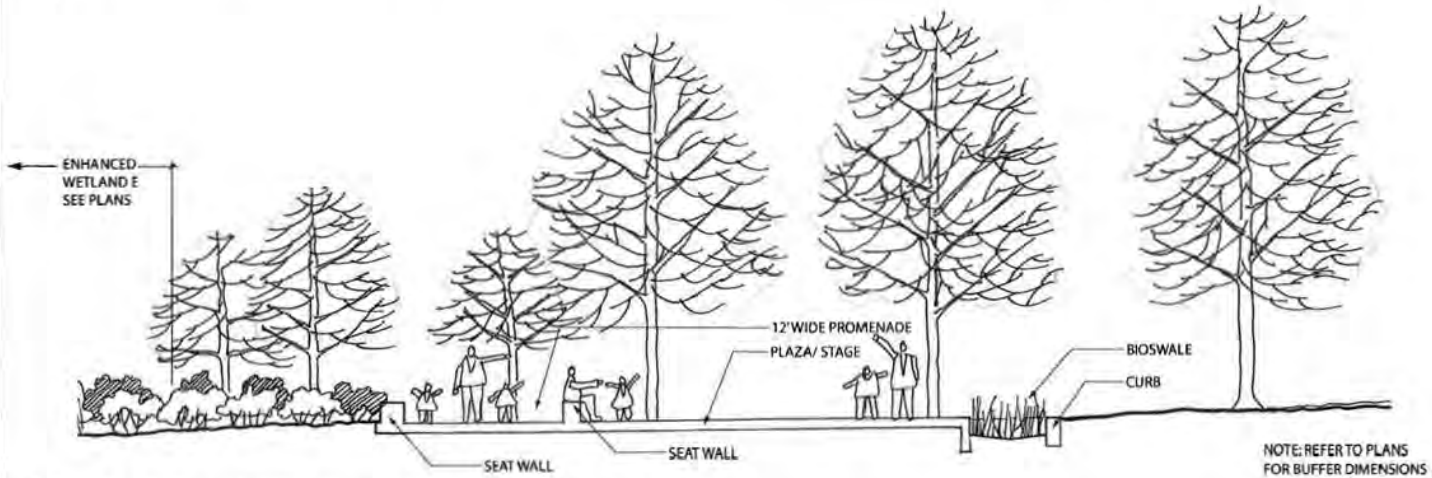
FIGURE 19A OF 25 : WETLAND E SECTIONS A & B
USACE JURSIDICTION

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: MARCH 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC



C SECTION THROUGH AMPHITHEATRE NOT TO SCALE



D SEAT WALL AT PROMENADE AND PLAZA/ STAGE NOT TO SCALE

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

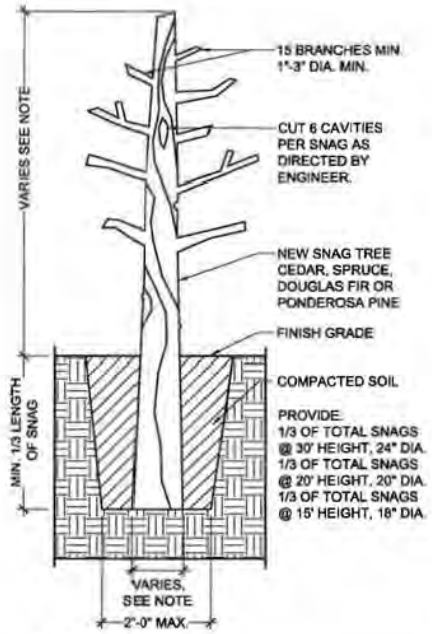
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

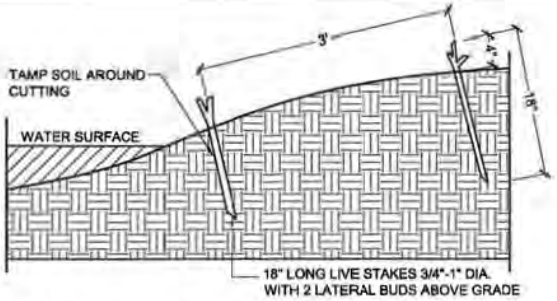
FIGURE 19B OF 25 : WETLAND E SECTIONS C & D

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

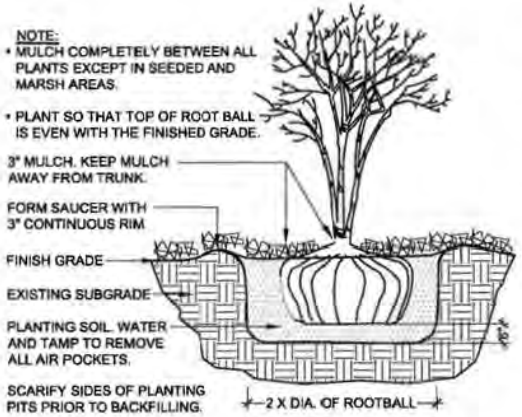
PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC



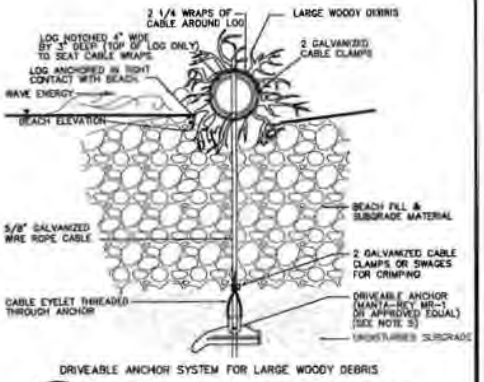
A SNAG DETAIL
NOT TO SCALE



B LIVE STAKE DETAIL
NOT TO SCALE



C TREE AND SHRUB PLANTING DETAIL
NOT TO SCALE



D HABITAT LOG/ROOTWAD DETAIL
NOT TO SCALE

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

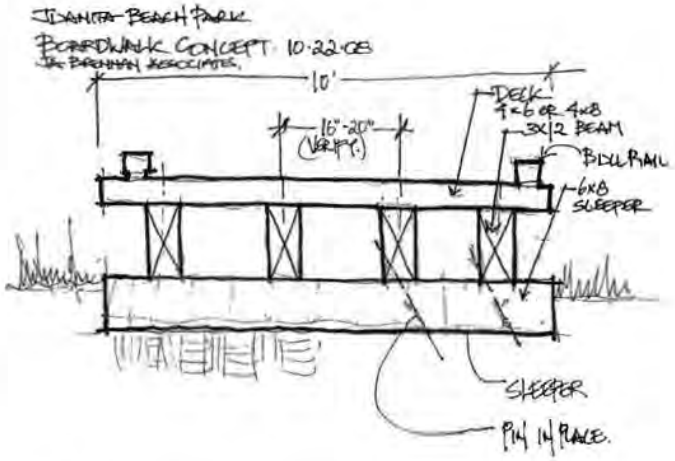
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

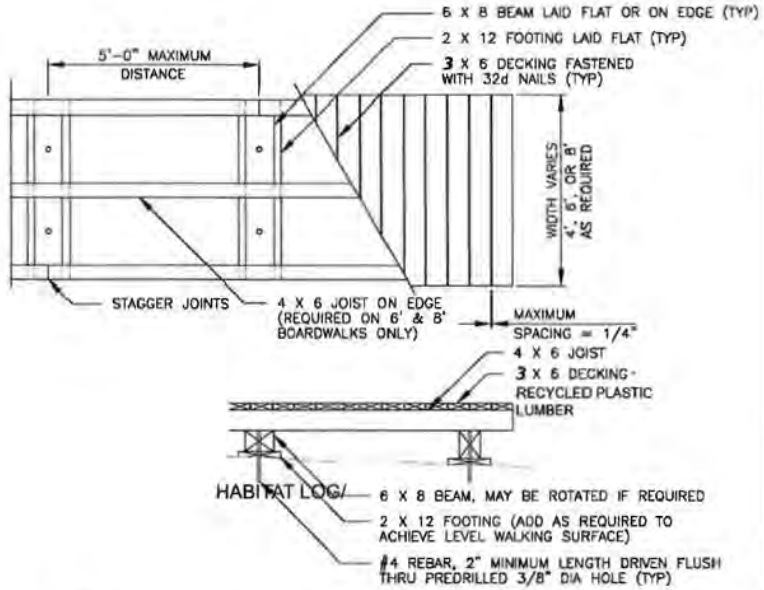
FIGURE 20A OF 25: MITIGATION DETAILS

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC



A BIOSWALE BOARDWALK SECTION
NOT TO SCALE



B BIOSWALE BOARDWALK PLAN AND SECTION
NOT TO SCALE

NOTE: BOARDWALK IS LOCATED ADJACENT TO ENHANCED WETLAND E AREA

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 20B OF 25: MITIGATION DETAILS

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC

JUANITA BEACH PARK PHASE 1

WETLANDS & BUFFERS PLANT LIST (04-06-09 REVISED 06-15-09)

UPLAND RIPARIAN BUFFER

LARGE TREES DECIDUOUS

BOTANICAL NAME	COMMON NAME
ACER MACROPHYLLUM	BIG LEAF MAPLE
BETULA PAPYRIFERA	PAPER BIRCH/CANOE BIRCH
FRAXINUS LATIFOLIA	OREGON ASH
POPULOUS TREMULOIDES	QUAKING ASPEN
POPULUS TRICHOCARPA	BLACK COTTONWOOD

SMALL TREES DECIDUOUS

BOTANICAL NAME	COMMON NAME
ACER CIRCINATUM	VINE MAPLE
BETULA OCCIDENTALIS	WATER BIRCH
CORYLUS CORNUTA	HAZELNUT
CRATAEGUS DOUGLASII	DOUGLAS HAWTHORN
PRUNUS EMARGINATA	BITTER CHERRY
SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW

LARGE CONIFER

BOTANICAL NAME	COMMON NAME
ABIES GRANDIS	GRAND FIR
PICEA SITCHENSIS	SITKA SPRUCE
PSEUDOTSUGA MENZIESII	DOUGLAS FIR
THUJA PLICATA	WESTERN RED CEDAR
TSUGA HETEROPHYLLA	WESTERN HEMLOCK

LIVESTAKE (24"-36" O.C.

BOTANICAL NAME	COMMON NAME
CORNUS STOLONIFERA	RED TWIG DOGWOOD
SALIX SITCHENSIS	SITKA WILLOW

GRASSES / NON FLOWERING PLANTS

BOTANICAL NAME	COMMON NAME
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
EQUISETUM HYEMALE	FALL SCOURING RUSH

UPLAND SEED MIX
(INCLUDE MEADOW AREA AT OXBOW MARSH)

BOTANICAL NAME	COMMON NAME
ELYMUS GLAUCUS	BLUE WILDRYE
BROMUS CARINATUS	CALIFORNIA BROME
FESTUCA RUBRA RUBRA	NATIVE RED FESCUE
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
AGROPYRON RIPARIUM	STREAMBANK WHEATGRASS

Note: Seed shall be applied at a rate of 18.55 pounds per acre. No noxious weeds will be permitted. The seed mixture shall be no less than 98% pure, and shall have a minimum germination rate of 90%. Hydroseed or broadcast seed as conditions dictate.

LARGE SHRUBS

BOTANICAL NAME	COMMON NAME
AMELANCHIER CANADENSIS	SERVICEBERRY
CORNUS STOLONIFERA	RED TWIG DOGWOOD
HOLODISCUS DISCOLOR	OCEANSPRAY
MAHONIA AQUIFOLIUM	TALL OREGON GRAPE
OEMLARIA CERASIFORMIS	INDIAN PLUM
RIBES SANGUINEUM	RED FLOWERING CURRANT
RUBUS SPECTABILIS	SALMONBERRY
SALIX HOOKERIANA	HOOKER'S WILLOW
SALIX SITCHENSIS	SITKA WILLOW
SAMBUCUS RACEMOSA	RED ELDERBERRY

SMALL SHRUBS

BOTANICAL NAME	COMMON NAME
GAULTHERIA SHALLON	SALAL
LONICERA INVOLUCRATA	BLACK TWINBERRY
MAHONIA NERVOSA	LOW OREGON GRAPE
MAHONIA REPENS	CREEPING MAHONIA
RIBES BRACTEOSUM	STINK CURRANT
RIBES SANGUINEUM	RED FLOWERING CURRANT
ROSA NUTKANA	NOOTKA ROSE
ROSA PISOCARPA	CLUSTERED WILD ROSE
ROSA WOODSII	WOOD'S ROSE
RUBUS PARVIFLORUS	THIMBLEBERRY
SYMPHORICARPOS ALBUS	SNOWBERRY
VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY
VACCINIUM PARVIFOLIUM	RED HUCKLEBERRY

BIOSWALE SEED MIX
(WATER QUALITY SWALE)

BOTANICAL NAME	COMMON NAME
FESTUCA RUBRA	NATIVE RED FESCUE
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
GLYCERIA OCCIDENTALIS	WESTERN MANNAGRASS

WETLAND PLANTS

TREES & SHRUBS

BOTANICAL NAME	COMMON NAME
CORNUS STOLONIFERA	RED TWIG DOGWOOD
FRAXINUS LATIFOLIA	OREGON ASH
LONICERA INVOLUCRATA	BLACK TWINBERRY
SALIX HOOKERIANA	HOOKER'S WILLOW
SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW
SALIX SITCHENSIS	SITKA WILLOW

WETLAND PLANTS - DEEP MARSH
(AT OXBOW MARSH LOW FLOW CHANNEL)

BOTANICAL NAME	COMMON NAME
POTAMOGETON NATANS	FLOATING BROWN-LEAF
POLYGONUM AMPHIBIUM	WATER SMARTWEED
SCIRPUS ACUTUS	HARDSTEM BULRUSH
SCIRPUS VALIDUS	SOFSTEM BULRUSH
SPARGANIUM EURYCARPUM	BROADFRUIT BUREED

WETLAND SEED MIX - EMERGENT MARSH (AT OXBOW MARSH)

BOTANICAL NAME	COMMON NAME
CAREX OBNUPTA	SLOUGH SEDGE
CAREX STIPATA	SAW BEAKED SEDGE
ELEOCHARIS PALUSTRIS	CREEPING SPIK RUSH
JUNCUS TENUIS	SLENDER RUSH
SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH

WETLAND SEED MIX - WET MEADOW (AT OXBOW MARSH & WETLAND E)

BOTANICAL NAME	COMMON NAME
CAREX OBNUPTA	SLOUGH SEDGE
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
FESTUCA RUBRA	RED FESCUE
GLYCERIA OCCIDENTALIS	WESTERN MANNGRASS
JUNCUS ENSIFOLIUS	DAGGER LEAF RUSH
SCIRPUS MICROCARPUS	SMALL FRUITED BULRUSH

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 21 OF 25: MITIGATION PLANT LIST

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009 & JUNE 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC

Date: April 14, 2009

GENERAL NOTES

JUANITA BEACH PARK, PHASE 1

1. All construction on the project site must adhere to the requirements of the plans and detailed construction specifications.

2. Regulatory requirements: Conform to applicable federal, state, and local codes and requirements for pollution, hazardous materials, safety, health, and the like.

3. Codes: conform to applicable codes for demolition work, safety of workers, control of dust, fumes and hazardous materials. Take extra care to prevent injury to users of the adjacent and on site buildings.

4. Conservation Measures and Best Management Practices

Conservation measures are incorporated into the initial project design as a proactive means for avoiding or minimizing adverse impacts associated with project activities. Best management practices (BMPs) are specific temporary or permanent activities that will be implemented during the construction phase. Conservation measures and BMPs described in this section are included in the construction plans for the proposed project. Specific measures are noted below.

Conservation Measures

•Limit construction and demolition activities to dry (non-raining) periods.

•Require the contractor to implement the Temporary Erosion and Sedimentation Control (TESC) plan, and to follow King County (1998) Surface Water Design Manual.

•The contractor will be required to prepare an emergency spill containment kit, to be located on the construction site at all times, and prepare a Spill Prevention Control and Countermeasures (SPCC) plan, addressing prevention and clean up of accidental spills.

•Require the contractor to follow the hydraulic code rules that may apply to this project, as described in the Washington Administrative Code (WAC) 220-110, and as required in the hydraulic project approval permit. Maintain copies of all permits on site at all times during construction.

•Fill any voids left by the removal of rock/concrete slab armoring with clean, naturally occurring gravel material meeting specific gradation requirements (e.g., a gravel/sand mix with limited fines less than 1 millimeter in diameter).

Best Management Practices

• Install temporary and permanent erosion and sedimentation control measures including silt fences, temporary mulching, and straw bales, as indicated in the design plans. Inspect and maintain TESC facilities at inactive areas a minimum of once a week and within 24 hours following a storm event. Remove TESC facilities when no longer required as approved by City of Kirkland.

•Mark the clearing and/or excavation limits in the field prior to vegetation removal and other construction activities.

•Cover all land areas that will be left undisturbed for more than 7 days with an approved soil covering practice whether at final grade or not.

•Revegetate banks that are disturbed during project construction.

•In accordance with the Revised Code of Washington (RCW) 77.57.010 any device used for diverting water from a fish-bearing stream must be equipped with a fish guard to prevent passage of fish into the diversion device. The diversion pipe will therefore be screened to prevent fish from entering the system. Screen maintenance will be adequate to prevent injury or entrapment of juvenile fish, and the screen will remain in place as long as the diversion is in place.

•Install sandbag coffer dam or similar devices at the inlet and downstream end of the diversion pipeline to divert the entire flow through the pipe and prevent backwater from entering the work area.

•Prior to dewatering the project reach, the contractor shall have a qualified fisheries biologist capture any fish found in the work area using non-invasive netting techniques and relocate them to the nearest free-flowing water.

•Upon completion of dredging for the installation of irrigation pipes, backfill material so that there are no pits, potholes, or large depressions that could strand fish.

•Inspect, clean, and maintain all equipment to prevent the loss of petroleum products waterward of the ordinary high water line.

•Mud and dirt control: prevent mud and dirt from being conveyed onto the existing paved parking lot and public streets and sidewalks. Provide washing stations, mats, brooms, brushes, and other necessary tools and equipment as required to remove mud and dirt from vehicles. Promptly remove all mud and dirt deposited onto public streets and paved parking and walking areas.

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 22a OF 25: GENERAL NOTES

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC

Erosion/Sedimentation Control - Plan Notes

1. The approved Construction Sequence shall be as follows:
a. Conduct pre-construction meeting.
b. Flag or fence clearing limits.
c. Post sign with name and phone number of TESC supervisor.
d. Install catch basin protection if required.
e. Grade and install construction entrance(s).
f. Install perimeter protection (silt fence, brush barrier, etc.).
g. Construct sediment ponds and traps.
h. Grade and stabilize construction roads.
i. Construct surface water controls (interceptor dikes, pipe slope drains, etc.) simultaneously with clearing and grading for project development.
j. Maintain erosion control measure in accordance with City of Kirkland Standards and manufacturers recommendations.
k. Relocate erosion control measures or install new measures so that as site conditions change, the erosion and sediment control is always in accordance with the City TESC minimum requirements.
l. Cover all areas within the specified time frame with straw, wood fiber mulch, compost, plastic sheeting, crushed rock or equivalent.
m. Stabilize all areas that reach final grade within 7 days.
n. Seed or mulch any areas to remain unworked for more than 30 days.
o. Upon completion of the project, all disturbed areas must be stabilized and best management practices removed if appropriate.

2. Approval of this erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).

3. The implementation of this ESC plan and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the Permittee/Contractor until all construction is approved.

4. The boundaries of the clearing limits shown on this plan shall be set by survey and clearly flagged in the field by a clearing control fence prior to construction. During the construction period, no disturbance or removal of any ground cover beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the Permittee/Contractor for the duration of construction.

5. The TESC facilities shown on this plan must be constructed prior to or in conjunction with all clearing and grading activities in such a manner as to ensure that sediment-laden water does not enter the drainage system or violate applicable water standards. Wherever possible, maintain natural vegetation for silt control.

6. The TESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these TESC facilities shall be upgraded (e.g., additional sumps, relocation of ditches and silt fences, etc.) as needed for unexpected storm events. Additionally, more TESC facilities may be required to ensure complete siltation control. Therefore, during the course of construction it shall be the obligation and responsibility of the Contractor to address any new conditions that may be created by his activities and to provide additional facilities over and above the minimum requirements as may be needed.

7. The TESC facilities shall be inspected by the Permittee/Contractor daily during non-rainfall periods, every hour (daylight) during a rainfall event, and at the end of every rainfall, and maintained as necessary to ensure their continued functioning. In addition, temporary siltation ponds and all temporary siltation controls shall be maintained in a satisfactory condition until such time that clearing and/or construction is completed, permanent drainage facilities are operational, and the potential for erosion has passed. Written records shall be kept documenting the reviews of the TESC facilities.

8. The TESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within 48 hours following a storm event.

9. All denuded soils must be stabilized with an approved TESC method (e.g. seeding, mulching, plastic covering, crushed rock) within the following timelines:
April 1 to October 31 soils must be stabilized within 7 days of grading.
November 1 to March 31 soils must be stabilized within 2 days of grading.

10. At no time shall more than 1' of sediment be allowed to accumulate within a catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system.

11. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wash pads, may be required to ensure that all paved areas are kept clean for the duration of the project.

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 22B OF 25: GENERAL NOTES

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC

12. Any permanent retention/detention facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the permanent facility is to function ultimately as an infiltration or dispersion system, the facility shall not be used as a temporary settling basin. No underground detention tank, detention vault, or system which backs under or into a pond shall be used as a temporary settling basin.

13. Where seeding for temporary erosion control is required, fast germinating grasses shall be applied at an appropriate rate (example: annual or perennial rye applied at approximately 80 pounds per acre).

14. Where straw mulch is required for temporary erosion control, it shall be applied at a minimum thickness of 2".

15. All erosion/sedimentation control ponds with a dead storage depth exceeding 6" must have a perimeter fence with a minimum height of 3'.

16. All work and materials shall be in accordance with City of Kirkland standards and specifications.

17. The TESC facilities shall be constructed in accordance with the details on the approved plans. Locations may be moved to suit field conditions, subject to approval by the Engineer and the City of Kirkland Inspector.

18. A copy of the approved erosion control plans must be on the job site whenever construction is in progress.

19. All lots adjoining or having any native growth protection easements (NGPE) shall have a 4' high temporary construction fence (cyclone or plastic mesh) separating the lot (or buildable portions of the lot) from the area restricted by the NGPE and shall be installed prior to any grading or clearing and remain in place until construction is complete.

20. Clearing limits shall be delineated with a clearing control fence. The clearing control fence shall consist of a 6-ft. high chain link fence adjacent the drip line of trees to be saved, wetland or stream buffers, and sensitive slopes. Clearing control fences along wetland or stream buffers or upslope of sensitive slopes shall be accompanied by an erosion control fence. If approved by the City, a four-foot high orange mesh clearing control fence may be used to delineate clearing limits in all other areas.

21. Off-site streets must be kept clean at all times. If dirt is deposited on the public street system, the street shall be immediately cleaned with power sweeper or other equipment. All vehicles shall leave the site by way of the construction entrance and shall be cleaned of all dirt that would be deposited on the public streets.

22. Any catch basins collecting runoff from the site, whether they are on or off the site, shall have their grates covered with filter fabric during construction. Catch basins directly downstream of the construction entrance or any other catch basin as determined by the City Inspector shall be protected with a filter fabric sock or equivalent.

23. The washed gravel backfill adjacent to the filter fabric fence shall be replaced and the filter fabric cleaned if it is nonfunctional by excessive silt accumulation as determined by the City of Kirkland. Also, all interceptor swales shall be cleaned if silt accumulation exceeds one-quarter depth.

24. Rock for erosion protection of roadway ditches, where required, must be of sound quarry rock, placed to a depth of 1' and must meet the following specifications: 4"-8" rock/40%-70% passing; 2"-4" rock/30%-40% passing; and 1"-2" rock/10%-20% passing.

25. If any part(s) of the clearing limit boundary or temporary erosion/sedimentation control plan is/are damaged, it shall be repaired immediately.

26. All properties adjacent to the project site shall be protected from sediment deposition and runoff.

27. Do not flush concrete by-products or trucks near or into the storm drainage system. If exposed aggregate is flushed into the storm system, it could mean re-cleaning the entire downstream storm system, or possibly re-laying the storm line.

28. Prior to the October 1 of each year (the beginning of the wet season), all disturbed areas shall be reviewed to identify which ones can be seeded in preparation for the winter rains. The identified disturbed area shall be seeded within one week after October 1. A site plan depicting the areas to be seeded and the areas to remain uncovered shall be submitted to the Public Works Construction Inspector. The Inspector can require seeding of additional areas in order to protect surface waters, adjacent properties, or drainage facilities.

29. If a sediment pond is not proposed, a baker tank or other temporary ground and/or water storage tank may be required during construction, depending on weather conditions.

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality. DATUM: Horizontal NAD 83(91) Vertical NAVD 88 ADJACENT PROPERTY OWNERS: See Figure 25 LATTITUDE: 47°42'18.45"N LONGITUTE: 122°12'46.92"W	**CITY OF KIRKLAND** **PARKS AND RECREATION DEPARTMENT** JUANITA BEACH PARK PHASE 1 DEVELOPMENT REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034 **FIGURE 22C OF 25: GENERAL NOTES**	**PROPOSED:** JUANITA BEACH PARK PHASE 1 DEVELOPMENT **IN:** CITY OF KIRKLAND **AT:** NE JUANITA DRIVE **COUNTY OF:** KING STATE: WA **APPL. BY:** CITY OF KIRKLAND PARKS **DATE:** NOVEMBER 2008 **REVISED:** APRIL 2009 PREPARED BY: **J.A. BRENNAN ASSOCIATES, PLLC**

5. Earthwork

•Earthwork should be accomplished in small sections to minimize exposure to wet conditions. That is, each section should be small enough so the removal of unsuitable soils and placement and compaction of clean structural fill can be accomplished on the same day. The size of construction equipment may have to be limited to prevent soil disturbance. It may be necessary to excavate soils with a backhoe, or equivalent, located so that equipment does not traffic over the excavated area. Subgrade disturbance caused by equipment traffic shall be minimized.

•Excavation for wetlands: excavate wetlands to elevations and grades shown on drawings. Elevation tolerances for wetland excavation are +6 inches and - (minus) 0 inches. Excavation below the elevations and grades shown will not be paid. The contractor shall plan for working in wet and muddy conditions during this procedure.

Compaction

General: Control soil compaction during construction providing minimum percentage of density specified for area classification.

Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages for maximum dry density and within 3 percent of optimum moisture content for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698; and not less than the following percentages of relative density; determined in accordance with ASTM 2049, for soils which will not exhibit a well defined moisture density relationship (cohesionless soils).

Compact Planting Areas, and Oxbow marsh to: 65%

Compact Berm Material and Meadow Areas to: 85%

6. Site Preparation

•Clear and grub all proposed landscape restoration areas. Ensure that all roots from invasive plants have been removed. Save and protect all native plant material along the creek bank. Save and protect all existing trees shown to remain within stream buffer enhancement project limits/clearing limits. Save and protect all vegetation beyond project limits/clearing limits. Use plastic construction fencing for tree protection as directed.

7. Irrigation system

•Provide a complete and operable system with required mechanical and electrical work.

•Codes and regulations: provide all work specified herein and indicated on drawings in strict accordance with applicable local building, electrical, plumbing, and health codes.

8. Planting General Requirements

•All landscape areas shall be graded so as to provide positive drainage. Any areas which appear to have any potential drainage problems shall be brought to the attention of the owner immediately. Areas shall be graded such that new grades meet and blend naturally with existing grades.

•All landscape areas shall be amended with 2" of organic amendment and cultivated (tilled or scarified) to a depth of 4" to create a homogenous blend of soil.

Soil and Soil Amendments

• Organic Amendment: Shall consist of composted yard debris or organic waste material composted for a minimum of 12 months.

1. Compost shall consist of 100% recycled content. In addition, the organic material shall have the following physical characteristics:
   - a. Shall be screened using a sieve no finer than 5/16 inch and no greater than 7/16 inch.
   - b. Shall pass a standard cress test for seed germination (90% ination compared to standard).
   - c. Shall have a pH from 5.5 to 7.5.
   - d. Shall have a maximum electrical conductivity of 3.0 ohms/cm.
   - e. Shall have a maximum carbon to nitrogen ratio of 40:1.
   - f. Shall be certified by the Process to Further Reduce Pathogens FR guidelines for hot composting as established by the United States Environmental Protection Agency
2. Submittals: Contractor shall notify owner of the source of supply and provide a two (2) pound sample for approval before installation.
3. Acceptable Sources:
   - a. Astec, LLC, Bellevue, WA
   - b. Cedar Grove Compost Company, Maple Valley, WA
   - c. Northwest Cascade, Puyallup, WA
   - d. Lloyds Sand and Gravel, Federal Way, WA

• Container plant materials:

1. All new container plant materials shall be supplemented, at time of planting, with Roots Inc."mycorrhizaROOTS" mycorrhiza inoculant. The "mycorrhizaROOTS" shall be mixed per the manufacturers recommendation, and applied prior to removing plants from the container. Each container shall be flooded with the mycorrhiza solution to achieve a saturated root and soil mass.
2. Planting Soil backfill: Two-way topsoil consisting of 2/3 sandy loam, 1/3 composted organic material. Shall consist of 67% sandy loam and 33% composted organic material by volume. The soil shall meet the following require ments:
   - a. Soil shall be sandy loam or loamy sand consisting largely of sand, but with enough silt and clay present to give it a small amount of stability. Individual sand grains can be seen and felt readily. On squeezing in the hand when dry, it shall fall apart when the pressure is released; on squeezing when moist, it shall form a cast that will not only hold its shape when the pressure is released, but shall withstand careful handling without breaking.

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 22D OF 25: GENERAL NOTES

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING **STATE:** WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BRENNAN ASSOCIATES, PLLC

(Planting General requirements continued.)

•All disturbed areas shall be mulched and planted with specified plant material or seeded with the specified seed mix as indicated in the Plans.

•Meet requirements of American standard for nursery stock, ANSI Z60.1 2004 published by the American Nursery & Landscape Association except as otherwise supplemented or modified under this section.

•Excavate planting pit approximately 1.5x as deep as the root mass provided with the plant and twice as wide.

•Planting Backfill

To the excavated soil, thoroughly incorporate the manufacturer's recommended rate for specified organic amendment (mycorrhizae).

•Backfill the planting pit with sufficient Planting Backfill to result in the plant root crown being flush with the surrounding grade.

Gently disturb the root ball of the plant manually, to loosen tightly wound or matted roots.

Set the plant plumb in the planting pit and backfill with Planting Backfill. By hand, compact the backfill to eliminate air pockets.

Water plants thoroughly.

9. Layout

•Layout of all work shall be surveyed and staked as required. Maintain all stakes. If necessary to disturb existing stakes, re-establish in a safe place. Notify engineer a minimum of 3 days prior to excavation of work areas. Engineer shall inspect staking and layout of work prior to excavation.

10. Maintenance

•General: maintain all planting, starting with the planting operations, and continuing until final acceptance by owner.

•Maintenance shall include all watering, weeding, mowing, cultivating, spraying, and pruning necessary to keep the plant materials in a healthy growing condition and to keep the planted areas neat and attractive throughout the maintenance period.

•No herbicide or pesticides may be used on site without the prior approval of the owner, and prior to consulting state regulations effecting chemical use adjacent to a fish bearing stream (or lake).

11. Wetland Structures

•Locate to create natural appearance as directed by Engineer.

•Habitat logs/root wads shall consist of cedar or fir logs of the dimensions shown on the drawings. The habitat logs shall be anchored and installed as shown on the drawings. Habitat logs/ root wads to be located and placed per plan.

•Habitat snags shall consist of cedar, spruce or Douglas fir logs of the dimensions shown on the drawings. Install habitat snags as shown on drawings. Habitat snags to be located and placed per plan.

•Amphibian Stick Bundle shall be constructed as shown on the drawings. Use of 7 willow sticks from on site, of the dimensions shown on the drawings, will placed to create an enclosed barrier, to retain soil and raise the planting medium.

12. Oxbow Marsh Low Flow Channel – Stream Bed Gravel specification

Streambed gravel shall be clean, naturally occurring gravel material meeting the following gradation requirements:

Screen Size	Gradation
5"	100
4"	95-100
3"	90-95
1 ½"	65-80
1 ¼"	45-60
No.4	22-46
#200	0-2

13. Footbridges and Railings

•Generally, Footbridges are wooden structures constructed with either post and beam construction for sections over 14" above grade or mud-sill construction for sections under 14" above grade. Sections more than 30" above grade require a handrail.

•Refer to other Specifications of the project for details regarding installation of all timbers, lumber, and fasteners.

14. Wood Construction

•Quality standards and lumber grading rules shall comply with the following; Western Wood Products Association (WWPA) "Standard Grading Rules For Western Lumber", West Coast Lumber Inspection Bureau (WCLIB) "No. 16 Standard Grading And Dressing Rules For West Coast Lumber", U.S. Department Of Commerce Product Standard PS20

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 22E OF 25: GENERAL NOTES

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BREHNAN ASSOCIATES, PLLC

(Wood Construction continued.)

•All work is to be pre-formed by experienced carpenters.

•All hardware to be hot dipped galvanized.

•All lumber shall be hem-fir pressure treated exposed lumber with green tone "Outdoor Wood" (Koppers process) or "Sun Wood" (Osmose process) without incisions. Sand to a smooth finish any potential contact surfaces to remove splinters, sharp or rough areas. Oil stain all wood transparent black. Color and brand to be approved by owner.

•Trex wood-polymer composite lumber to be provided for bridge and boardwalk decking.

15. Concrete Work

•All concrete shall be 3000 psi 28 day cure strength in accordance with ASTM C94. Portland cement shall comply with ASTM A150, type 1. Fine and coarse aggregates shall comply with ASTM C33.

•All concrete, unless otherwise indicated shall be batched and mixed at a City of Kirkland approved plant.

•Concrete placement shall comply with ASTM C94. Moisten prepared grade immediately before placing concrete. Use all means necessary to protect concrete material before, after and during placement. Cure by keeping continuously moist for not less than 72 hours and until forms are removed.

•Following placement, strike off concrete to conform to the cross section shown on the drawings.

•Coordinate with other suppliers the anchors or supports which may need to be installed. This would include such items as the picnic tables, trash receptacle, and any other site furniture.

•All form work is to be inspected by owner prior to pouring concrete.

•Forms shall be true and free from play. All formwork shall comply with ACI 347.

•Form lumber shall be standard dimensions and of such quality as to meet the requirement of stresses applied.

•Reinforcing steel shall comply with ASTM A615, grade 60, FY=60000 psi. Detail reinforcing steel in accordance with ACI 315. Steel wire shall comply with ASTM A82, plain cold-drawn steel.

•Place all steel reinforcement accurately and held firmly in the position shown on the drawing during the placing and setting of concrete. Provide a minimum of 3" covering of concrete for all formed surfaces.

16. Cleanup

•Remove all debris, such as cans, surplus materials, and trimmings, from the site and legally dispose of. Neatly dress and finish planting areas, and flush all paved areas, adjacent walls, etc. free of topsoil and mulch.

PURPOSE: Develop a lakefront promenade with seating walls, stream enhancements and park enhancements to improve swimming beach water quality.

DATUM: Horizontal NAD 83(91)
Vertical NAVD 88

ADJACENT PROPERTY OWNERS: See Figure 25

LATTITUDE: 47°42'18.45"N
LONGITUTE: 122°12'46.92"W

CITY OF KIRKLAND
PARKS AND RECREATION DEPARTMENT

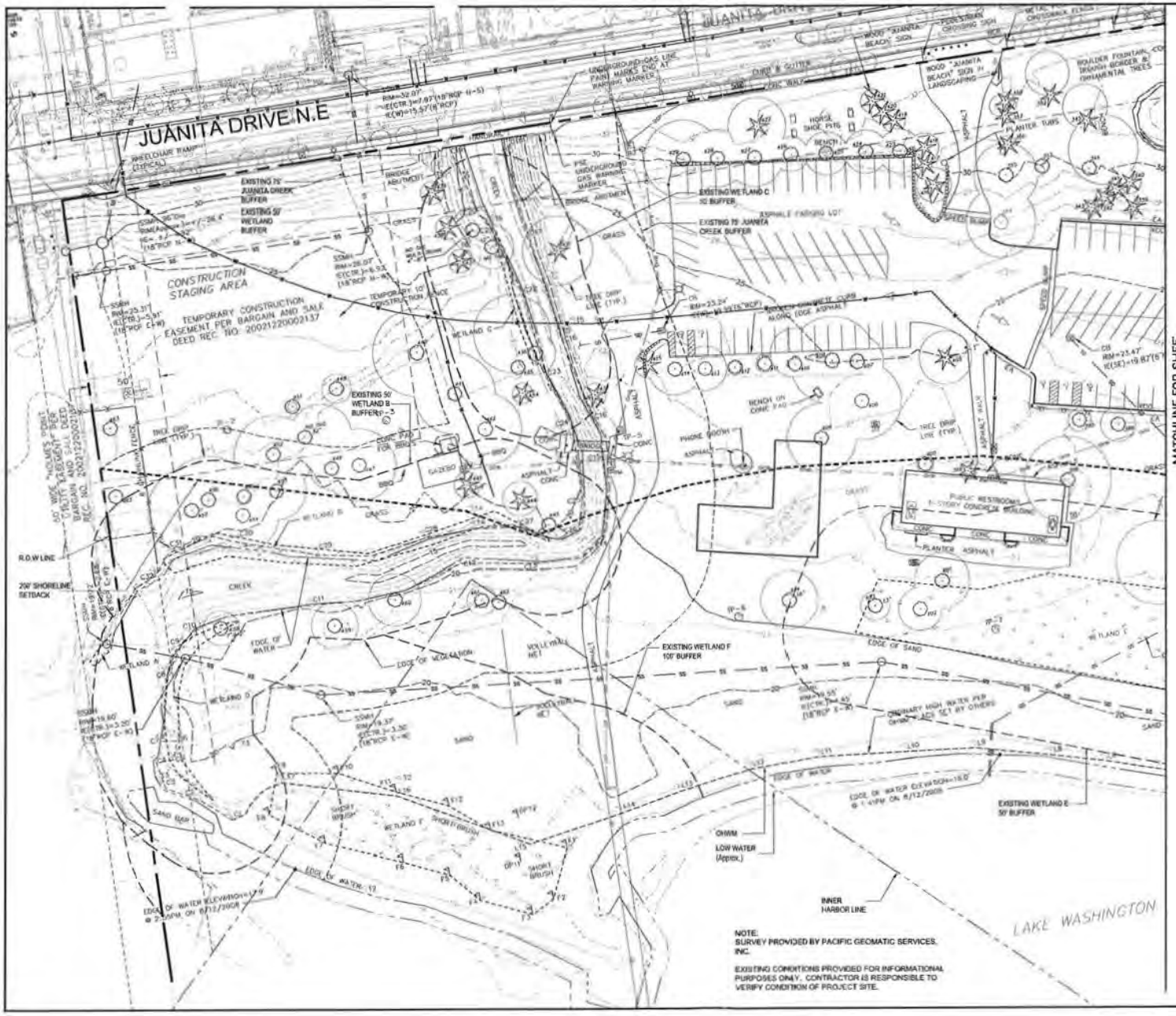
JUANITA BEACH PARK PHASE 1 DEVELOPMENT

REFERENCE #: NWS-2008-1222-NO ADDRESS: 9703 NE Juanita Dr Kirkland, WA 98034

FIGURE 22F OF 25: GENERAL NOTES

PROPOSED: JUANITA BEACH PARK PHASE 1 DEVELOPMENT
IN: CITY OF KIRKLAND
AT: NE JUANITA DRIVE
COUNTY OF: KING STATE: WA
APPL. BY: CITY OF KIRKLAND PARKS
DATE: NOVEMBER 2008
REVISED: APRIL 2009

PREPARED BY:
J.A. BREIINAN ASSOCIATES, PLLC



NOTE:
SURVEY PROVIDED BY PACIFIC GEOMATIC SERVICES, INC.

EXISTING CONDITIONS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY CONDITION OF PROJECT SITE.

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: EXISTING CONDITIONS

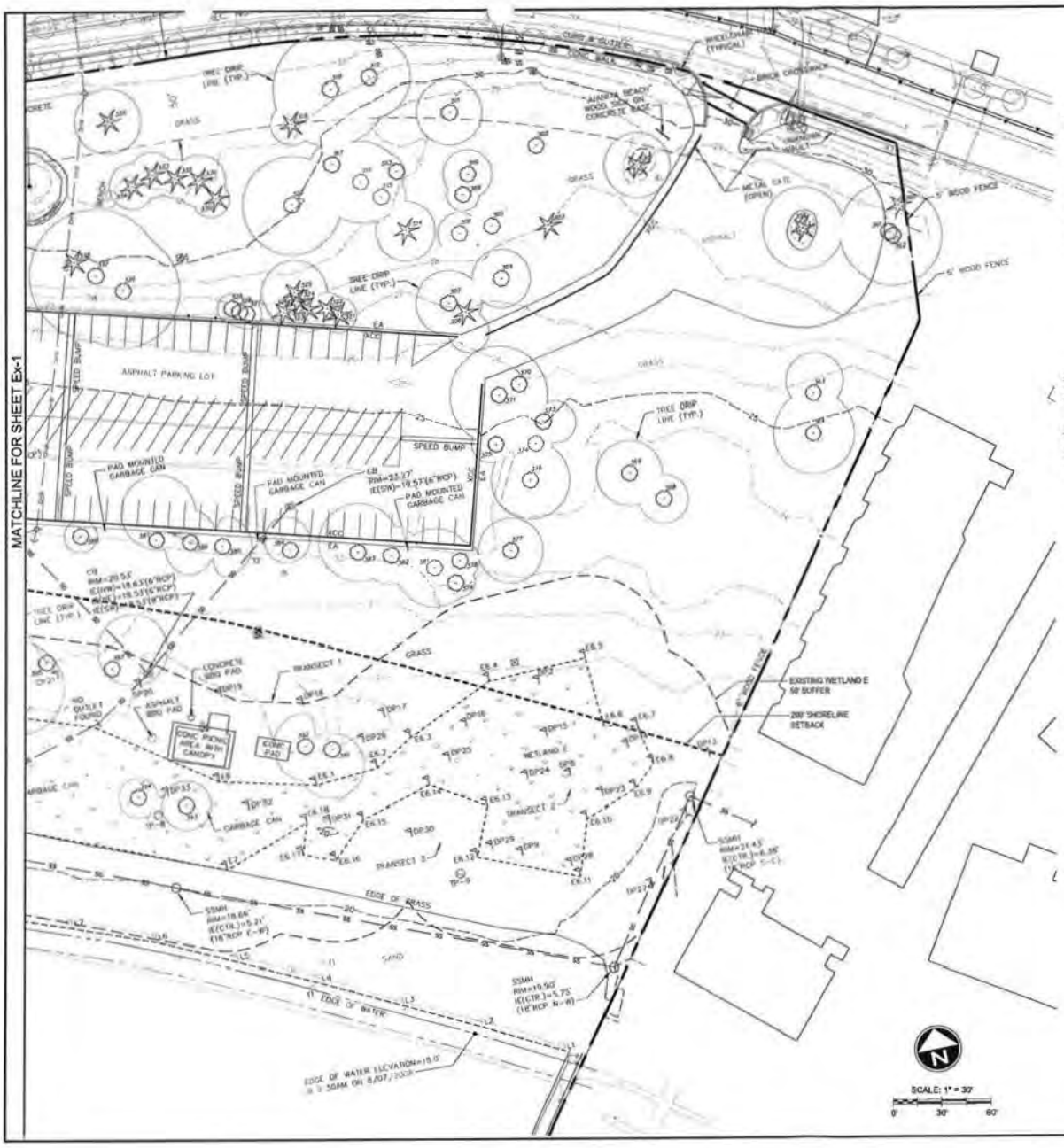
j.a.brennan
associates plc
110 S King Street, Suite 200
Seattle, WA 98104
t 206.583.0620 f 206.583.0623
www.jabrennan.net

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.

SHEET NO.
Ex-1
X OF X SHEETS

ENCLOSURE 9



>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
NOT LESS THAN TWO OR MORE THAN TEN BUSINESS DAYS PRIOR TO COMMENCING EXCAVATION OR DEMOLITION. SECURE THE SERVICES OF A COMMERCIAL UNDERGROUND UTILITIES LOCATOR SERVICE TO VERIFY NO CONFLICTS IN IMPROVEMENTS THAT MAY NOT BE INDICATED ON THE DRAWINGS.
>>800 424 5555<<

SURVEYORS NOTES:

1. ALL UNDERGROUND UTILITY LOCATIONS ARE BASED ON RECORDED CHANGES OF DIMENSIONS AND VISUAL PAINT MARKED PLACES OF SERVICE. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION PROVIDED.

2. THE BOUNDARY LINES SHOWN HEREON ARE THE RECONSTRUCTION POSITIONS ONLY AND NOT BASED ON A BOUNDARY RETRACEMENT SURVEY BY PACIFIC GEOMATIC SERVICES, INC. THE BOUNDARY LINES SHOWN IN ELECTRONIC AND COUNTY ASSESSOR DATA AS SHOWN ON PRELIMINARY SURVEYS.

3. THE SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT, WHICH MAY REVEAL INTERESTS AND EASEMENTS OF RECORD. INTERESTS NOT SHOWN ARE UNKNOWN.

4. WETLANDS SHOWN HEREON WERE DELINEATED BY WETLAND SCIENCE IN FEBRUARY 2008 IN ACCORDANCE WITH PREVIOUS MAPPING.

5. WETLAND LINE WITH BUFFER ZONES WERE DELINEATED BY WETLAND SCIENCE BETWEEN SEPTEMBER 30 AND AUGUST 31, 2008.

6. THESE WERE CHECKED BY CITY OF KIRKLAND INSPECTOR WHEN PRESENT ON AUGUST 31, 2008. [illegible] REFER TO THE INFORMATION ON THE FINAL RECONSTRUCTED SURVEY.

STATISTICS:

EQUIPMENT: PENTAX 2000 ROBOTIC TOTAL STATION
TRIMBLE GPS RTK
NR ENGINEERING FIELD PAINTING
MEETS NR EXCEEDS SURVEY STANDARDS AS BELOW
[illegible]
INITIAL SURVEY WORK COMPLETED IN MONTH OF 2008.
ADDITIONAL WETLANDS / BUFFER DELINEATED IN SEPTEMBER OF 2008

HORIZONTAL DATUM:

THE HORIZONTAL DATUM FOR THIS SURVEY IS AND IS BASED WASHINGTON STATE PLANE NORTH ZONE BASED ON THE WASHINGTON STATE REFERENCE NETWORK, A REGIONAL COOPERATIVE OF GPS REFERENCE STATIONS, AND CITY OF KIRKLAND SURVEY CONTROL POINT 51.

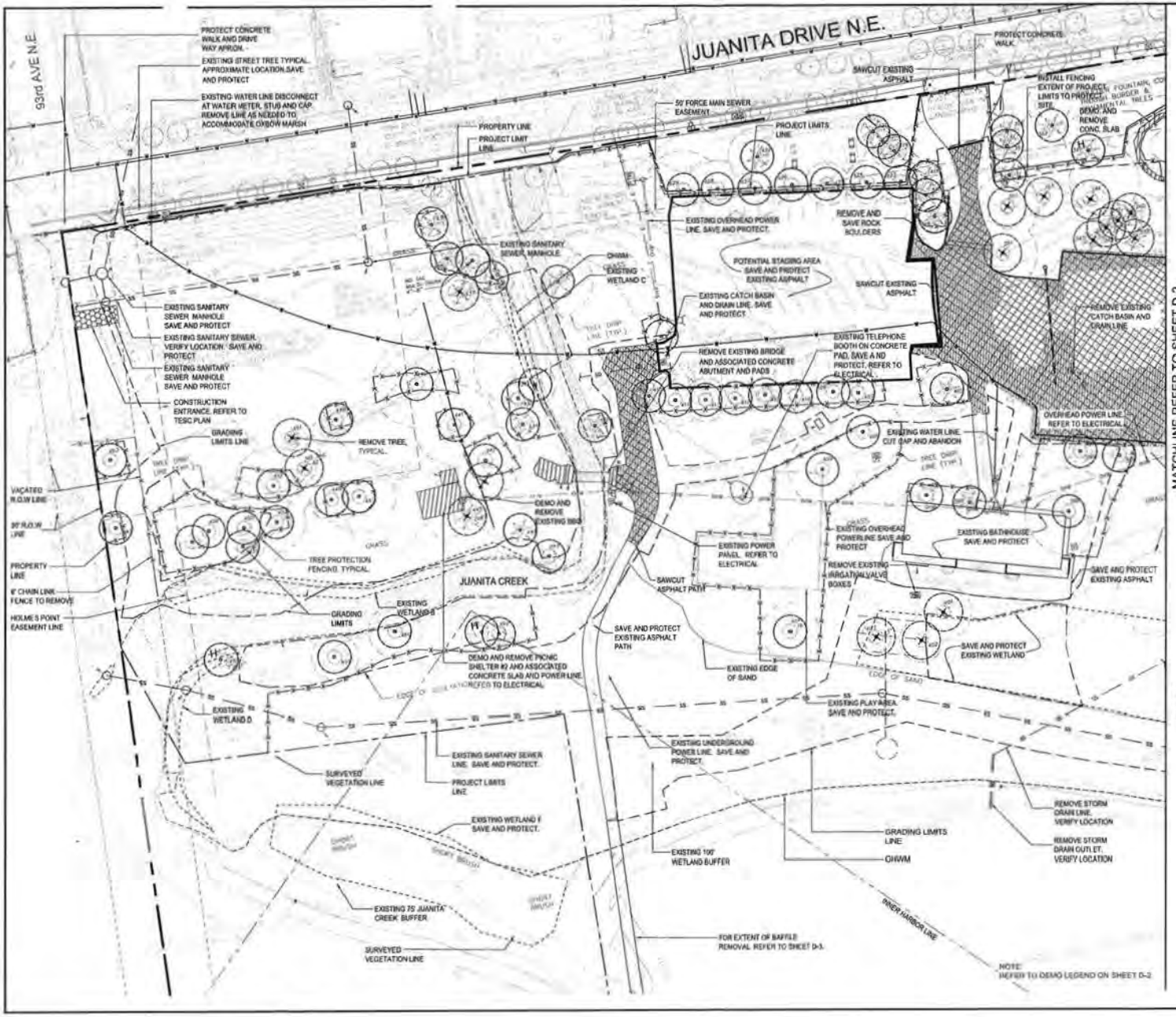
VERTICAL DATUM:

THE VERTICAL DATUM FOR THIS SURVEY IS SAME AS BASED ON THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, A REGIONAL COOPERATIVE OF GPS REFERENCE STATIONS, AND A PUBLISHED ELEVATION FROM CITY OF KIRKLAND SURVEY CONTROL POINT 51.

ELEVATION FROM CITY OF KIRKLAND SURVEY CONTROL POINT 51: 11.86 (NAVD 88)

LEGEND

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]



MATCHLINE REFER TO SHEET D-2

>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
>>800 424 5555<<

DEMOLITION/ TREE PROTECTION LEGEND	
	EXISTING DECIDUOUS TREE WITH ARBORIST TAG
	EXISTING CONIFER TREE WITH ARBORIST TAG
	EXISTING TREE TO REMOVE (AS TOTAL)
	EXISTING TREE TO REMAIN
	TREE DRIP LINE
	ASPHALT DEMOLITION
	EXISTING ASPHALT TO REMAIN
	CONCRETE SLAB DEMOLITION
	CONSTRUCTION ACCESS. REFER TO TESC PLAN.
	TREE PROTECTION FENCING
	EXTRUDED CONCRETE CURB DEMOLITION
	POTENTIAL HABITAT TREE - ARBORIST REVIEW REQUIRED
	PROJECT LIMITS LINE. FENCE WORK LIMITS

NOTE:
REFER TO ARBORIST'S REPORT "EVALUATION OF TREES AT JUANITA BEACH PARK" FOR TREE INVENTORY AND CONDITON.

SCALE: 1" = 30'
0' 30' 60'

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

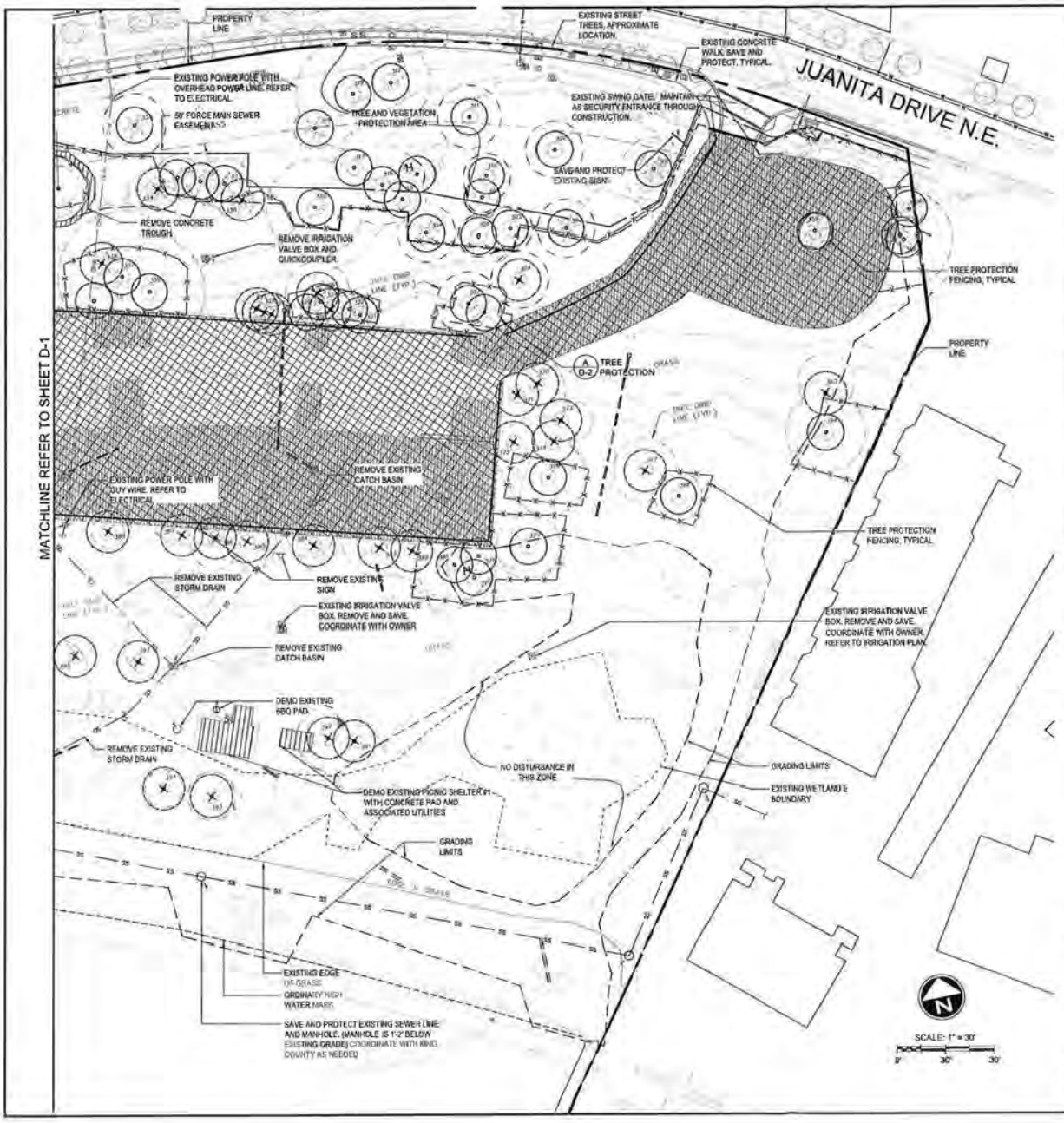
TITLE: DEMOLITION / CLEARING & GRUBBING/ TREE PROTECTION PLAN

j.a. brennan
ASSOCIATES
100 S King Street, Suite 200
Seattle, WA 98104
t. 206.583.0620 f 206.583.0923
www.jabrennan.com

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.

SHEET NO.
D-1
X OF X SHEETS



DEMOLITION/ TREE PROTECTION LEGEND

	EXISTING DECIDUOUS TREE WITH ARBORIST TAG
	EXISTING CONIFER TREE WITH ARBORIST TAG
	EXISTING TREE TO REMOVE (46 TOTAL)
	EXISTING TREE TO REMAIN
	TREE DRIP LINE
	ASPHALT DEMOLITION
	EXISTING ASPHALT TO REMAIN
	CONCRETE SLAB DEMOLITION
	CONSTRUCTION ACCESS. REFER TO TESC PLAN.
	TREE PROTECTION FENCING
	EXTRUDED CONCRETE CURB DEMOLITION
	POTENTIAL HABITAT TREE - ARBORIST REVIEW REQUIRED
	PROJECT LIMITS LINE, FENCE WORK LIMITS

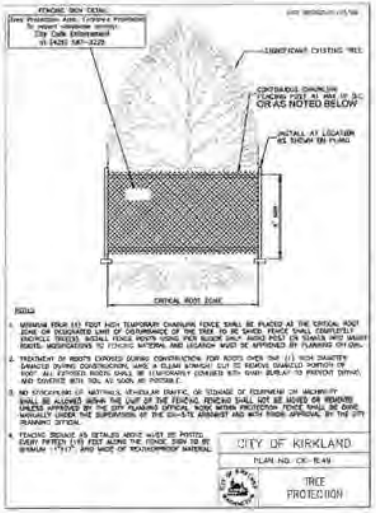
>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
NOT LESS THAN TWO OR MORE THAN TEN BUSINESS DAYS PRIOR TO COMMENCING EXCAVATION OR DEMOLITION. SECURE THE SERVICES OF A COMMERCIAL UNDERGROUND UTILITIES LOCATION SERVICE TO IDENTIFY BELOW-GROUND IMPROVEMENTS THAT MAY NOT BE INDICATED ON THIS DRAWING.
>>800 424 5555<<

EXISTING BUILDINGS TO REMOVE IN PHASE 1

EXISTING PICNIC SHELTER #1 = 785 SF

EXISTING PICNIC SHELTER #2 = 685 SF

NOTE:
REFER TO ARBORIST'S REPORT "EVALUATION OF TREES AT JUANITA BEACH PARK" FOR TREE INVENTORY AND CONDITON.



A TREE PROTECTION
NOT TO SCALE

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

CITY OF KIRKLAND WASHINGTON

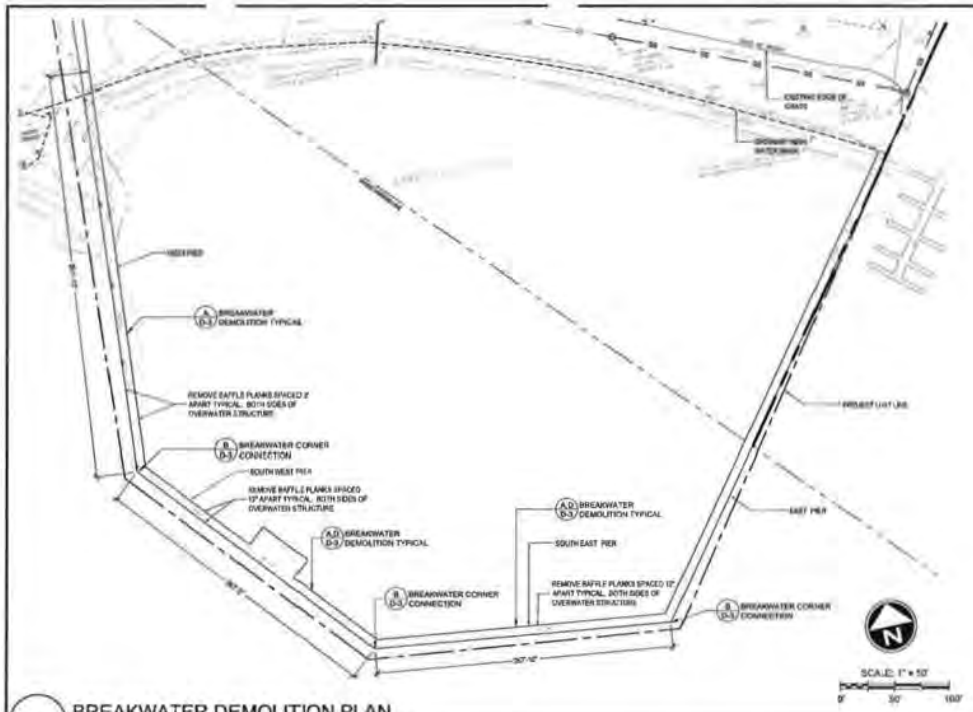
PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: DEMOLITION / CLEARING AND GRUBBING/ TREE PROTECTION PLAN

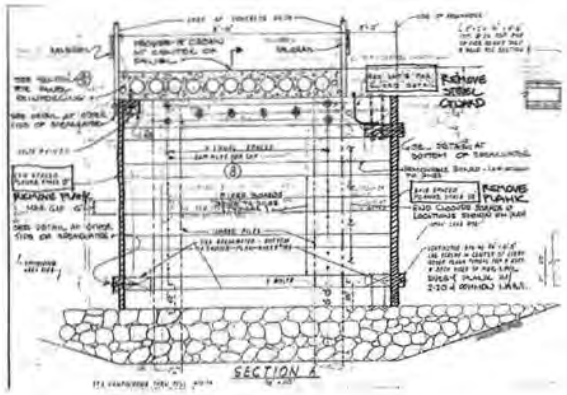
j.a. brennan associates plc
100 S King Street, Suite 200
Seattle, WA 98104
t 206.587.0600 f 206.343.0807
www.jabrennan.com

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.
SHEET NO. D-2
X OF X SHEETS

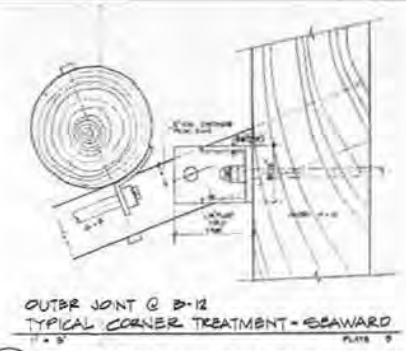


BREAKWATER DEMOLITION PLAN



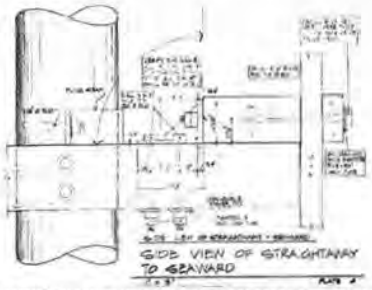
A BREAKWATER DEMOLITION DETAIL (EXISTING CONDITION)

NOT TO SCALE (DETAIL FROM JUANITA PARK BREAKWATER AS-BUILTS 1973)



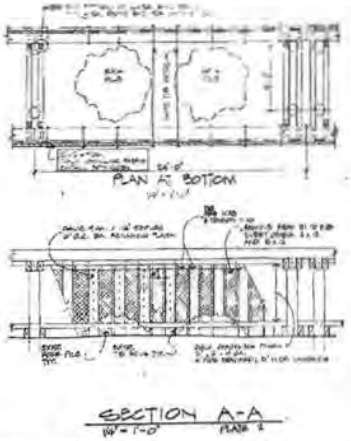
B TYPICAL CORNER CONNECTION PLAN VIEW

NOT TO SCALE (DETAIL FROM JUANITA PARK BREAKWATER REPAIRS 1976)



C EXISTING TYPICAL BREAK WATER CONNECTION

NOT TO SCALE (DETAIL FROM JUANITA PARK BREAKWATER REPAIRS 1976)



D TYPICAL ELEVATION AT SOUTH EAST PIER

NOT TO SCALE (DETAIL FROM JUANITA PARK BREAKWATER REPAIRS 1976)

>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
>>800 424 5555<<

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

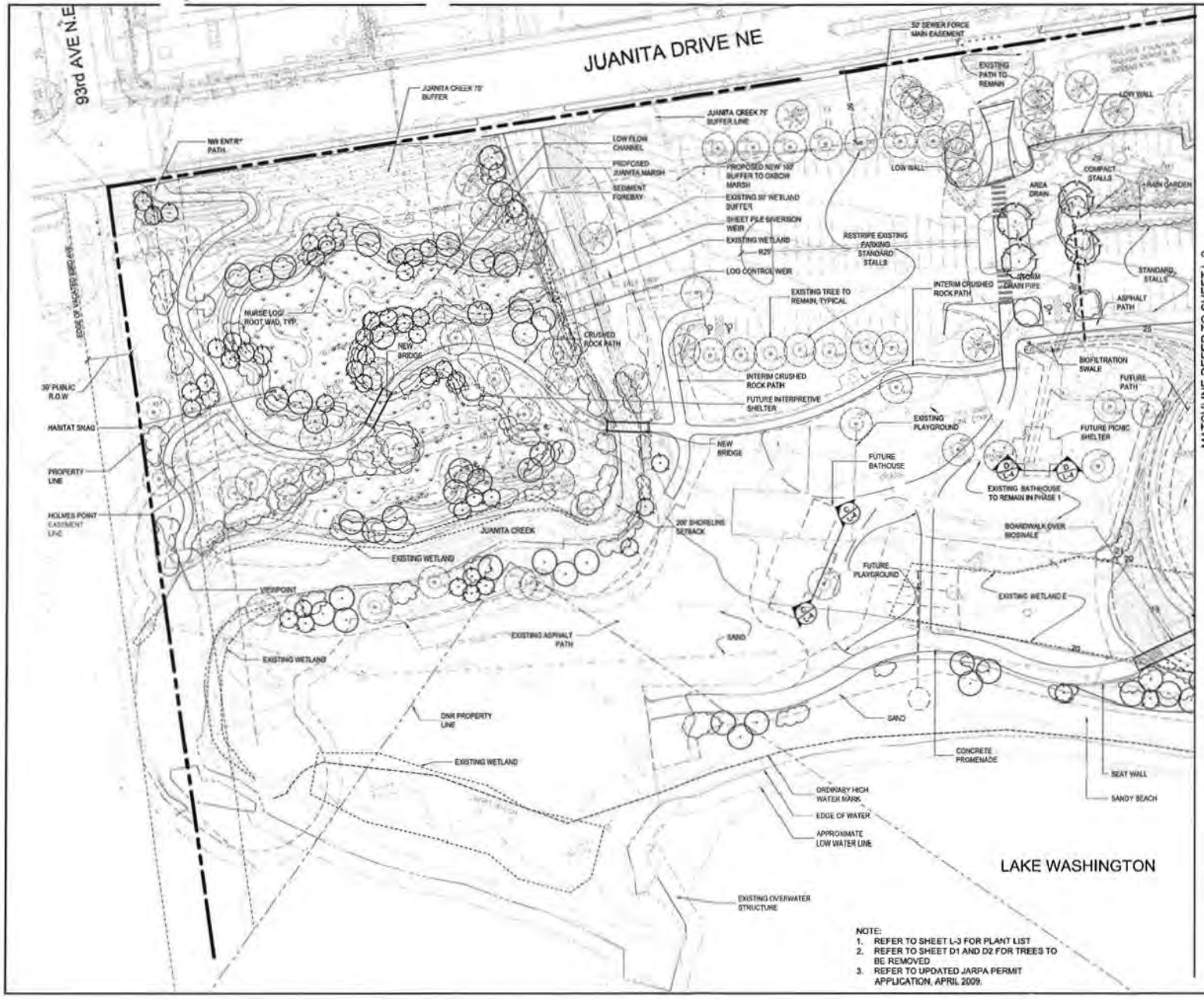
TITLE: BREAKWATER DEMOLITION PLAN

j.a. brennan

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.

SHEET NO. D-3
X OF X SHEETS



NOTE:
1. REFER TO SHEET L-3 FOR PLANT LIST
2. REFER TO SHEET D1 AND D2 FOR TREES TO BE REMOVED
3. REFER TO UPDATED JARPA PERMIT APPLICATION, APRIL 2009.

>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
>>800 424 5555<<

CITY OF KIRKLAND WASHINGTON

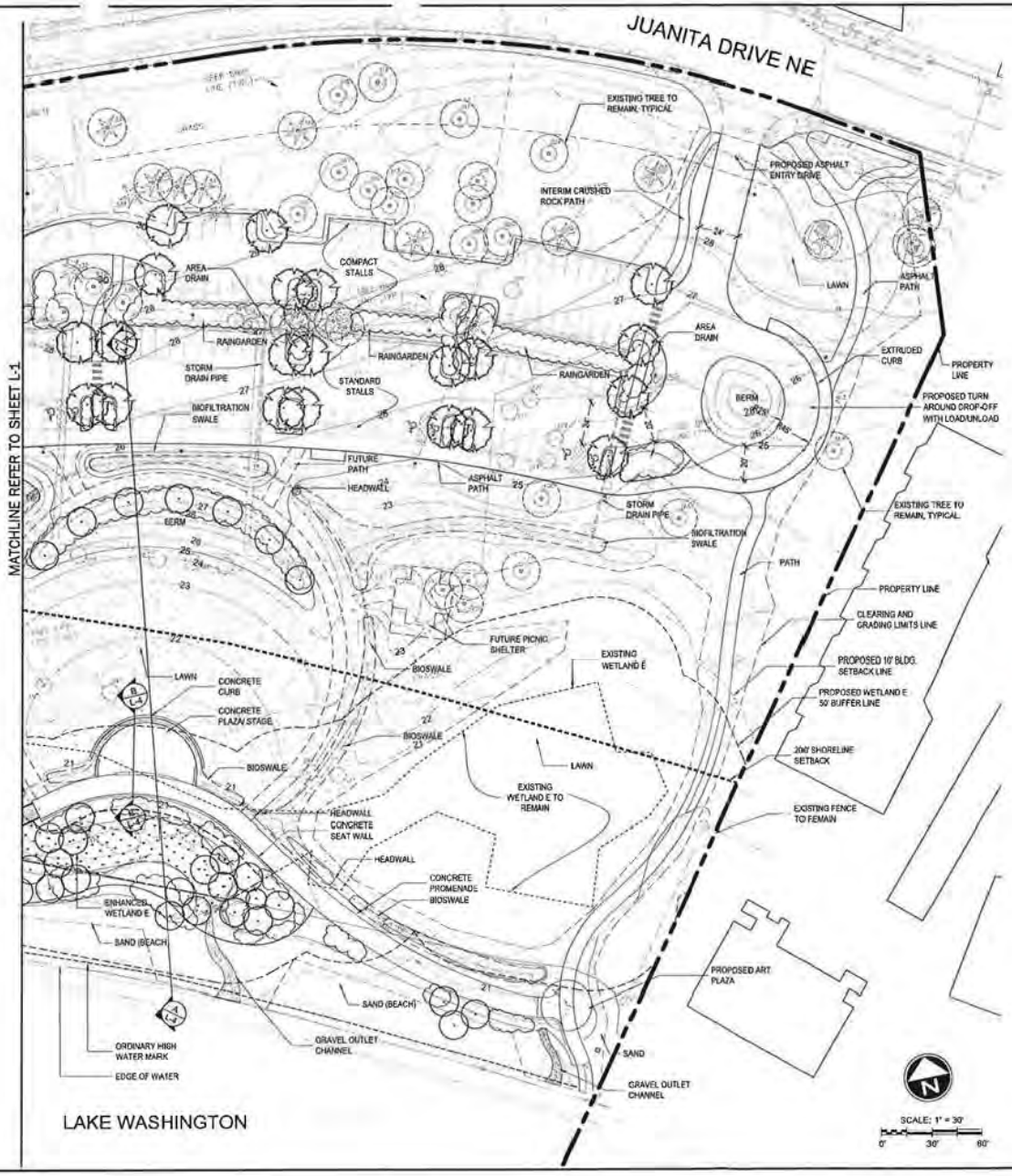
PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: PLANTING PLAN

j.a. brennan

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.
SHEET NO. L-1
X OF X SHEETS



>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
NOT LESS THAN TWO OR MORE THAN TEN BUSINESS DAYS PRIOR TO COMMENCING EXCAVATION OR DEMOLITION, REQUIRES THE SERVICES OF A COMMERCIAL UNDERGROUND UTILITIES LOCATOR SERVICE TO IDENTIFY BELOW-GROUND IMPROVEMENTS THAT MAY NOT BE INDICATED ON THE DRAWINGS.
>>800 424 5555<<

SITE AREA:
TOTAL SITE AREA +/- 14 Ac. (609,840 SF)

PROPOSED PARKING COUNT:

NEW COMPACT STALLS (8' X 16') =	72 STALLS
NEW STANDARD STALLS (8.5' X 18.5') = (INCLUDES 8 ADA W/ 2 VAN STALLS)	82 STALLS
EXISTING STANDARD STALLS RE-STRIPED = (INCLUDES 2 ADA STALLS)	72 STALLS
TOTAL STALLS =	226 STALLS

FUTURE BUILDINGS (CONSTRUCTION IN LATER PHASES):

BATHHOUSE =	2280 SF
2 PICNIC SHELTERS =	1790 SF (TOTAL)
INTERPRETIVE SHELTER =	100 SF

EXISTING BUILDING TO REMAIN IN PHASE 1 (FUTURE REMOVAL):

EXISTING BATHHOUSE (RESTROOM) = 4010 SF

See plans resetted 7/21/09

NOTE:
1. REFER TO PLANT LIST ON SHEET L-3.
2. REFER TO UPDATED JARPA PERMIT APPLICATION, APRIL 2009.
3. REFER TO SHEET D1 AND D2 FOR TREES TO BE REMOVED

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: PLANTING PLAN

j.a. brennan associates pllc
landscape architecture planning
100 S King Street, Suite 200
Seattle, WA 98104
t 206.583.0620 f 206.583.0623
www.jabrennan.com

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.
SHEET NO. L-2
X OF X SHEETS

ENCLOSURE 9

LARGE TREES DECIDUOUS

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
AR		ACER RUBRUM	RED MAPLE	2" CAL	B&B/CONTAINER	AS SHOWN
AM		ACER MACROPHYLLUM	BIG LEAF MAPLE	2-3'	B&B/CONTAINER	AS SHOWN
BP		BETULA PAPYRIFERA	PAPER BIRCH/CANOE BIRCH	1 1/2"CAL	B&B/CONTAINER	AS SHOWN
CJ		CERCIDIPHYLLUM JAPONICUM	KATSURA TREE	2" CAL	B&B/CONTAINER	AS SHOWN
CC		CORYLUS CORNUTA	HAZELNUT	3'-4'	B&B/CONTAINER	AS SHOWN
FL		FRAXINUS LATIFOLIA	OREGON ASH	5'-6'	B&B/CONTAINER	AS SHOWN
PT		POPULOUS TREMULOIDES	QUAKING ASPEN	1" CAL	B&B/CONTAINER	AS SHOWN
PT		POPULUS TRICHOCARPA	BLACK COTTONWOOD	2-3'	B&B/CONTAINER	AS SHOWN
QC		QUERCUS COCCINEA	SCARLET OAK	2" CAL	B&B/CONTAINER	AS SHOWN
SL		SALIX LUCIDA SSP. LASIANDRA	PACIFIC WILLOW	See spec	LIVESTAKE	24" O.C.

SMALL TREES DECIDUOUS

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
AC		ACER CIRCINATUM	VINE MAPLE	3-5'	CONTAINER	AS SHOWN
BO		BETULA OCCIDENTALIS	WATER BIRCH	2-3'	B&B/CONTAINER	AS SHOWN
CO		CERCIS OCCIDENTALIS	WESTERN REDBUD	6'-8'	B&B/CONTAINER	AS SHOWN
CH		CRATAEGUS DOUGLASII	DOUGLAS HAWTHORN	3'-5'	B&B/CONTAINER	AS SHOWN
PE		PRUNUS EMARGINATA	BITTER CHERRY	3-5'	B&B/CONTAINER	AS SHOWN
PC		PYRUS CALLERYANA 'BRADFORD'	BRADFORD PEAR	2" CAL	B&B/CONTAINER	AS SHOWN

LARGE CONIFER

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
AG		ABIES GRANDIS	GRAND FIR	6'-8'	B&B/CONTAINER	AS SHOWN
CD		CALOCEDRUS DECURRENS	INCENSE CEDAR	6'-8'	B&B/CONTAINER	AS SHOWN
PS		PICEA SITCHENSIS	SITKA SPRUCE	2-3'	B&B/CONTAINER	AS SHOWN
PM		PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6'-8'	CONTAINER	AS SHOWN
TP		THUJA PLICATA	WESTERN RED CEDAR	3'-4'	B&B/CONTAINER	AS SHOWN
TH		TSUGA HETEROPHYLLA	WESTERN HEMLOCK	3'-4'	CONTAINER	AS SHOWN

LARGE SHRUBS

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
AC		AMELANCHIER CANADENSIS	SERVICEBERRY	2-3'	CONTAINER	6' O.C.
CS		CORNUS STOLONIFERA	RED TWIG DOGWOOD	24"-36"	CONTAINER	6' O.C.
CS		CORNUS STOLONIFERA	RED TWIG DOGWOOD	24"-36"	LIVESTAKE	6' O.C.
CS		CORNUS STOLONIFERA 'FLAVIRAMEA'	YELLOWTWIG DOGWOOD	2 GAL.	CONTAINER	6' O.C.
HD		HOLODISCUS DISCOLOR	OCEANSPRAY	2 GAL.	CONTAINER	6' O.C.
LI		LONICERA INVOLUCRATA	BLACK TWINBERRY	1 GAL.	CONTAINER	6' O.C.
MA		MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	2 GAL.	CONTAINER	6' O.C.
MCA		MYRICA CALIFORNICA	PACIFIC WAXMYRTLE	24"-36"	CONTAINER	6' O.C.
OC		OEMLARIA CERASIFORMIS	INDIAN PLUM	1 GAL.	CONTAINER	6' O.C.
RS		RIBES SANGUINEUM	RED FLOWERING CURRANT	24"-36"	CONTAINER	6' O.C.
RS		RUBUS SPECTABILIS	SALMONBERRY	1 GALLON	CONTAINER	6' O.C.
SH		SALIX HOOKERIANA	HOOKER'S WILLOW		LIVESTAKE	6' O.C.
SS		SALIX SITCHENSIS	SITKA WILLOW		LIVESTAKE	6' O.C.
SR		SAMBUCUS RACEMOSA	RED ELDERBERRY	1 GALLON	CONTAINER	6' O.C.
VE		VIBURNUM EDULE	HIGHBUSH CRANBERRY	24"	CONTAINER	6' O.C.

SMALL SHRUBS

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
CS		CORNUS STOLONIFERA 'KELSEYI'	DWARF RED TWIG DOGWOOD	1 GAL.	CONTAINER	36" O.C.
GS		GAULTHERIA SHALLON	SALAL	1 GAL.	CONTAINER	36" O.C.
MN		MAHONIA NERVOSA	LOW OREGON GRAPE	1 GAL.	CONTAINER	30" O.C.
RB		RIBES BRACTEOSUM	STINK CURRANT	24"-36"	CONTAINER	36" O.C.
RN		ROSA NUTKANA	NOOTKA ROSE	1 GAL.	CONTAINER	6' O.C.
RP		ROSA PISOCARPA	CLUSTERED WILD ROSE	1 GAL.	CONTAINER	36" O.C.
RW		ROSA WOODSII	WOOD'S ROSE	1 GAL.	CONTAINER	36" O.C.
PF		POTENTILLA FRUTICOSA	POTENTILLA	1 GAL.	CONTAINER	36" O.C.
RP		RUBUS PARVIFLORUS	THIMBLEBERRY	12"-18"	BR/TRANS GRD.	36" O.C.
SP		SALIX PURPUREA 'NANA'	DWARF BLUE ARCTIC WILLOW	1 GALLON	CONTAINER	36" O.C.
SA		SYMPHORICARPOS ALBUS	SNOWBERRY	1 GAL.	BR/TRANS GRD.	36" O.C.
VO		VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	5 GALLON	CONTAINER	36" O.C.
VP		VACCINIUM PARVIFOLIUM	RED HUCKLEBERRY	1 GALLON	CONTAINER	36" O.C.

GRASSES & NON FLOWERING PLANTS

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
EG		ELYMUS GLAUCUS	BLUE WILDRYE	4" POT	CONTAINER	24" O.C.
EM		ELYMUS MOLLIS	DUNE GRASS	4" POT	CONTAINER	24" O.C.
ET		EQUISETUM HYEMALE	FALL SCOURING RUSH	1 GALLON	CONTAINER	18" O.C.
FOG		FESTUCA OVINA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE	1 GALLON	CONTAINER	18" O.C.
HS		HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	4" POT	CONTAINER	18" O.C.

MIXES

PLANTING MIX 1 (SHALLOW FRESH-WATER MARSH PLANTS)

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
		CAREX STIPATA	SAWBEAK SEDGE	6"	PLUG	24" O.C.
		ELEOCHARIS PALUSTRIS	SPIKE-RUSH	6"	PLUG	18" O.C.
		JUNCUS EFFUSUS	COMMON RUSH	6"	PLUG	18" O.C.
		JUNCUS ENSIFOLIUS	DAGGER LEAF RUSH	6"	PLUG	18" O.C.
		SPARGANIUM EMERSUM	BURREED	6"	PLUG	18" O.C.

PLANTING MIX 2 (SHALLOW FRESH-WATER MARSH PLANTS)

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
		ALISMA PLANTAGO-AQUATICA	AMERICAN WATER PLANTAIN	6"	PLUG	18" O.C.
		CAREX OBNUPTA	SLOUGH SEDGE	6"	PLUG	18" O.C.
		JUNCUS BALTICUS	BALTIC RUSH	6"	PLUG	18" O.C.
		SCIRPUS MICROCARPUS	SMALL-FLOWERED BULRUSH	6"	PLUG	18" O.C.

PLANTING MIX 3 (DEEP MARSH PLANTS)

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
		SAGITTARIA LATIFOLIA	ARROWHEAD, WAPATO	6"	PLUG	18" O.C.
		SCIRPUS ACUTUS	HARDSTEM BULRUSH	6"	PLUG	18" O.C.
		SCIRPUS VALIDUS	SOFTSTEM BULRUSH	6"	PLUG	18" O.C.
				6"		

PLANTING MIX 4 (UPLAND HERBACEOUS) MIX

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
		CAMASSIA QUAMASH	COMMON CAMAS	4" POT	CONTAINER	18" O.C.
		IRIS DOUGLASIANA	DOUGLAS IRIS	4" POT	CONTAINER	12" O.C.
		LUPINUS ARCTICUS	ARCTIC LUPINE	4" POT	CONTAINER	18" O.C.
		LUPINUS LITTORALIS	SEASHORE LUPINE	4" POT	CONTAINER	18" O.C.
		MAIANTHEMUM DILATATUM	WILD LILY OF THE VALLEY	1 GAL.	CONTAINER	18" O.C.
			TULIP	BULB		12" O.C.

Herbaceous Planting Notes: Bold text indicates primary species within each planting mix. Mix is to be comprised of 70% primary species, split evenly when there are two species. The remaining 30% of the Mix is to be split evenly between the other seconda

Plant individual species in groups of 10-20 plants within each planting area.

BIO-FILTRATION SWALE SEED MIX

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	48%	ELYMUS GLAUCUS	BLUE WILDRYE
	38%	FESTUCA RUBRA SPP. RUBRA	NATIVE RED FESCUE
	12%	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS
	2%	BECKMANNIA SYZIGACHNE	AMERICAN SLOUGHGRASS

WETLAND SEED MIX - EMERGENT MARSH

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	35%	CAREX OBNUPTA	SLOUGH SEDGE
	25%	SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH
	20%	CAREX STIPATA	SAW BEAKED SEDGE
	10%	JUNCUS TENUIS	SLENDER RUSH
	10%	ELEOCHARIS PALUSTRIS	CREEPING SPIKE RUSH

WETLAND SEED MIX - WET MEADOW

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	15%	CAREX OBNUPTA	SLOUGH SEDGE
	25%	JUNCUS ENSIFOLIUS	DAGGER LEAF RUSH
	5%	FESTUCA RUBRA var. ROEMERI	ROEMER'S RED FESCUE
	10%	SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH
	15%	GLYCERIA OCCIDENTALIS	WESTERN MANNAGRASS
	12%	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS

Note: Seed shall be applied at a rate of 18.55 pounds per acre. No noxious weeds will be permitted. The seed mixture shall be no less than 98% pure, and shall have a minimum germination rate of 90%. Hydroseed or broadcast seed as conditions dictate.

WILDFLOWER MEADOW SEED MIX

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	33%	BROMUS BIEBERSTEINII	MEADOW BROME
	20%	FESTUCA OVINA	SHEEP FESCUE
	10%	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS
	10%	KOELERIA MACRANTHA	PRAIRIE JUNEGRASS
	10%	IRIS MISSOURIENSIS	WILD BLUE IRIS
	10%	GAILLARDIA PULCHELLA	INDIAN BLANKET
	4%	SALVIA PACHYPHYLLA	BLUE SAGE
	2%	PAPAVER NUDICAULE	ICELAND POPPY
	1%	SAIROCARPUS CORNUTUS	SPURRED SNAPDRAGON

Note: Seed shall be applied at a rate of 8 pounds per 1000 SQ. FT. No noxious weeds will be permitted. The seed mixture shall be no less than 98% pure, and shall have a minimum germination rate of 90%. Broadcast or drill seed as conditions dictate.

UPLAND SEED MIX

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	10%	AGROPYRON RIPARIUM	STREAMBANK WHEATGRASS
	20%	BROMUS CARINATUS	CALIFORNIA BROME
	10%	DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
	30%	ELYMUS GLAUCUS	BLUE WILDRYE
	30%	FESTUCA RUBRA RUBRA	NATIVE RED FESCUE

Note: Seed shall be applied at a rate of 8 pounds per 1000 SQ. FT. No noxious weeds will be permitted. The seed mixture shall be no less than 98% pure, and shall have a minimum germination rate of 90%. Broadcast or drill seed as conditions dictate.

LAWN SEED MIX

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME
	50%		PERENNIAL RYEGRASS
	30%		BLUEGRASS
	20%		FESCUE

Apply at a rate of 5 lbs. per 1000 s.f.

NOTE:
PLANT LIST CONTAINS PROPOSED PLANTS FOR THE ENTIRE PROJECT SITE. PLANTINGS FOR OXBOW MARSH AREA AND WETLAND E ARE CONTAINED WITHIN THE PLANT LIST.

SEE ALSO UPDATED JARPA PERMIT APPLICATION APRIL 2009 MITIGATION PLANT LIST.

>>>>CAUTION<<<<
CALL BEFORE YOU DIG!
NOT LESS THAN TWO OR MORE THAN TEN BUSINESS DAYS PRIOR TO COMMENCING EXCAVATION OR DEMOLITION, SECURE THE SERVICES OF A COMMERCIAL UNDERGROUND UTILITIES LOCATOR SERVICE TO IDENTIFY BELOW-GROUND IMPROVEMENTS THAT MAY NOT BE INDICATED ON THE DRAWINGS.
>>800 424 5555<<

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: PLANT LIST

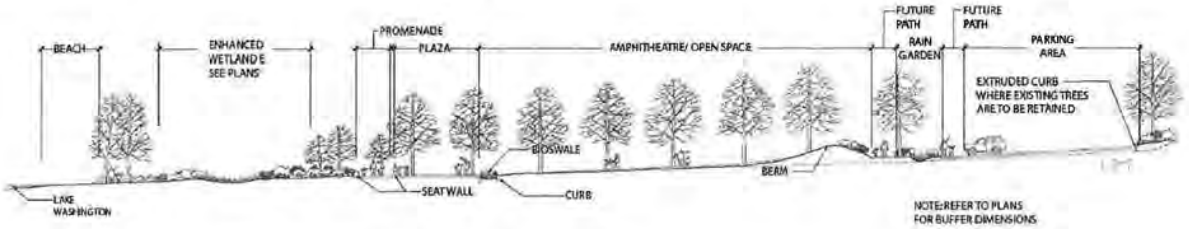
j.a. brennan
100 S King Street, Suite 200
Seattle, WA 98104
t 206.583.0620 f 206.583.0623
www.jabrennan.com

REVISION:

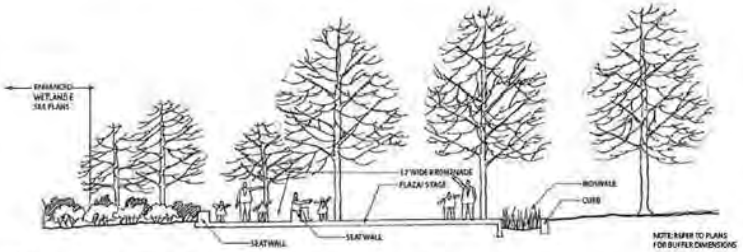
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.
SHEET NO. L-3
X OF X SHEETS

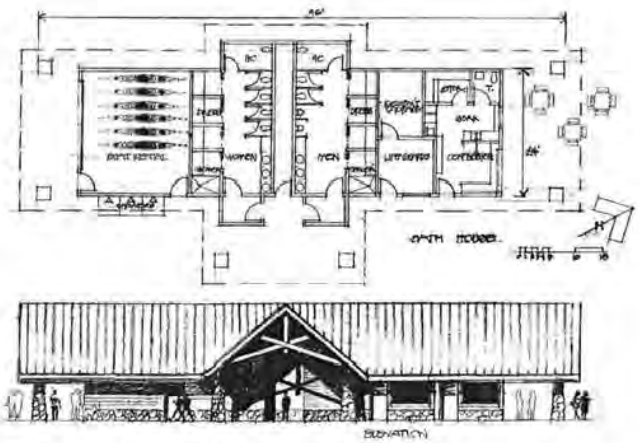
ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY



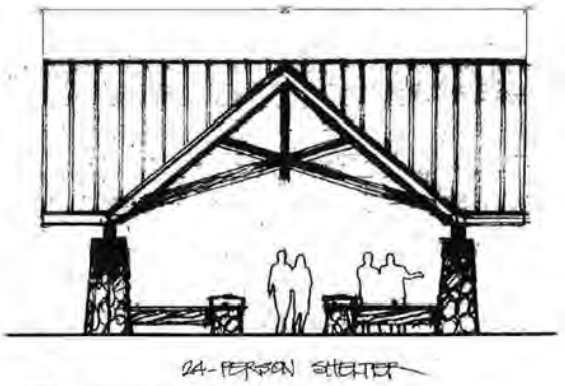
A SECTION THROUGH COMMUNITY COMMNONS (AMPHITHEATRE)
APPROX. SCALE 1" = 20'



B SECTION THROUGH PLAZA/ STAGE AREA
APPROX. SCALE 1/8" = 1'-0"



C FUTURE BATHHOUSE
SCALE: 1" = 10'



D FUTURE PICNIC SHELTER
SCALE: 1/4" = 1'-0"

>>>>CAUTION<<<<
CALL BEFORE YOU DIGI
NOT LESS THAN TWO OR MORE THAN TEN BUSINESS DAYS PRIOR TO COMMENCING EXCAVATION OR DEMOLITION. SECURE THE SERVICES OF A COMMERCIAL UNDERGROUND UTILITIES LOCATION SERVICE TO IDENTIFY BELOW-GROUND IMPROVEMENTS THAT MAY NOT BE INDICATED ON THIS DRAWINGS.
>>800 424 5555<<

CITY OF KIRKLAND WASHINGTON

PROJECT: JUANITA BEACH PARK PHASE 1

TITLE: SITE SECTIONS

j.a. brennan
landscape architecture
100 S King Street, Suite 200
Seattle, WA 98104
t 206 583.0320 f 206.583.0623
www.jabrennan.com

REVISION:	
DATE:	DESCRIPTION:

SCALE: AS SHOWN
DATE: 05-01-09
DRAWN BY:
DESIGNED BY:
APPROVED BY:
CAD FILE NO.
SHEET NO. L-4
X OF X SHEETS

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ENCLOSURE 9
SHR17-00775
RECEIVED
JUL 21 2009
AM PM
PLANNING DEPARTMENT
BY

JULY 2009 ADDENDUM TO THE JUANITA BEACH PARK WETLAND AND STREAM MITIGATION PLAN, prepared by Douglass Consulting (original Plan dated December 2008)

This Addendum to the Juanita Beach Park Wetland and Stream Mitigation Park, dated July 2009, summarizes the updates and revisions to the mitigation plan by providing revised sections of the Wetland and Stream Mitigation Plan, dated December 2008. These revised Plan sections, along with the updated design drawings, the updated Juanita Beach Park Water Resource Impact Table, and the Juanita Beach Park Water Resource Mitigation Table, provide updated information on the impacts and proposed mitigation for water resources associated with the Juanita Beach Park Master Plan – Phase I.

December 2008 original Wetland and Stream Mitigation Plan are located in File SHR09-00001. See Revised plans dated April 2009 submitted on July 21, 2009

ATTACHMENT 2

Wetland F is located east of the mouth of Juanita Creek and west of the pedestrian pier, along the shoreline of Lake Washington on a newly accreted sandbar. Wetland F's formation occurred between 2006 and 2008 due to fluvial deposition of sediment from Juanita Creek. Wetland F is adjacent to Lake Washington and is influenced by Lake Washington's water table. Wetland F is 9,196 sf (0.21 acres) in size and is contiguous with Lake Washington and within the ordinary high water mark (OHWM). This wetland is dominated by hydrophytic vegetation such as soft rush, sapling black cottonwood, and American speedwell.

Wetland Functions and Category

Wetlands provide a number of functions including erosion control; fish habitat; groundwater recharge and base flow maintenance; stormwater attenuation, floodwater conveyance; water quality improvement; and wildlife habitat. Wetlands A, B, C, and D within the study area were previously rated using the Washington State Wetland Ratings System for Western Washington (WDOE, 2004), while Wetlands E and F were rated for this report utilizing the Revised Washington State Wetland Ratings System for Western Washington (WDOE, 2006). The wetlands along Juanita Creek (Wetlands A, B, C, and D) are Category III riverine wetlands. These wetlands are all similar and had a total function score of 47 points each. Wetland E is a Category IV depression wetland, with a total function score of 21. Wetland F is a lakefringe Category III wetland with a total function score of 38.

Type 3 Type I

Wetlands A, B, C, and D, and F would all be classified under the City of Kirkland Municipal Zoning Code, Chapter 90 Drainage Basins as Type 1 wetlands because the wetlands are either contiguous with Lake Washington (Wetland F) and/or adjacent to Juanita Creek (Wetlands A, B, C, and D), both water bodies that provide habitat for federally-listed fish species. The wetlands are all located within a Primary Drainage Basin and therefore, buffers on the wetlands along Juanita Creek would be 100 feet wide per the KZC Chapter 90.45. As with Juanita Creek, a 10-foot building setback from the wetland buffer is also required. The buffer on Wetland F would also be 100 feet with a 10-foot building setback from the wetland buffer.

Buffers: Type I = 100' Type 3 = 50'

Wetland E would be a Category III wetland under the City of Kirkland KZC Chapter 90.45, due to the location of the wetland in the upland lawn 75 feet upslope of Lake Washington. The wetland is considered a depressional wetland. A 50-foot buffer is required for Type III wetlands in a primary basin as well as a 10-foot building setback.

The WDOE function and category and City of Kirkland scores and type for each wetland are summarized in Table 1.

Table 2 summarizes shoreline, creeks, and wetland resources in Phase I, their category under WDOE and KZC, and required buffers.

4.0JUANITA BEACH PARK MASTER PLAN – PHASE I

3.5 JUANITA OXBOW MARSH

An oxbow marsh habitat is proposed in the western area of Juanita Beach Park that currently serves as a picnic area, a primary entry into the park from the northwest end, and which is also flooded periodically during extreme high flows of Juanita Creek. The new marsh will provide valuable fish and wildlife habitat, water quality function, and will restore a type of wetland habitat historically associated with Lake Washington shoreline environments. The Oxbow Marsh will have nearly 19,000 sf of marsh habitat and approximately 30,000 of planted riparian buffer habitat; overall over an acre of habitat creation and restoration.

Marshes and wetlands are natural landscape filters that can enhance water quality. The marsh at Juanita Beach Park cannot resolve all the water quality issues on Juanita Creek, which are a watershed-scale problem best addressed by a watershed-scale solution. However, by providing water quality treatment to the extent practical at the park, the marsh will provide some improvement of water quality, and it is a means of raising public awareness of water quality on Juanita Creek and other urban streams. The Oxbow Marsh design is discussed in detail in Section 8.0 Mitigation Plan.

4.1 JUANITA CREEK, RIPARIAN, AND WETLAND ENHANCEMENTS

Phase I includes enhancements to Juanita Creek and the riparian zone along the creek, as well as wetland enhancements to Wetland E. In addition, there is one location south of the pedestrian bridge where Juanita Creek takes an unnaturally sharp bend. Under Phase I, the bend in the creek will be softened by laying back the banks and placing jute netting and live stakes for bank stabilization. To the extent feasible, invasive species will be removed within the riparian zone and additional native plantings will be added. Proposed species to be added along the creek banks include: Pacific Willow, Red-Twig Dogwood, Scouler's Willow, Western Red Cedar, Alder, Cottonwood, Oregon Ash, and other native species. Phase I also proposes the removal and replacement of the existing pedestrian bridge with a new, longer and higher pedestrian bridge that will not impede flood flows to the degree that the current bridge does.

Wetland E will also be rehabilitated from its current condition as a "lawn" wetland to a meadow wetland planted with native grass, meadow, and some marsh species. Hydrology in Wetland E will be restored by routing treated stormwater from the rain garden and biofiltration swales into Wetland E. This restoration work is discussed in detail under 8.0 Mitigation Plan.

grasses and leave their droppings on the lawn and beach area. The project seeks to improve the shoreline while providing for better ADA access along the lakefront.

The primary impact to the shoreline will be the addition of new impervious surface for the promenade, asphalt paths, crushed rock paths, and seating walls. The new impervious surfaces within the shoreline will total 30,931 sf. While this is new pavement, there will be the benefit of directing pedestrian traffic within the shoreline. There will also be 90,000 sf of grading and 800 cu yd of grading (both cut and fill) in the shoreline for the creation of the Community Commons and the construction of the structures discussed above. After grading, all exposed soils will be planted with lawn grasses and native and ornamental shrubs and trees.

5.2 JUANITA CREEK, ASSOCIATED WETLANDS AND BUFFERS

Juanita Creek

Overall the project will enhance Juanita Creek, however there will be some small areas of excavation below the ordinary high water mark (OHWM) for the creation of the connection between Juanita Creek and the Oxbow Marsh (Figures 6 and 7). The total area of excavation will be 3,500 sf and 24 cu yds of cut. After the excavation is complete the channel connection will be made and boulders and creek bottom gravels will be placed to restore the creek habitat.

In addition, there will be excavation below the OHWM to complete the softening of the sharp bend in Juanita Creek below the pedestrian bridge. Currently the creek takes a sharp bend to the west and has bank armoring to reduce the scour from high velocity flows in this area. Under the plan, 2,900 sf of bank will be "laid-back" to soften the bank. After the grading work is completed to soften the contours, the bank will be restored by placing jute netting and planting live willow stakes to secure the bank.

While both of these efforts are considered creek restoration, there is the potential for impacts to fish and water quality that could result from the excavation within the creek. The BMPs outlined under Section 4.7 Construction Methods will be implemented to reduce the potential for impacts during construction of the Oxbow Marsh.

Wetlands B and C

Overall, the Juanita Oxbow Marsh design provides a wetland and stream enhancement. However, Wetlands B and C along the edge of Juanita Creek will be altered in the process of excavating the proposed oxbow marsh channel. No fill of the existing wetlands is proposed, however small amounts of excavation in Wetland B (1,333 sf) and Wetland C (240 sf) will occur to create the channel. These areas will be replanted after the excavation to include open water habitat and emergent and riparian marsh in Wetlands B and C.

While both of these efforts are considered restoration, there is the potential for impacts to fish and water quality that could result from the excavation within the creek. The BMPs outlined under

Mitigation will be provided for this "Paper Fill". Please note that the area of Wetland E that will be identified as "Paper Fill" under the CoK Code is NOT "Actual Fill" under the US Army Corps of Engineers (USACE) and the Washington Department of Ecology (WDOE).

Wetland E functions are already quite low per the WDOE Rating System with a total score of 21. Water quality and hydrologic functions for Wetland E are the highest scores at 8 points for each function. These two functions will be impacted by the wetland fill that is proposed. The very low habitat function (score of 5) will also be impacted due to the new impervious surface in the wetland for the Promenade, chips, and stage areas. After the rehabilitation of Wetland E is complete, each of these functions will increase. Hydrology and water quality functions will be restored by the addition of treated stormwater into Wetland E and the planting of native species in Wetland E. Habitat function will also be improved in Wetland E by the planting of native species and increase of hydrology to the wetland.

The City of Kirkland requires a 50-foot wide buffer for Type III wetlands. The City Zoning Code (KZC Chpt 90) does allow for a reduction to the buffer under certain conditions, but has a 30% reduction limitation. The KZC also allows for pedestrian paths within buffers for public recreational facilities.

Wetland E's buffer, a Type III wetland, has been reduced in some areas to protect the wetland with a 35 to 50-foot wide buffer with a 10' building setback per KZC. Structures such as the bathhouse and picnic shelters have been moved out of Wetland E's buffer and are no longer buffer encumbrances. A 50-foot wide buffer has been established around the preserved portion of the Wetland E to the east. Because the western portion of Wetland E has been identified as "Paper Fill", there will be no buffer around this portion.

Currently the Wetland E buffer, like Wetland E, is a lawn and is heavily used by visitors to the park for walking, sunbathing, and picnicking. Much of the buffer is located in an area between the bathhouse and the picnic shelters and the beach. Visitors to the park walk freely through the wetland and buffer to access these recreational features in the park. The buffer currently provides little protection to the wetland because of the absence of significant shrub and tree plantings and the high level of pedestrian traffic through the wetland and buffer. The Phase I plan helps cut down on pedestrian traffic through Wetland E and buffer by rehabilitating the wetland with additional hydrology for the wetland and native plantings in the wetland and buffer. Also, the new Promenade will help direct visitors onto the Promenade instead of walking freely in these areas (Figure 13).

However, this is still a highly used part of the park. Maintaining a 50-foot buffer would eliminate a large area that is currently used and needed in the future for visitors to the park. Without a buffer reduction users would not be able to use the bathhouse, the picnic shelter, much of the sandy beach, and much of the lawn that is currently the focal points for recreational uses. A reduced buffer will be an improvement over current conditions, will adequately protect the rehabilitated wetland, and will serve as an educational opportunity for the park users.

7.0MITIGATION SEQUENCING

Proposed enhancements of the habitats at Juanita Creek, the Lake Washington shoreline, and the onsite wetlands and buffers at Juanita Beach Park are numerous and are key aspects of the Juanita Beach Park Master Plan. The RCO funding for Phase I includes significant commitments to enhancements of the on-site natural resources at the park. Some key opportunities for environmental restoration that were identified in the Master Plan and will be implemented in Phase I include:

1. Creation of a floodplain with side channels/wetlands along Juanita Creek for habitat restoration and water quality improvement;
2. Removal of armoring and softening banks in Juanita Creek where feasible;
3. Removal of invasive species and addition of native plantings to the Juanita Creek riparian zone;
4. Reduction of impervious surface at the site where feasible;
5. Provision of water quality treatment for stormwater prior to release into wetlands, streams, or Lake Washington;
6. Relocation of some existing buildings out of sensitive area buffers; and
7. Addition of pathways and boardwalks near sensitive areas to reduce uncontrolled pedestrian access in these sensitive areas and focus pedestrian access onto pathways.

This plan was prepared by the Douglass Consulting and the JA Brennan design team in accordance with *Wetland Mitigation in Washington State – Part 1 Agency Policies and Guidance* (March 2006), and in consultation with the USACE, the Muckleshoot Tribe, WDOE, WDFW, and the City of Kirkland. An on-site agency meeting was held in September 2008 to discuss mitigation concepts, with additional agency consultation and meetings occurring between September 2008 and November 2008. Meeting notes from these agency meetings are included in Appendices B and C.

In addition, this mitigation plan was prepared to demonstrate the project's compliance with the CWA, Section 404 requirements, as administered by the USACE. Under the CWA, Section 404, mitigation for proposed impacts to jurisdictional wetlands must be provided as part of the permit application package. The USACE further provides this priority sequence that must be followed during the mitigation process:

1. Avoid impacts to wetlands;
2. Minimize impacts to wetlands; and

quantity and higher quality of riparian habitat adjacent to Juanita Creek and the associated wetlands.

Phase I includes removal of the picnic shelter and concrete pad within the buffer of Juanita Creek. Phase I also includes the addition of pedestrian pathways within the 75-foot creek buffer and the 100-foot buffer for the associated wetland along the creek (Wetland A, B, C, and D). Buffer widths are determined per the City of Kirkland KZC Chapter 90. Currently, pedestrians accessing the park from the northeast entry point along NE Juanita Drive walk uncontrolled through the creek and wetland buffers and cross Juanita Creek at the pedestrian bridge to access the swimming beach. The new pedestrian pathways are designed to control the pedestrian access through the new Oxbow Marsh and the creek and wetland buffers while providing access between the northeast entry point, the pedestrian bridge, and the swimming beach.

The proposed pathways will reduce current impacts to creek and wetland buffers by limiting access to one pathway system instead of uncontrolled access through the buffers. In addition, the pathway crosses the Oxbow Marsh at the narrowest location and a bridge is used for this crossing to reduce impacts to the new wetland habitat at the marsh.

7.3 WETLAND E AND BUFFERS

Wetland E is a palustrine emergent wetland that is planted in lawn grass, located directly between the lawn area, the bathhouse, and the swimming beach. Wetland E is heavily used for walking and sunbathing by visitors. After input from the USACE and WDOE staff at the October 2, 2008 agency meeting, the JA Brennan design team reconfigured the Promenade design to minimize impacts to Wetland E and to rehabilitate a portion of Wetland E. Wetland E would be unavoidably affected by the need to maintain logical pedestrian connections between the lawn area, the bathhouse, and the swimming beach. As with pedestrian access in the buffers for Juanita Creek and associated wetlands, currently pedestrians walk uncontrolled through Wetland E and its buffers to access the lawn, the bathhouse, and the swimming beach (Figure 13). Park users also use Wetland E and it's buffers for sunbathing and picnicking.

The design team created a design to transform Wetland E from a lawn wetland to a wetland planted with native species and incorporated into the park landscape as a natural element and an opportunity for public education. Encroachments within the buffer for Wetland E will be reduced by directing pedestrian access to the Promenade, planting native species in the buffer, and signage to indicate that the wetland and buffer are protected areas. The Promenade is located to reduce encroachments into the buffer as much as is feasible, given the constraint of the keeping the Promenade as far from the edge of water for Lake Washington as is feasible while reducing impacts to Wetland E. Total proposed impacts to Wetland E for the construction of the Promenade and other features is now 0.40 acres. In addition, after the additional determination site visit requested by the USACE in fall 2008, a picnic shelter and path were relocated to avoid impacts to the expanded portion of Wetland E. Finally, in a future phase, the bathhouse will be removed out of the Wetland E buffer and this area will be planted with native buffer species.

8.0 MITIGATION PLAN

This Mitigation Plan presents the restoration elements to be completed under Phase I as well as the compensation to be provided for adverse effects on wetlands and buffers that would result from construction of Phase I. Key features of this Mitigation Plan include:

- Enhance the Lake Washington shoreline by moving the parking lot away from the shoreline; planting areas with native species and directing pedestrian traffic to the Promenade.
- Create the Oxbow Marsh wetland, with an off-channel habitat connection to Juanita Creek, to provide wetland marsh habitat and to improve water quality.
- Enhance Juanita Creek by removing bank hardening in the creek and planting native species in the riparian zone.
- Enhance Wetlands B and C by creating open water and riparian habitats and planting native species.
- Rehabilitate Wetland E by planting native emergent species and directing treated stormwater into Wetland E.
- Enhance creek and wetland buffers by planting native species and directing pedestrian traffic to new pathways.
- Preserve Wetlands A, D, and F.
- Enhance water quality at the park by treating stormwater from the parking lot and the Promenade in rain gardens and biofiltration swales. The created Oxbow Marsh will also provide water quality function.

8.1 LAKE WASHINGTON SHORELINE

As with pedestrian access in the buffers for Juanita Creek and associated wetlands and Wetland E and buffers, currently pedestrians walk uncontrolled through the Lake Washington shoreline to access the lawn, the bathhouse, and the swimming beach. Phase I does include new impervious surfaces within the shoreline for the Promenade, paths, and seating walls. However, these elements in the shoreline will help reduced the uncontrolled pedestrian access in the shoreline by directing pedestrian to the Promenade and pathways and seating walls.

Phase I includes plantings of native tree, shrub, and grass/emergent species within the shoreline, in addition to the plantings in Wetland E. Clusters of native trees and shrubs will be planted at key locations along the lakeside of the Promenade to enhance habitat in the shoreline. In addition, the biofiltration swales along the landside of the Promenade will be planted with native emergent and grass species. These two elements will enhance habitats within the shoreline and add natural

improvement of water quality, and a means of raising public awareness of water quality on Juanita Creek and other urban streams.

The marsh design will preserve the northwestern pedestrian entry into the park. A small entry plaza will be constructed adjacent to NE Juanita Drive that leads to a six-foot wide crushed rock path winding its way down to the oxbow marsh and across the marsh on a 28-foot long pedestrian bridge, and ultimately across Juanita Creek on a replacement bridge that leads to the swimming beach, Promenade and Community Commons. The marsh pedestrian bridge will be six feet wide and constructed of wood and recycled plastic materials with a pin-pile foundation system. There will be connecting crushed rock paths that lead to two crushed rock overlooks/interpretive points at the marsh and another at Juanita Creek. The existing bridge across the creek will be replaced with a bridge that is three feet longer than the existing bridge (28 feet) and 2.2 feet higher to allow for improved clearance during flood flows.

Wetland Enhancement of Wetlands B and C

As discussed previously, there will be excavation in Wetlands B and C in order to create the connection of the Oxbow Marsh to Juanita Creek. The location of the entry and exit of the Oxbow Marsh is designed to minimize impacts to Juanita Creek. The excavation will alter grades to convert Wetlands B and C from riparian wetlands on the bank of Juanita Creek to riparian wetlands with a central low flow channel flowing through them. After all grading is completed, native trees, shrubs, and emergent species will be planted. The habitats in Wetlands B and C will be diversified with channel and riparian habitats and diverse plantings. In addition, the creation of the Oxbow Marsh will be an overall enhancement of the riparian wetland habitats of B and C. Therefore, the project will result in a higher quantity and higher quality of riparian habitat adjacent to Juanita Creek and the associated wetlands.

Oxbow Marsh Design Issues – Sedimentation

The potential for fish passage/stranding and/or excessive sedimentation are two primary design issues considered in the design of the Oxbow Marsh. Sedimentation is a process that naturally occurs in wetland areas. Sediment deposition serves as vegetation substrate and nutritional source. However, uncontrolled or excessive sedimentation can create burdensome maintenance requirements and make a wetland unsustainable in the long term.

The project is located in the natural depositional zone of the stream system, with a low hydraulic gradient and backwater effects from Lake Washington. This situation is amplified by the reversal of natural seasonal fluctuation of lake levels due to operation of navigational locks controlling water levels in Lake Washington, which pairs low stream flows in Juanita Creek with high lake levels in Lake Washington during the summer.

The marsh design employs several strategies to minimize or manage the sedimentation in the Oxbow marsh. The primary strategy in this respect is to set up the marsh as a flow-through system with a single flow path (as opposed to a backwater channel or multiple flow channels). A flow-

Applying a 2.0 safety factor and sediment bulk density of 0.76 ton/CY, this translates to approximately 16 CY of sediment deposition per year.

Sands and heavier sediments will fall out in the upstream portion of the marsh. In order to help localize this deposition, the project will have a "settling zone" immediately downstream of the diversion weir. While settling would be enhanced by a pond or pit, we proposed only a zero-slope reach to avoid stranding fish.

Silts and clays, which are held in suspension longer than heavier material, will deposit further downstream in the marsh. Tetra Tech, Inc. calculations compared sediment deposition rate (average flow depth divided by particle fall velocity) to the average retention time through the marsh to estimate potential sediment capture rates in the marsh, which on the order of up to 30 percent. Based on these calculations, this material is expected to deposit primarily in the over-bank areas of the marsh; the low-flow channel will fill at a slower rate because of its higher gradient and better potential to experience flushing flows.

Sediment Management

Much of the sandy material delivered to the marsh can be expected to drop out in the upper part of the marsh, and can be removed on a consistent basis to keep the diversion weir clear and help maintain marsh function. The design team proposes that the "settling zone" at the upstream end of the marsh be maintained. The design team recommends providing vehicular access to the upper portion of the marsh and the diversion structure to facilitate future maintenance. This maintenance would involve vactoring sediment deposits in the settling zone, which is approximately 50 feet long by 20 feet wide. Using a conservative dry bulk density1 and a safety factor of two, our estimate of average annual deposition is approximately 16 CY. The maintenance frequency would depend on the actual deposition rate during a particular time period and possibly the size of vactor truck used. A large vactor truck might have up to 9 CY of debris capacity, which suggests that maintenance would be required about once a year (with an average of about two trips to the decanting station). The settling zone area is excluded from mitigation area calculations for the purposes of determining area of compensatory mitigation.

The silt portion of the sediment can be expected to deposit by accretion in the marsh channel and on the marsh floodplain over time, and would not necessarily need to be removed to maintain marsh functionality. Maintenance in the remainder of the marsh is not proposed. Fine sediment deposition is expected to deposit primarily in the overbank areas of the marsh (those areas outside the low-flow channel), which would not inhibit flow through the marsh significantly. If the low-flow channel becomes plugged, water may seek an alternate path through the marsh. Given the small magnitude and velocity of flow through the marsh, this possible meandering would not present a significant risk to the marsh.

City of Kirkland Parks and Recreation would be responsible for maintenance. The Parks Department may collaborate with Public Works to accomplish the maintenance, but the ultimate maintenance responsibility would remain with the Parks Department.

northeast entry point along NE Juanita Drive walk uncontrolled through the creek and wetland buffers and cross Juanita Creek at the pedestrian bridge to access the swimming beach.

Under Phase I, the existing picnic shelter will be removed, along with the concrete pad. The new pedestrian pathways proposed under Phase I will control pedestrian movement through the Oxbow Marsh and the creek/ wetland buffers while providing access between the northeast entry point, the pedestrian bridge, and the swimming beach. The proposed pathways will reduce current impacts to creek and wetland buffers by limiting access to one pathway system instead of uncontrolled access through the buffers. The pathway crosses the Oxbow Marsh at the narrowest location and a boardwalk is used for this crossing to reduce impacts to the new wetland habitat at the marsh.

In addition, new plantings of native species tree, shrub, and meadow species are proposed within the buffers. The existing trees will be preserved as much as is feasible. The removal of impervious surface, limiting pedestrian access, and restoring the vegetation to native plantings will enhance the buffers capacity to protect the creek and wetlands, and will provide a rich habitat for birds and wildlife.

8.4 WETLAND REHABILITATION – WETLAND E

As discussed previously, the design for Wetland E has been improved to minimize impacts to the wetland and to rehabilitate Wetland E and incorporate it into the landscape as a natural feature. Currently, Wetland E is a palustrine, emergent wetland that is planted in lawn grass, and is virtually unidentifiable to visitors as a wetland. A small portion of Wetland E will be filled in order to build the Community Commons, the Promenade and paths. This is necessary to permit adequate space for community gathering and allowing the space to function as a small amphitheater. The area of actual fill in Wetland E for these elements totals 11,542 sf. In addition, under the City of Kirkland code, the area of Wetland E that will continue to remain in lawn grass and be used for passive recreation, is identified as a "Paper Fill" under the City code. This area is 5,984 sf. The total area of Wetland E that will be impacted under the City of Kirkland code totals 17,526 sf (0.4 acres).

The wetland rehabilitation will consist of minor grading and planting, with the emphasis being on avoiding impacts to the existing wetland and creating a wetland meadow in the portion of Wetland E that is preserved. The area of Wetland E that will be preserved and rehabilitated with native plantings to create a meadow wetland habitat is 9,802 sf (0.22 acres). The grading plan, planting plan, sections, and mitigation details are shown on Figures 17, 18, 19a, and 19b. Mitigation details, Plant List, and General Notes are shown on Figures 20a, 20b, 21, and 22.

The portion of the Promenade that crosses the wetland will be constructed as a boardwalk to minimize impacts to Wetland E. Redirecting pedestrian traffic between bathhouse and beach to access points around the wetland and along the promenade will reduce current human impacts to Wetland E.

Lake Washington shoreline to allow for construction of the Lakefront Promenade. The functions will be replaced by replanting the lawn in the shoreline after grading activities to create the Community Commons are complete and planting native trees and shrubs in clusters along the Promenade and native plantings in the biofiltration swale adjacent to the Promenade for a total of 3,736 sf (0.08 acres) of native plantings.

Goal 2. Replace and improve stream functions after temporary impacts associated with excavating a 3,500 sf (0.08 acres) area below the OHWM of Juanita Creek, (a Type I stream), to allow for the construction of the Oxbow Marsh. The creek restoration will include: removing bank hardening from Juanita Creek (26 square yards), softening sharp banks vulnerable to scouring with bioengineered bank stabilization (2,900 sf)(0.07 acres), and removing invasive species and planting native species in the riparian zone of the creek (37,061 sf)(0.85 acres). The mitigation ratio for the temporary impacts for restoration within the creek will be nearly 2:1 (1.8:1). KZC: Class A stream

Goal 3. Replace and improve wetland functions for impacts associated with excavating a 1,333 sf (0.03 acres) area of Wetland B, a Type III wetland, to allow for the construction of the inlet to the Oxbow Marsh. This goal will be met by enhancing Wetland B marsh wetland and riparian wetland with native plantings, for a total of 458 sf (0.011 acres) of wetland enhancement of Wetland B and with wetland creation in the Oxbow Marsh in the amount of 0.034 acres of wetland creation. The mitigation ratio for the temporary impacts to Wetland B will be 1.5:1.

Goal 4. Replace and improve lost wetland functions resulting from actual fill and "paper fill" totalling 17,526 sf (0.40 acres) area of Wetland E, a City Type III wetland, to allow for the construction of the Community Commons, the Promenade and boardwalk. This goal will be met by creating a wetland marsh habitat at the Oxbow Marsh (0.40 acres) and enhancing 0.20 acres of Wetland E with native plantings. The mitigation ratio will be 1:1 for creation and 0.5:1 for rehabilitation for a total mitigation ratio of 1.5:1.

Goal 5. Provide buffers to protect the creek and wetland habitats from excessive human disturbances associated with the use of the property as a public park. This will be achieved by providing pathways with boardwalk and bridge to direct pedestrian traffic through the buffer, wetlands, and creek crossing and by planting 37,061 sf (0.85 acres) of Juanita Creek and wetland buffer with native plantings. The mitigation ratio for the Juanita Creek/wetland buffer encroachments and reductions will be 10:1 in the form of enhancement plantings.

Goal 6. The Wetland E buffer will have a Promenade to direct pedestrian traffic through the buffer and wetland. Also in the Wetland E buffer, 1,032 sf of impervious surface removed during Phase I and another 2,816 sf of impervious surface removed in

survival rate can be met by survival with one-year warranty plantings for any missing emergent and grass species.

- YEAR 1: 100% of at least four species of native emergent and grass species will survive after the first year following planting and will cover at least 60% of the restoration palustrine emergent (PEM) wetland meadow areas in Wetland E and the planted Wetland E buffers. The 100% survival rate can be met by survival with one-year warranty plantings for any missing emergent and grass species.

- YEAR 3: At least three species of planted native trees and at least four species of planted native shrubs will survive after five years after planting and will cover at least 30% of the areas in the Lake Washington shoreline designated for planting native species.

- YEAR 3: At least three species of planted native trees and at least four species of planted native shrubs will survive after five years after planting and will cover at least 30% of the Oxbow Marsh, Wetlands B and C, (palustrine forested and scrub-shrub [PFO/PSSC]), and the Juanita Creek/wetland buffer areas.

- YEAR 3: At least four species of native emergent and grass species will survive after five years after planting and will cover at least 50% of the Oxbow Marsh, Wetlands B and C (PFO/PSSC), and the Juanita Creek/wetland buffer areas.

- YEAR 3: At least four species of native emergent and grass species will survive after the first year following planting and will cover at least 70% of the palustrine emergent (PEM) wetland meadow areas in Wetland E and the planted Wetland E buffers.

- YEARS 5 and 7: At least three species of planted native trees and at least four species of planted native shrubs will survive after five and seven years after planting and will cover at least 35% of the areas in the Lake Washington shoreline designated for planting native species.

- YEARS 5 and 7: At least three species of planted native trees and at least four species of planted native shrubs will survive after five years after planting and will cover at least 35% of the Oxbow Marsh, Wetlands B and C, (palustrine forested and scrub-shrub [PFO/PSSC]), and the Juanita Creek/wetland buffer areas.

- YEAR 5: At least four species of native emergent and grass species will survive after five years after planting and will cover at least 60% of the Oxbow Marsh, Wetlands B and C (PFO/PSSC), and the Juanita Creek/wetland buffer areas.

- YEAR 5: At least four species of native emergent and grass species will survive after the first year following planting and will cover at least 80% of the palustrine emergent (PEM) wetland meadow areas in Wetland E and the planted Wetland E buffers.

(*Lythrum salicaria*) and Japanese knotweed (*Polygonum cuspidatum*), for which there is a zero tolerance standard (0% cover in any year). Other invasive weeds include:

Poison Hemlock (*Conium maculatum)*
Himalayan blackberry (*Rubus procerus*)
Evergreen blackberry (*R. laciniatus*)
Scot's broom (*Cytisus scoparius*)
Reed canarygrass (*Phalarus arundinacea*)
Climbing nightshade (*Solanum dulcamara*)
Field morning-glory (*Convolulus arvensis*)
Burdock (*Arctium minus*)
Knapweed (*Centaurea* spp.)
Canada thistle (*Cirsium arvense*)
Bull thistle (*C. vulgare*)
Teasel (*Dipsacus sylvestris*)
St. John's wort (*Hypericum perforatum*)
Russian thistle (*Salsola kali*)
Tansy ragwort (*Senecio jacobaea*)
Common tansy (*Tanacetum vulgare*)
Birdsfoot trefoil (*Lotus corniculatis*)

8.8 MITIGATION CONSTRUCTION PLAN

Mitigation capable of creating, rehabilitating, enhancing, and protecting wetland functions typically involves several sequential stages. The sequence and estimated schedule of stages identified for construction of the proposed wetland mitigation are presented below.

Pre-construction Meeting

The project manager, mitigation plan installer, and any other parties deemed necessary by the project manager, shall conduct a pre-construction meeting with the project environmental lead and/or the mitigation designer to ensure that the goals and objectives of the design are clearly understood and to clarify any design or installation questions prior to initiation of construction.

Establish Construction Limits and Erosion Control Measures

Conservation measures are incorporated into the initial project design as a proactive means for avoiding or minimizing adverse impacts associated with project activities. Best management practices (BMPs) are specific temporary or permanent activities that will be implemented during the construction phase. Conservation measures and BMPs are fully described in Section 4.7 of this Plan and are shown as a TESC Plan on Figures 5a, b, and c and described in Figure 22. General Notes. All conservation measures and BMPs will be included in the construction plans for the proposed project.

8.9 MONITORING PLAN

Mitigation monitoring shall be conducted by a qualified person for a ten-year period on Years 1, 3, 5, 7, and 10. Year 1 will begin one year from the date the USACE accepts the as-built drawings for the mitigation plan construction. Year 1 will also serve as the one-year warranty inspection. A qualified person could include the mitigation designer or a qualified wetland biologist. Each year monitoring will be conducted twice – once in the spring between April 1 and May 30th and in the fall between September 1 and October 31st. Monitoring will assess the following parameters:

1. Function of control structures, hydrology and flows at Oxbow Marsh;
2. Sedimentation at Oxbow Marsh;
3. Fish use, passage and stranding issues at Oxbow Marsh;
4. Native vegetation establishment (percent survival and cover, vigor, and diversity);
5. Control of invasive species;
6. Wildlife observations;
7. Photographic ground points;
8. Human encroachment, including trampling, vandalism, and trash dumping;
9. Success relative to Performance Standards; and
10. Contingency Plan.

The monitoring results will be related to the performance standards and, if warranted, recommendations shall be made based on these findings to assure mitigation success. Monitoring reports will be submitted to the Seattle District USACE Regulatory Branch, the Muckleshoot Tribe, WDOE, WDFW, and the City of Kirkland by December 31st of each monitoring year.

8.10 MAINTENANCE

The project manager shall be responsible for complying with all maintenance requirements for the duration of the 10-year monitoring period established by this mitigation plan. See Table 6 for maintenance tasks and schedule for maintenance.

Table 6. Maintenance Tasks

Activity	Schedule and Special Notes
Water all installed species.	As needed, once every two weeks until the first fall after plant installation or until rainfall reaches an average monthly rainfall accumulation of 3 inches.
Replace all dead rehabilitation plantings.	For one year following final acceptance. Then as required under the Contingency Plan as determined in the monitoring reports.
Trash removal from enhancement	At least two times during each year (April or May and

RECEIVED
JUL 21 2009

JUANITA BEACH PARK MASTER PLAN PHASE 1 IMPACTS TO WATER RESOURCES

Resource	WDOE Category	City Kirkland Type	Buffer Width	Type of Impact	Area of Impact (sf)	Quantity of Cut/Fill (cu yds)
Lake Washington Shoreline	I	I	200 ft	Concrete surface for Promenade, Plaza (stage), and Seat Walls	10,476	
				8' Wide Asphalt Paths	2,265	
				6' Wide Crushed Rock Paths	541	
				Art element Plaza: (at the east end of the promenade)	300	
				Future 8' Wide Asphalt Paths	2,316	
				Future Proposed Bathouse w/ picnic shelter	2,279	
				Future Picnic Shelter	618	
				Future paving	12,136	
Total Shoreline Impervious Surface:				**Impervious Surface:**	**30,931**	
Total Shoreline Cut and Fill:				**Grading, Cut and Fill: For above items+ Comm Commons**	**90,000/(2.0 ac.)**	**800 CY**
Juanita Creek	I	A	75 ft	Excavation within the OHWM of the creek.	3,500/0.08 ac	24 CY Cut
Juanita Creek Buffers	I		75 ft	Crushed rock path in buffer	3,327/0.08 ac	26 CY Fill

7/19/09

ENCLOSURE 9
SHR17-00775

			bldg setback	Community Commons		
				Direct impact area for paving, excavation, etc. for Promenade and paths	4,627	
Total Wetland E Buffer Impacts:				**Buffer Reduction, Grading, Cut and Fill, Paving:**	**7,415/0.17 ac**	**268 CY Fill**
Wetland F	I	I	100 ft	none	0	
Oxbow Marsh Buffer	III	I	100 ft	Crushed Rock Path	2,348	32 CY Cut/ 32 CY Fill
				Resurface existing asphalt paving (Existing- Not applicable as an impact)	(1,479)	18CY Cut/ 18 CY Fill
				Bridge over Oxbow Marsh	210	8 CY Cut
Total Oxbow Marsh Buffer Impacts				**Grading, Cut and Fill: For Paths and Resurfacing**	**2,558/0.06 ac**	**58 CY Cut/ 50 CY Fill**

ENCLOSURE 9
SHR17-00775

RECEIVED
JUL 21 2009
PM
DEPARTMENT

JUANITA BEACH PARK MASTER PLAN PHASE 1 WATER RESOURCES MITIGATION

Resource	WDOE Category/ City Kirkland Type	City Req'd Buffer Width	Buffer Width Provided	Type of Mitigation	Area of Mitigation (sf)
Lake Washington Shoreline	I/I	200 ft	200 ft	Plantings of native species along the shoreline	1,616 sf
				Biofiltration swale planted with native species	2,120 sf
Total Lake Washington Shoreline Enhancements					**3,736 sf/ (0.08 ac)**
Juanita Creek	I/A	75 ft	75 ft	Remove existing concrete riprap bank armoring	26 SY
				Lay back steep bank, place jute netting and plant with willow live stakes	**2,900 SF/0.07 ac**
Juanita Creek Buffers	I/A	75 ft	75 ft	Planting native meadow and tree species in riparian buffer	**37,061 sf/0.85 ac**
				Remove existing picnic shelter and small concrete pad (removal of impervious surface)	685 sf
Wetland A	III/III	50 ft	50 ft w/10 ft bldg setback	none	0
Wetland B	III/III	50 ft	50 ft w/10 ft bldg setback	Enhance with riparian native species.	**458 sf/0.11 ac**
Wetland C	III/III	50 ft	50 ft w/10 ft bldg setback	Enhance riparian wetland with native tree and shrub plantings	**160 sf/0.004 ac**

ENCLOSURE 9
SHR17-00775

7/20/09

Oxbow Marsh	III/I	50 ft	100 ft	Create a new Oxbow Marsh habitat with native species- shallow marsh portion	16,510 sf
Oxbow Marsh	III/I	50 ft	100 ft	Create a new Oxbow Marsh habitat with native species – deeper centre marsh habitat portion with low flow channel	2,482 sf
Total Oxbow Marsh Wetland Creation					**18,992 sf/0.44 ac**
Oxbow Marsh Buffer	III/I	50 ft	100 ft	Create a riparian buffer to the new off-channel habitat.	**19,843 sf/0.45 ac**

EXHIBIT 9
SHR17-00775

THE WATERSHED COMPANY

SCIENCE & DESIGN

July 24, 2009

Janice Soloff
City of Kirkland
Planning and Community Development Department
123 – 5th Avenue
Kirkland, WA 98033

Re: Juanita Beach Park Phase 1 environmental review – submittal date July 17, 2009; The Watershed Company Reference Number: 080704.3

Dear Janice:

Thank you for the opportunity to review the above-referenced project for compliance with the standards and regulations found in Chapter 90 of the Kirkland Zoning Code (KZC).

Overall the submittal complies with Chapter 90 in terms of allowed impacts and required mitigation. However, several details of the mitigation plan need refinement or clarification. Each is outlined below.

1) No plant quantities are found in the submittal. In light of the amount of proposed pedestrian amenities and resulting anticipated use within the sensitive areas and mitigation areas, a dense plant assemblage is appropriate. This will deter off-trail use of the site and generally increase wildlife habitat values. As an example, we note that 50,778 square feet of upland area is being planted adjacent to the oxbow marsh. This area should have at minimum 609 trees and 1,422 shrubs. The plant quantities by species should be listed in the submittal.

2) Goal 7 in the mitigation plan addendum is to establish 0.44 acres of created wetland. However, there are no performance standards to measure if this goal is achieved. Typically, wetland creation areas must meet performance standards for wetland hydrology and vegetation. Hydric soils are usually assumed to be established if the hydrology standard is met. Performance standards for wetland creation are needed.

3) Figure 11CC shows a cross section of the low flow channel. It is shown as completely vegetated. However, no fertile soil is shown in the cross-

750 Sixth Street South | Kirkland, WA 98033
p 425.822.5242 | f 425.827.8136 | watershedco.com

ATTACHMENT 3

section. The section does show a 1-foot-thick layer of clean rounded stream gravel just below the vegetated "soil" surface. The emergent vegetation listed in the plant list will not survive in this gravel substrate. The pure gravel will not develop into a hydric soil and will therefore not meet wetland creation requirements. Finally, organic material in the soil will assist in the overall goal of providing water quality benefits. Organic matter, especially in anoxic conditions, removes a wide variety of pollutants from surface water. Organic soil should be specified in all emergent areas required for wetland creation credit.

4) Somewhat in conflict with Figure 11CC, the planting requirements and soil amendment notes on Figure 22D list that "all landscape areas" be amended with 2 inches of organic amendment. Even if this treatment is intended for the oxbow marsh and low-flow channel, the amendment quantity is insufficient to support emergent vegetation. All proposed emergent areas should have soil that contains at least 45% organic matter by bulk density. The plan should specify an emergent wetland soil mix. The plan should require this minimum organic percentage as a performance standard (verified by receipts or haul tickets at the time of installation).

5) The SEPA checklist contains some minor inconsistencies: page 13 states the Lake Washington shoreline is Category I protected by a 200-foot buffer. There are no category designations for shorelines under the Shoreline Master Program and no buffers. There are environment designations and a 200-foot management zone. Page 21 lists Wetland F as a Category I per the Ecology rating system. This conflicts with the 2008 wetland delineation "update" report, which scored Wetland F as Category III per the state system. These discrepancies should be corrected.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Hugh Mortensen

Hugh Mortensen, PWS
Senior Ecologist

THE WATERSHED COMPANY

SCIENCE & DESIGN

* See April 2009 plans received July 2009 and subsequent plan review letter by Watershed dated July 24, 2009. JLS, PCD

January 16, 2009

Janice Soloff
City of Kirkland
Planning and Community Development Department
123 – 5th Avenue
Kirkland, WA 98033

Re: Juanita Beach Park Phase 1 environmental review
The Watershed Company Reference Number: 080704.3

Dear Janice:

Thank you for the opportunity to review the above-referenced project for compliance with the standards and regulations found in Chapter 90 of the Kirkland Zoning Code (KZC). We are also reviewing how the project complies with the Shoreline Substantial Development process. However, this review will be provided under separate cover.

Project Summary
The applicant proposes several improvements to Juanita Beach Park to improve use of the site by the public. These improvements include a new boardwalk and "Promenade" path, public gathering areas, and improvements to existing lawn and beach areas. The application also incorporates several components to improve water quality and wildlife habitat. Some of these components are in the form of habitat enhancement and wetland creation to mitigate for impacts to wetlands, wetland buffers and stream buffers. Finally, a small portion of the enhancement is to be set aside as a mitigation bank for future permitting needs of the City. Habitat enhancement/mitigation will take the form of the addition of hydrogeomorphic complexity in Wetland E, the creation of a side channel on Juanita Creek, the creation of a wetland "marsh" adjacent to Juanita Creek, and wetland and stream buffer enhancement with native plants.

Findings
Wetland Determination
The characterizations of wetland hydrology, soils and vegetation that produced the final wetland boundaries are accurate. The Washington State Rating Forms were not reviewed for accuracy, as these forms are not used by the current City of Kirkland

750 Sixth Street South | Kirkland, WA 98033
p 425.822.5242 | f 425.827.8136 | watershedco.com

sensitive areas regulations in Chapter 90. The City uses a unique form to rate wetlands for regulation. City wetland rating forms were supplied for Wetlands E and F in the determination report; no such forms were supplied for Wetlands A, B, C or D. While we did not come to the same number of points on the forms, we found the classification of Wetlands E (Type 3 – ~~25~~ 50-foot buffer plus 10-foot setback) and F (Type 1 – 100-foot buffer plus 10-foot setback) to be accurate.

We disagree with the classification of Wetlands A, B, C and D as Type 1. The code definition of Type 1 wetlands includes those contiguous to the lake and those that provide *significant* habitat to federally listed species. Since Wetlands A, B, C and D are outside the Lake Washington Ordinary High Water Mark and all water moves toward (not from) the lake from the wetlands, they are not contiguous. While the stream provides habitat for listed fish, the wetlands do not provide much, if any, habitat and certainly do not provide *significant* habitat. Rating forms for these wetlands should be completed to determine the wetland rating, appropriate buffers and other relevant regulations.

Stream Determination
The submittal accurately identifies Juanita Creek as a Type A stream in a primary basin, requiring a 75-foot buffer plus a 10-foot setback.

Impacts to Wetland E
KZC 90.55 1. j (which applies via KZC 90.55.3) requires the applicant to show that there is no practical or feasible alternative with less impact to the wetland. Modification to Wetland E is proposed for the community commons (fill), portions of the Promenade (fill) and a path and playchip area at the east end. Un-quantified impacts appear to be proposed by a series of step stones crossing the wetland south of the proposed picnic shelter. Portions of the lawn area within the existing buffers are proposed to be retained/improved. However, no mitigation is proposed for this continued non-conforming use. Furthermore, the buffer is proposed for a 50% reduction, which is more than the 30% reduction allowed in KZC 90.60.1. The mitigation notes this discrepancy and states that a variance is needed for approval.

A discussion of mitigation sequencing is provided on pages 31 and 32 and the need for providing logical pedestrian access is discussed. However, it appears that fill impacts of the Promenade south of the commons could be further minimized by lengthening the proposed boardwalk. Furthermore, is it absolutely critical that the commons be perfectly circular in plan-view? Aesthetic concerns aside, an oblong- or oval-shaped area would appear to present similar amphitheater functions and would avoid much of the impact. Similarly, it is unclear why the playchip area,

occupying the eastern end of Wetland E and its buffer, needs to be situated as shown. Note that KZC 90.70 allows "access through wetlands and buffers in conjunction with a public park."

Impacts to Wetlands B and C

Impacts to Wetlands B and C are described as temporary. The modifications to these wetlands are presented as enhancements necessary to allow creation of the wetland marsh and side channel features. Per Table 5, the impacts are being mitigated at a 1:1 ratio. Such modification appears to be addressed in two code sections: First, 90.55.2 and .3 state that no land surface modification shall occur in Type 2 or 3 wetlands except as provided in each subsection. Although, both subsections state that the applicant may request a modification of the section requirements. Second, KZC 90.65 allows for wetland restoration by removing "material detrimental to the area" or through the addition of "native plants and other habitat features." Creation of a new hydrogeomorphic regime in these wetlands, as proposed, could legitimately be viewed as a habitat enhancement. City officials such as the City Attorney and/or Planning Director should be consulted as to which section applies to this project and how similar questions have been interpreted in the past. Regulations aside, it is our opinion that these wetlands are of extremely low functional value and, provided other questions of the plan could be resolved, the improvement in habitat far outweighs the minor losses within Wetlands B and C.

Mitigation Plan

The proposed marsh area has been determined to accumulate sediment and the design team proposes vehicular access in perpetuity to facilitate removal of this sediment. Since all of the wetland mitigation and banked wetland creation area is downstream of the sedimentation basin, the long-term status as wetland, and therefore the perpetual success of the mitigation, would seem to be dependent on the continual removal of sediment. In general, mitigation that depends upon continued maintenance is discouraged. Ideally, mitigation should produce habitats that are self-maintaining in perpetuity or at least are compatible with natural ecosystem change. The word "restoration" is used throughout the mitigation plan. True restoration of form and function would imply the lack of a need for ongoing maintenance, i.e. sediment removal. Characterizing the proposed mitigation as *restoration* would imply that a course had been set for the "restored" habitat to continue to maintain its now-natural form *or* that it had been set up to evolve on its own through a progression of successive natural forms and, similarly, that it would continue to provide a succession of natural habitat functions. The need for maintenance prompts a series of questions: Who would be responsible for sediment

removal? Would it be on a regular basis or only as needed? Are regular inspections planned? If so, by whom and how often? Would Kirkland Parks be responsible for sediment removal or would Public Works take over? What is the contingency if sediment is not removed and the loss of mitigated wetland takes place? Given the uncertainty represented by these questions, we recommend that any proposed mitigation be independent of the need for maintenance beyond the five-year establishment period.

It appears that creation of the oxbow marsh as proposed would require a number of mature trees to be removed. How many and of what size and species? Could marsh configuration be altered such that more of these trees are retained, such as on hummocks?

The proposed marsh would, upon its completion, be defined as a Type 1 wetland under KZC 90.30. This is due to its ability to provide significant habitat to state or federally listed threatened or endangered fish species. As a Type 1 wetland, it would have a 100-foot standard buffer, plus a 10-foot building setback. The mitigation plan only shows a 25-foot buffer and no discussion of buffer reduction is presented. The larger buffer and setback would extend onto the neighboring property to the west, thereby potentially encumbering future development. Per KZC 90.55.4, the creation or expansion of a wetland buffer on any property other than the subject property would only be allowed if a statement signed by the owners of all affected properties affirms that the encumbrance is consented to. It appears that the proposed marsh comes within roughly 80 feet of the western neighboring property.

Similarly, since the new channel is designed to be used by salmonid fish, it would satisfy the requirements of Type A streams, expanding the stream buffer (75-foot buffer plus 10-foot setback) and binging to bear all of the stream requirements of such areas per Chapter 90.

Buffers

The plan incorrectly displays buffers. Buffers for the new wetland are too narrow and not shown for the new stream channel (see above). Also, the plan shows direct buffer offsets that produce sharp corners as opposed to radius curves. This results in buffers that are slightly larger at each corner. All of the standard/proposed modified City of Kirkland sensitive areas buffers for both wetlands and Juanita Creek should be shown on the plans, except where they overlap.

There are several key details missing from the plan that should be incorporated into the final design. These include a grading plan for the low flow channel, streambed gravel specifications, gravel cross-sections, specifications for topsoil, especially in excavated areas, and details on soil amendment or de-compaction where re-vegetation is to take place without excavation.

The performance standards section needs revision. First year survival for all planted species should be 100% acknowledging that the standard can be met either by survival or first-year warranty replacement. All references to survival of species should be for *native* plant species. Similarly, all references to percent cover should allow desirable native volunteer vegetation to count towards each percentage goal. Due to the complexity and size of the plan combined with replanting and/or substitution, tracking of percent survival beyond the second year is difficult and not very meaningful to the success of the site. Survival standards in year three and beyond is not needed.

The proposed plant list contains several plant species that are hybrids, not native to lowland King County or are otherwise inappropriate for mitigation sites in this ecoregion. These include the following: red maple, katsura tree, quaking aspen, scarlet oak, western redbud, silk tassel tree, Bradford pear, grand fir, incense cedar, snow brush, yellow twig dogwood, Pacific wax myrtle, blue elderberry, highbush cranberry, none of the "grasses" except the scouring rush, none of the "wildflower meadow" mix, except the tufted hairgrass (*Iris tenax* is fine), none of the "upland seed mix", except for meadow foxtail (birdsfoot trefoil is an invasive weed), dwarf red twig dogwood (ornamental cultivar), dwarf blue arctic willow, evergreen huckleberry, Roemer's red fescue, spike bentgrass, and meadow barley.

Birdsfoot trefoil should also be included in the list of invasive weeds to be managed at below 10% cover.

No schedule was shown for the monitoring plan. Note that KZC 90.554.c requires two site visits in each of the required five monitoring years. The first visit is typically a maintenance review in the spring; the summer or fall visit contains the bulk of the fieldwork.

The 2,900 sq ft Juanita Creek bank "layback area" cross-section shows live stakes installed where the bank is excavated. No information on the species is provided. Since this is a portion of the channel subject to summer backwatering and has a southern exposure, this area would benefit from installation of large shading conifers as well. Stakes at the top and middle of the bank will likely not survive

here, as they will not have a reliable hydrology source. In contrast to the cross section drawing, Figure 9 shows this area only sparsely vegetated.

Sedimentation

The text basically admits to placing the oxbow marsh in a depositional area where it can not likely be sustained by ongoing natural processes, as alluded to above, and calls it "restoration." Again, restoration should, by definition, be self-sustaining *or* be the first step along a naturally-occurring succession of habitat changes leading to such restored habitat.

It is stated that sedimentation in the oxbow marsh "is amplified by the reversal of natural seasonal fluctuation of lake levels due to operation of the navigational locks controlling water levels in Lake Washington, which pairs low stream flows in Juanita Creek with high lake levels during the summer." We disagree, and contend that the opposite is true. Deposition in the oxbow marsh area would tend to be much *higher*, not lower, if the lake's hydroperiod were more natural, being in that case higher in the winter and lower in the summer. Sediment is carried primarily by winter high flows and if the lake were higher in the winter it would be deposited at a higher elevation where the stream flows would meet placid lake water farther shoreward, in the oxbow marsh, rather than being carried, as the situation is now, farther lakeward.

The text states that a flow-through system is one of the strategies employed to minimize sedimentation, as opposed to a backwater channel. Again, we disagree. A flow-through system does not necessarily reduce sedimentation because the source of most of the sediment would be the creek, not the lake. Flow-through means that higher volumes of sediment–laden water from the creek will pass through the marsh increasing both sediment loading and likely or potential deposition. The area is essentially a delta, and channel-splitting (in this case induced) and deposition are things that tend to occur in deltas. Trying to fight the trend of the inherent, ongoing natural processes (deposition) within the project area setting can be difficult and frustrating. We disagree that a flow-through design would inherently or necessarily result in less deposition than a backwater design. It is stated in the text that that flow-through maintains circulation, but it fails acknowledge that the flow carries the sediment and, with respect to the marsh, is its source. Deposition cannot occur in quiet water if there's no sediment supply and therefore no sediment present to deposit, descriptive of a backwater area. Deposition does tend to occur in areas where sediment–laden water experiences a combination of decreasing velocities and/or depths (shear stress is dependent on both), an apt description of the proposed oxbow marsh area.

It is stated that an objective is to deliver 25% of the summer low flow to the marsh. The amount or proportion of winter high flow or high event flow would be more relevant to the sedimentation issue. Summer low flows will carry relatively little sediment.

A sediment density of 0.76 tons per cubic yard is given and used in calculations resulting in an estimate of cubic yardage of sediment deposition per year. We suggest that the given ratio, and hence the calculations based on it, are in error. Perhaps the ratio has been inverted, in which case the correct density would be more like 1.3 tons per cubic yard. Water has a density of 0.84 tons per cubic yard; the value given would indicate that the sediment is less dense than water, which is implausible.

Finally, given that the project area is more or less at (and portions at times below) the placid lake level, have the erosional and depositional effects of wave action due to storms been evaluated for the project/project area?

Fish passage
The sheet pile diversion weir is described as being 2 feet wide and 4.5 feet high. Why not make the opening more orifice-like to limit flows during the really high-flow events and thereby further reduce the amount of sediment loading to the marsh?

It is not clear how fish passage would be maintained through the marsh. The sheet pile diversion weir does not look particularly passable on Figure 11C, plunging onto rocks and logs with no pool, though the plunge is not particularly high.

Page 48, second bulleted performance standard from bottom. Flow depth over the weirs, apart from any debris accumulation, is influenced primarily by stream flow, which is not controlled by the project. Hence specifying 3 inches or 12 inches of flow depth at any particular time is not too meaningful. Is it the intent that the depth of flow should be the same over the log weir (at the notch?) as for the sheet pile weir leading to the oxbow marsh at all flow levels? If so, this should be so-stated and the overall performance standard clarified.

Page 49, top bulleted performance standard. If the intent is to check for pools which are disconnected from the channel, the observations should be made when the flows are *lower* than typical as opposed to higher. Any isolated pools would be more likely to still be connected at the higher flows specified.

Figure 11a. Plunges of 0.8 foot rather than the 1 foot shown may be required by WDFW to allow for passage of adult trout and even lower plunges may be needed if juvenile fish passage is required. See WAC 220-110-070. Other appended materials (Appendix D, Tetra Tech memo dated10/17/08) indicate that this issue has already been brought up, but not addressed on the plans or in the main report text.

Appendix D, Tetra Tech memo dated 10/17/08, Figure 1. Why are plunges created below each of the installed weirs at all, complicating the design with fish passage issues? Couldn't each of the weirs be lowered by, nominally, a foot to serve simply as gradient controls without the plunges? Alternatively, couldn't the marsh channel profile just be set to match the sheet pile weir elevation at the upstream end, regardless of what that elevation is?

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Hugh Mortensen

Hugh Mortensen, PWS
Senior Ecologist

Gregory P. Johnston

Gregory P. Johnston, EIT/CFP
Senior Fisheries Biologist

j.a. brennan
associates PLLC

Landscape Architects & Planners
100 S. King Street, Suite 200, Seattle, WA 98104
t. 206.583-0620 f. 206.583.0623
www.jabrennan.com

memo

To: **Janice Soloff, AICP** Date: 5/4/09

From: **Juanita Beach Park Design Team** Project: **Juanita Beach Park Phase 1 Design**

Re: **Juanita Beach Park Phase 1 Design**

Comments:

RESPONSE TO WATERSHED LETTER

WETLAND DETERMINATION

Refer to the 2009 Wetland and Stream Mitigation Plan Addendum prepared (Douglass Consulting) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

IMPACTS TO WETLAND E

Consideration for Wetland E Disturbance

Juanita Beach Park is a popular waterfront destination attracting large numbers of park users throughout the year. The City of Kirkland Parks Department provided the following estimates of park visitation. Summer draws the highest number of people; a normal hot summer day may have upwards of 1000 patrons a day. A wet summer day may still attract 100-200 park visitors. On larger planned event days, such as the 4th of July celebration, upwards of 5,000 people visit the park in one day.

Currently park visitors walk freely across the mowed lawn Wetland E surface as there is no defined circulation system through the open lawn area. The lack of designated pathways is detrimental to the existing Wetland E area as frequent pedestrian traffic is disbursed across the wetland lawn. The lawn will continue to be mowed by the City of Kirkland.

The designers carefully weighed the high level of use of the park against the heavily impacted wetland resource and developed a scheme that avoids a portion of wetland, enhances a portion and proposes fill of another portion of the wetland. Ultimately up to 47% of the low functioning Wetland E will be impacted. The proposed design focuses on two main strategies of sensitive development and avoidance of the wetland area:

1. Control circulation
2. Cluster high use activities.
3. Create expanded wetlands for mitigation adjacent to Juanita Creek.

ATTACHMENT 4

Control Circulation

The design strategy of a well defined circulation route is to control the movement of pedestrians as a means to protect the enhanced wetland area and minimize impacts to the area of wetland avoidance. The proposed circulation network that includes the waterfront promenade provides park users a means of avoiding the Wetland E area. The easterly portion of Wetland E is proposed to remain undisturbed and shall maintain its current function as an open space mowed lawn. Proposed pedestrian paths will focus pedestrian traffic in upland areas, thereby reducing pedestrian impacts to the area of wetland avoidance. Previously, a stepping stone path was shown crossing Wetland E on the south side of the existing bathhouse. This path has been removed from the plan.

Cluster High Use Activities

Clustering high use activities in one area of the park will assist in drawing visitors away from sensitive areas in the park. High use activities such as the future playground and future bathhouse will be clustered in an area west of Wetland E, focusing the majority of wetland impacts to this actively used area. To accommodate the existing and proposed high use activity the project intends to 'paper fill for CoK' the most westerly portion of the wetland, effectively eliminating this area of the wetland.

The design also intends to create areas for intimate and large group gatherings, while protecting and enhancing a portion of Wetland E. The central area of Wetland E is proposed to be enhanced with native plantings, resulting in a higher functioning wetland. A proposed seat wall adjacent to the promenade and stage will provide a barrier to protect the enhanced wetland area.

Modified Buffer Setbacks

Wetland E buffer setback has been increased to a 50-foot buffer to meet the Type 3 City wetland code requirement in addition to a 10-foot building setback. Refer To Revised Plan Sheets.

See revised April 2009 Redevelopment Plans July 2009 - 35

Fencing will not be included at the buffer edge as a 50-foot buffer will be maintained with only pedestrian paths within the buffer, as permitted by KZC 90.70, which allows "access through wetlands and buffers in conjunction with a public park".

Promenade/ Boardwalk

The initial park design included a concrete promenade that extended along the length of the lake shore. Early review and feedback from federal, state, and local agencies and the Muckleshoot Tribe recommended that the designers consider enhancing Wetland E, and so, during schematic design, a boardwalk was incorporated into the promenade to reduce impacts to the western portion of Wetland E and the promenade was relocated to avoid wetland impacts to the maximum extent possible. The current size and length of boardwalk permits a continuous flow of wetland E connecting it to the lake shore, while re-directing pedestrian circulation away from the wetland and onto the promenade. A portion of the existing wetland is enhanced by developing a native marsh/meadow feature to support native emergent wetland vegetation. Treated water from bioswale/raingardens at the parking lot eventually drains into the emergent marsh enhancing the wetland hydrology. An overflow out of Wetland E to the beach is proposed.

Enhancement to Wetland E's buffer includes removal of impervious surface area, including removal of the 792 sq. ft picnic area, and the 240 sq. ft. concrete pad in Phase I, and removal of the 2,816 sq. ft bathhouse in a future phase.

Access through wetlands and buffers in conjunction with a public park is allowed by KZC 90.70.

Amphitheater (Commons):

The circular shape of the amphitheater/commons area permits the public to have a clear view towards the stage area. Compared to an oval-shaped space, the circle form allows more people to view the stage from the front rather than at an oblique angle. There are also large crowds of people at events in Juanita Park and the circulation pattern and area shown are critical to the park. This is not a change in use the paths are just focusing access. This will have a net effect of reducing the number of people walking across the lawn wetland.

Children's Playground (Playchip Area)

Per the City Council adopted Master Plan the playground is located on the west side of the Community Commons space, between the proposed picnic shelter and bathhouse. This location creates a strong connection between the picnic shelter and the playground. Families using the picnic shelter are able to easily watch their children enjoying the playground, and swimming, which makes this a safe and convenient juxtaposition. This playground location also permits easy circulation between the bathhouse, swimming beach and playground, which are all particularly attractive and convenient for families. The playground is also located away from the parking area to ensure children are safe from vehicular traffic. The play surface will be a permeable woodchip material that will freely drain the play area. A small area of fill of Wetland E is required to accommodate the play area. This entire area is currently mowed lawn which probably has a higher runoff rate than the wood chips.

Clustering the primary active uses to the west allows the eastern portion of Wetland E to remain more undisturbed as it is adjacent to a passive use area of the park. Locating the bathhouse and picnic shelter on the west side of the amphitheater allows the central Commons area to remain as a large open space for public gathering and events, with these support structures out of the way of, but in close proximity to the events space.

Mitigation Sequencing and Additional Comments for Wetland E

Refer to the 2009 Wetland and Stream Mitigation Plan Addendum prepared (Douglass Consulting) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

IMPACTS TO WETLAND B AND C

Impacts to wetlands B and C continue to be proposed, and the City recognizes that these two "wetlands are of extremely low functional value", and that "the improvement in habitat far outweighs the minor losses within Wetlands B and C." (Juanita Beach Park Phase 1 environmental review letter, January 16, 2009)

MITIGATION PLAN

Sediment Accumulation:

Refer to the April 2009 Juanita Beach Park – Updated Marsh Sediment Analysis with Stop Logs Memorandum prepared (TetraTech) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

Neighboring Parcel Encroachment:

Refer to the 2009 Wetland and Stream Mitigation Plan Addendum prepared (Douglass Consulting) and April 2009 Updated JARPA Graphics for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

Tree Impacts from Marsh Construction:

Three existing trees in the area of the proposed marsh were girdled by local beavers and will be removed as they are now dead. These trees may be used as habitat logs in buffer planting areas adjacent to the marsh. It is anticipated that up to 5 live trees will be impacted by the marsh construction. In an effort to preserve as many trees as possible, grading has been carefully designed to avoid tree root systems, but in some cases some root pruning will be required. The City arborist will be on site during construction to oversee implementation of the tree protection measures. Based on the arborist's tree inventory at the site, a number of trees will be retained and made into habitat snags as they were identified as potential public safety hazards.

(Refer to plan sheet D1 and D2 Demolition/ Clearing and Grubbing/ Tree Protection Plan)

Impacted trees include:

1. Two large Cottonwood trees (30.5" and 39" DBH) (trees have been topped and are in poor health)
2. One medium sized Blue Spruce (9" DBH)
3. One Pine tree (8.5" DBH)
4. One small coniferous tree less than 6" DBH.

In response to input provided in the City's preliminary environmental review, the channel alignment has been adjusted to preserve an existing Pin Oak tree with a 22" DBH and a canopy that extends +/- 40'. It was not possible to avoid the remainder of the trees listed above.

BUFFERS

The existing and proposed plans for the project identify the wetland and stream buffers as revised to respond to City comments. See April 2009 plan drawings.

Additional detail grading of the marsh will be provided once the current design has been approved.

Soil Amendments: (Incorporated into the general notes of JARPA)

1. Existing soil is primarily Indianola Fine Sand. Organic amendment will be provided.
2. Compaction for planted areas will not exceed 65% standard proctor density.
3. Amendment will include 2" of compost tilled or scarified to a depth of 4 inches in the Marsh.
4. Additional topsoil will also be provided for backfill into pit plantings.
5. Mycorrhizae will also be incorporated with the new container plantings.

Native Plants

The plant list will be modified to include mostly native plant material, as recommended for the Wetland E enhancement and entirely native plant material for mitigation in the marsh area.

King County's Native Plant List includes grand fir, quaking aspen, highbush cranberry, and evergreen huckleberry as native species. We will include these native species as part of the mitigation plantings. Many of the other plants mentioned by Watershed have been eliminated.

Live stake plantings along the Juanita Creek stream bank 'layback area' will use stakes of redtwig dogwood (Cornus stolonifera), Scouler's willow (Salix scouleriana), and Pacific willow (Salix lucida ssp. Lasiandra) species. Stakes have been omitted from the middle and top of bank where the hydrology will likely not permit their survival. Some trees and native upland hydroseed will be used to restore the mid and top of bank areas. Several Cedar trees will also be provided.

SEDIMENTATION

Refer to the April 2009 Juanita Beach Park – Updated Marsh Sediment Analysis with Stop Logs Memorandum prepared (TetraTech) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

MAINTENANCE

Refer to the April 2009 Juanita Beach Park – Updated Marsh Sediment Analysis with Stop Logs Memorandum prepared (TetraTech) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

FISH PASSAGE

Refer to the April 2009 Juanita Beach Park – Biological Assessment Addendum prepared (TetraTech) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

PERMITTING

Refer to the April 2009 Revised SEPA checklist and JARPA application prepared (Douglass Consulting) for responses to the January 16, 2009 Watershed Co. Environmental Review Letter for Juanita Beach Park.

Tree Plan: See Plan Sheets D1 and D2.

j.a. brennan
associates PLLC

Landscape Architects & Planners
100 S. King Street, Suite 200, Seattle, WA 98104
t. 206.583-0620 f. 206.583.0623
www.jabrennan.com

memo

To: **Stacey Rush**
City of Kirkland
Surface Water Utility Engineer Date: 5/4/09

From: **Juanita Beach Park Design Team** Project: **Juanita Beach Park**

Re: **Response to Stormwater Review**

Comments:

COMMENTS REGARDING THE WETLAND AND STREAM MITIGATION

Response to Comment 1)

Apply for Construction Stormwater General Permit
Certified Erosion and Sediment Control Lead – Parks to identify erosion and sediment lead

Response to Comment 2)

See April 2009 Updated JARPA application for Juanita Beach Park Phase 1.
Maintenance of New Marsh Area:
Parks Maintenance staff will provide monthly inspections of Marsh area to monitor:

1. Fish use passage and stranding
2. Sediment build up
3. Stop logs at Weir structures.
   It is anticipated that stop logs will need to be adjusted two times a year once in the spring and once in the fall
4. Accumulation and removal of debris
5. Function of control structures, hydrology and flows at Oxbow Marsh (In JARPA)
6. Vactor truck will access the settling zone once a year to remove anticipated sediment accumulation. (Verify)
7. Consider more frequent visits during the wet months?

Response to Comment 3)

Maintenance of Rain Garden and Bioswales:
Parks Maintenance staff will provide monthly inspections of Marsh area to monitor

1. Weeding
2. Removal of sediment build up in rain garden and bioswales, as needed.
3. Mowing of meadow grass in bioswales twice a year. (Spring and Fall)
4. Cutting back of perennial plants at end of growing season.
5. Pruning of shrubs in rain garden.

6. Irrigation of plants through establishment period, (3-5 years).
7. Routine maintenance will include biannual health evaluation of trees and shrubs in the rain garden and subsequent removal and replacement of any dead or diseased vegetation.
8. Rain garden soils should be maintained and replaced occasionally (on the order of every 10 years) to help maintain their effectiveness for stormwater treatment.

Response to Comment 4)

1. The existing sewer trunk line that runs east to west will be protected during construction. The line is owned and maintained by King County. City of Kirkland and King county standard provisions for protecting the sewer main will be included as part of the project specifications. The wetland enhancement and promenade is within the easement or overtop of the line. Currently both manholes are buried 1-2 feet below the sand. The manhole is being raised for access. The JA Brennan design team has been discussing access issues to the sewer with King County (King County owns and maintain the line). Planting will require provisions, or a hold-harmless agreement with parks, see attached S-1. Paving is allowed over the easement, however no structures are permitted to be constructed within the easement.
2. The line is approximately 10'to 15' (To be verified by King County) below existing grade. The pipe is 21" in diameter.
3. Improvements above the sewer line are limited to a 12 wide concrete promenade, low concrete seat walls 18" tall x 15" wide and minor excavation for wetland E improvements. Wetland E improvements will include a seeded meadow area, some shrub planting and limited tree planting, as well as the installation of nurse logs. Approximately 120lf above the sewer line will be planted.
4. 180 lineal feet of the proposed concrete promenade will rest above the sewer main. The design for the promenade is a 4" thick concrete slab set on a 6" compacted aggregate base.
5. Two manholes reside within the existing sandy beach, roughly 1 to 2 feet below the surface and are connected to the sewer line. The westerly manhole will be impacted by the promenade improvements resulting in raising the manhole to be flush with the finished concrete surface. This will be an improvement to maintenance crews, providing easier access to the manhole structure.
6. The easterly manhole will remain hidden below the sandy beach grade; the proposed improvements will elevate the sandy beach by roughly a foot. New plantings will be installed away from the manhole ensuring ease of access.
7. The proposed promenade improvements will result in easier access for maintenance of the sewer line and manhole structures. The concrete promenade will be designed to accommodate a heavily loaded class 5 truck vehicle.

COMMENTS REGARDING THE HYDRAULIC MEMORANDUM BY TETRA-TECH

The hydraulic memorandum focused on results concerning mean daily flow events and fish passage (minimum flow depths, connectivity, etc.); the City of Kirkland requested additional information regarding larger design flow events (2-year, 10-year, 25-year, 50-year, and 100-year annual peak events). These events were part of our original analysis, but not summarized in our memorandum.

We are currently refining the marsh design based on comments received during the permit review process, including adjusting the weir heights and possibly replacing the slot weir with an orifice configuration. In addition, we are evaluating the potential benefit of using an adaptive management strategy that would use stop logs to manage flow diversion into the marsh. We will be able to provide a full report on the hydraulic analysis of the revised design once it is complete. We are offering the results

of the preliminary analysis in the interim in order to help address the concerns indicated in the review comments.

The tables below summarize the results of our HEC-RAS hydraulic simulations of the preliminary design for the 2-year through 100-year design events assuming both a low (wintertime) and a high (summertime) downstream boundary condition. The simulation used design flow rates from the City of Kirkland Surface Water Master Plan.

Using the diversion weir scenario presented in the design development documents, approximately 7-8 percent of the flow from Juanita Creek would be diverted through the oxbow marsh during major flow events.

The average marsh flow velocity during major flow events is on the order of 0.5 ft/sec. Velocities in the low-flow channel will be higher relative to the overall marsh velocity due to its lower Manning roughness coefficient and greater flow depth. Based on these preliminary results, we have concluded that flow through the marsh during major events on Juanita Creek should not present a significant risk to the marsh.

Table 1. Flow rate and average marsh flow velocities, winter downstream boundary condition (16.75 ft NAVD88).

Return Frequency	**2-year**	**10-year**	**25-year**	**50-year**	**100-year**
Flow Rate (cfs)					
Juanita Creek, Q_{MAIN}	228.0	319.0	367.0	404.0	441.0
Marsh Diversion, Q_{DIVERT}	18.5	24.1	25.0	28.6	30.6
Percentage, $(Q_{DIVERT}/Q_{MAIN})x100$	8.1%	7.6%	6.8%	7.1%	6.9%
Marsh Flow Velocity (ft/sec)					
Maximum	0.72	0.81	0.82	0.86	0.89
Minimum	0.36	0.40	0.40	0.40	0.38
Average	0.46	0.47	0.46	0.47	0.47

Table 2. Flow rate and average marsh flow velocities, summer downstream boundary condition (18.75 ft NAVD88).

Event Return Frequency	**2-year**	**10-year**	**25-year**	**50-year**	**100-year**
Flow Rate (cfs)					
Juanita Creek, Q_{MAIN}	228.0	319.0	367.0	404.0	441.0
Marsh Diversion, Q_{DIVERT}	18.5	24.1	25.0	28.6	30.6
Percentage, $(Q_{DIVERT}/Q_{MAIN})x100$	8.1%	7.6%	6.8%	7.1%	6.9%
Marsh Flow Velocity (ft/sec)					
Maximum	1.19	0.81	0.82	0.86	0.89
Minimum	0.36	0.40	0.40	0.42	0.43
Average	0.50	0.49	0.48	0.49	0.49

Memorandum

DATE: March 30, 2009

3518 Fremont Avenue North #536
Seattle, WA 98103
Phone: (206) 545-7394
Mobile: (360) 220-1422
Fax: (206) 260-2436
e-mail: dld@douglassconsulting.net

TO:	**Jim Brennan, JA Brennan Associates**
FROM:	Desiree Douglass
SUBJECT:	2009 Addendum to *2008 Juanita Beach Park Wetland & OHWM Delineation Report* – Wetlands A, B, C, & D Category & Type Revision
Project:	Juanita Beach Park Master Plan, Phase 1
No. Pages	22

This addendum to the *Juanita Beach Park Wetland & OHWM Delineation Report* (Douglass Consulting, December 2008) documents the category and type revisions of Wetlands A, B, C, and D. The Watershed Company conducts reviews on behalf of the City of Kirkland Planning Department and conducted a review of all documents submitted for the Juanita Beach Park Master Plan Phase I. In their comment letter dated January 16, 2009 (Appendix A), The Watershed Company found that the classification of Wetlands A, B, C, and D are City of Kirkland Type III and not Type I as was presented in the Delineation Report (at pages 13-17). Douglass Consulting concurs with this comment and has provided City of Kirkland wetland field rating forms provided in Appendix B to illustrate the revised wetland rating findings. The ratings of all wetlands under the City of Kirkland rating system are now consistent with the rating of the wetlands under the Washington Department of Ecology (WDOE) system.

Wetlands A, B, C, and D Scoring & Type

A January 16, 2009 environmental review memorandum prepared by The Watershed Company for the City of Kirkland – Planning and Community Development Department disputed the Type I classification of Wetlands A, B, C, and D on the Juanita Beach Park property. Watershed stated that "*Wetlands A, B, C, and D are outside the Lake Washington Ordinary High Water Mark (OHWM) and all water moves toward the lake (not from) the lake from the wetlands*" thus the wetlands are not contiguous to Lake Washington. U.S. Army Corps of Engineers defines a contiguous wetland as a wetland that is "*adjacent, bordering, or neighboring*" waters of the United States. Since Wetlands A, B, C, and D are not contiguous to Lake Washington, thus the conditions of a Type 1 wetland listed in the City of Kirkland Zoning Code Plate 26- Wetland Field Rating Form are not met. In 2006, Douglass Consulting delineated the wetlands on the subject property without an OHWM determination of Juanita Creek, the previous OHWM determination was unavailable at the time. In August of 2008, Douglass Consulting delineated the OHWM of Juanita Creek. Douglass Consulting included the 2008 OHWM Delineation Report with the December 2008 Juanita Beach Park Wetland Determination Report in Appendix H. Douglass Consulting agrees with this finding as Wetlands A, B, C, and D are above the OHWM and not contained within or bordering the OHWM of Juanita Creek.

APPENDIX A: THE WATERSHED COMPANY LETTER, DATED 1/16/09

THE WATERSHED COMPANY

SCIENCE & DESIGN

January 16, 2009

Janice Soloff
City of Kirkland
Planning and Community Development Department
123 – 5th Avenue
Kirkland, WA 98033

Re: Juanita Beach Park Phase 1 environmental review
The Watershed Company Reference Number: 080704.3

Dear Janice:

Thank you for the opportunity to review the above-referenced project for compliance with the standards and regulations found in Chapter 90 of the Kirkland Zoning Code (KZC). We are also reviewing how the project complies with the Shoreline Substantial Development process. However, this review will be provided under separate cover.

Project Summary
The applicant proposes several improvements to Juanita Beach Park to improve use of the site by the public. These improvements include a new boardwalk and "Promenade" path, public gathering areas, and improvements to existing lawn and beach areas. The application also incorporates several components to improve water quality and wildlife habitat. Some of these components are in the form of habitat enhancement and wetland creation to mitigate for impacts to wetlands, wetland buffers and stream buffers. Finally, a small portion of the enhancement is to be set aside as a mitigation bank for future permitting needs of the City. Habitat enhancement/mitigation will take the form of the addition of hydrogeomorphic complexity in Wetland E, the creation of a side channel on Juanita Creek, the creation of a wetland "marsh" adjacent to Juanita Creek, and wetland and stream buffer enhancement with native plants.

Findings
Wetland Determination
The characterizations of wetland hydrology, soils and vegetation that produced the final wetland boundaries are accurate. The Washington State Rating Forms were not reviewed for accuracy, as these forms are not used by the current City of Kirkland

750 Sixth Street South | Kirkland, WA 98033
p 425.822.5242 | f 425.827.8136 | watershedco.com

sensitive areas regulations in Chapter 90. The City uses a unique form to rate wetlands for regulation. City wetland rating forms were supplied for Wetlands E and F in the determination report; no such forms were supplied for Wetlands A, B, C or D. While we did not come to the same number of points on the forms, we found the classification of Wetlands E (Type 3 – 25-foot buffer plus 10-foot setback) and F (Type 1 – 100-foot buffer plus 10-foot setback) to be accurate.

We disagree with the classification of Wetlands A, B, C and D as Type 1. The code definition of Type 1 wetlands includes those contiguous to the lake and those that provide *significant* habitat to federally listed species. Since Wetlands A, B, C and D are outside the Lake Washington Ordinary High Water Mark and all water moves toward (not from) the lake from the wetlands, they are not contiguous. While the stream provides habitat for listed fish, the wetlands do not provide much, if any, habitat and certainly do not provide *significant* habitat. Rating forms for these wetlands should be completed to determine the wetland rating, appropriate buffers and other relevant regulations.

Stream Determination
The submittal accurately identifies Juanita Creek as a Type A stream in a primary basin, requiring a 75-foot buffer plus a 10-foot setback.

Impacts to Wetland E
KZC 90.55 1. j (which applies via KZC 90.55.3) requires the applicant to show that there is no practical or feasible alternative with less impact to the wetland. Modification to Wetland E is proposed for the community commons (fill), portions of the Promenade (fill) and a path and playchip area at the east end. Un-quantified impacts appear to be proposed by a series of step stones crossing the wetland south of the proposed picnic shelter. Portions of the lawn area within the existing buffers are proposed to be retained/improved. However, no mitigation is proposed for this continued non-conforming use. Furthermore, the buffer is proposed for a 50% reduction, which is more than the 30% reduction allowed in KZC 90.60.1. The mitigation notes this discrepancy and states that a variance is needed for approval.

A discussion of mitigation sequencing is provided on pages 31 and 32 and the need for providing logical pedestrian access is discussed. However, it appears that fill impacts of the Promenade south of the commons could be further minimized by lengthening the proposed boardwalk. Furthermore, is it absolutely critical that the commons be perfectly circular in plan-view? Aesthetic concerns aside, an oblong- or oval-shaped area would appear to present similar amphitheater functions and would avoid much of the impact. Similarly, it is unclear why the playchip area,

occupying the eastern end of Wetland E and its buffer, needs to be situated as shown. Note that KZC 90.70 allows "access through wetlands and buffers in conjunction with a public park."

Impacts to Wetlands B and C

Impacts to Wetlands B and C are described as temporary. The modifications to these wetlands are presented as enhancements necessary to allow creation of the wetland marsh and side channel features. Per Table 5, the impacts are being mitigated at a 1:1 ratio. Such modification appears to be addressed in two code sections: First, 90.55.2 and .3 state that no land surface modification shall occur in Type 2 or 3 wetlands except as provided in each subsection. Although, both subsections state that the applicant may request a modification of the section requirements. Second, KZC 90.65 allows for wetland restoration by removing "material detrimental to the area" or through the addition of "native plants and other habitat features." Creation of a new hydrogeomorphic regime in these wetlands, as proposed, could legitimately be viewed as a habitat enhancement. City officials such as the City Attorney and/or Planning Director should be consulted as to which section applies to this project and how similar questions have been interpreted in the past. Regulations aside, it is our opinion that these wetlands are of extremely low functional value and, provided other questions of the plan could be resolved, the improvement in habitat far outweighs the minor losses within Wetlands B and C.

Mitigation Plan

The proposed marsh area has been determined to accumulate sediment and the design team proposes vehicular access in perpetuity to facilitate removal of this sediment. Since all of the wetland mitigation and banked wetland creation area is downstream of the sedimentation basin, the long-term status as wetland, and therefore the perpetual success of the mitigation, would seem to be dependent on the continual removal of sediment. In general, mitigation that depends upon continued maintenance is discouraged. Ideally, mitigation should produce habitats that are self-maintaining in perpetuity or at least are compatible with natural ecosystem change. The word "restoration" is used throughout the mitigation plan. True restoration of form and function would imply the lack of a need for ongoing maintenance, i.e. sediment removal. Characterizing the proposed mitigation as *restoration* would imply that a course had been set for the "restored" habitat to continue to maintain its now-natural form *or* that it had been set up to evolve on its own through a progression of successive natural forms and, similarly, that it would continue to provide a succession of natural habitat functions. The need for maintenance prompts a series of questions: Who would be responsible for sediment

removal? Would it be on a regular basis or only as needed? Are regular inspections planned? If so, by whom and how often? Would Kirkland Parks be responsible for sediment removal or would Public Works take over? What is the contingency if sediment is not removed and the loss of mitigated wetland takes place? Given the uncertainty represented by these questions, we recommend that any proposed mitigation be independent of the need for maintenance beyond the five-year establishment period.

It appears that creation of the oxbow marsh as proposed would require a number of mature trees to be removed. How many and of what size and species? Could marsh configuration be altered such that more of these trees are retained, such as on hummocks?

The proposed marsh would, upon its completion, be defined as a Type 1 wetland under KZC 90.30. This is due to its ability to provide significant habitat to state or federally listed threatened or endangered fish species. As a Type 1 wetland, it would have a 100-foot standard buffer, plus a 10-foot building setback. The mitigation plan only shows a 25-foot buffer and no discussion of buffer reduction is presented. The larger buffer and setback would extend onto the neighboring property to the west, thereby potentially encumbering future development. Per KZC 90.55.4, the creation or expansion of a wetland buffer on any property other than the subject property would only be allowed if a statement signed by the owners of all affected properties affirms that the encumbrance is consented to. It appears that the proposed marsh comes within roughly 80 feet of the western neighboring property.

Similarly, since the new channel is designed to be used by salmonid fish, it would satisfy the requirements of Type A streams, expanding the stream buffer (75-foot buffer plus 10-foot setback) and binging to bear all of the stream requirements of such areas per Chapter 90.

Buffers

The plan incorrectly displays buffers. Buffers for the new wetland are too narrow and not shown for the new stream channel (see above). Also, the plan shows direct buffer offsets that produce sharp corners as opposed to radius curves. This results in buffers that are slightly larger at each corner. All of the standard/proposed modified City of Kirkland sensitive areas buffers for both wetlands and Juanita Creek should be shown on the plans, except where they overlap.

Juanita Beach Park Phase 1 environmental review
Janice Soloff, City of Kirkland Planning
January 16, 2009
Page 5

There are several key details missing from the plan that should be incorporated into the final design. These include a grading plan for the low flow channel, streambed gravel specifications, gravel cross-sections, specifications for topsoil, especially in excavated areas, and details on soil amendment or de-compaction where re-vegetation is to take place without excavation.

The performance standards section needs revision. First year survival for all planted species should be 100% acknowledging that the standard can be met either by survival or first-year warranty replacement. All references to survival of species should be for *native* plant species. Similarly, all references to percent cover should allow desirable native volunteer vegetation to count towards each percentage goal. Due to the complexity and size of the plan combined with replanting and/or substitution, tracking of percent survival beyond the second year is difficult and not very meaningful to the success of the site. Survival standards in year three and beyond is not needed.

The proposed plant list contains several plant species that are hybrids, not native to lowland King County or are otherwise inappropriate for mitigation sites in this ecoregion. These include the following: red maple, katsura tree, quaking aspen, scarlet oak, western redbud, silk tassel tree, Bradford pear, grand fir, incense cedar, snow brush, yellow twig dogwood, Pacific wax myrtle, blue elderberry, highbush cranberry, none of the "grasses" except the scouring rush, none of the "wildflower meadow" mix, except the tufted hairgrass (*Iris tenax* is fine), none of the "upland seed mix", except for meadow foxtail (birdsfoot trefoil is an invasive weed), dwarf red twig dogwood (ornamental cultivar), dwarf blue arctic willow, evergreen huckleberry, Roemer's red fescue, spike bentgrass, and meadow barley.

Birdsfoot trefoil should also be included in the list of invasive weeds to be managed at below 10% cover.

No schedule was shown for the monitoring plan. Note that KZC 90.554.c requires two site visits in each of the required five monitoring years. The first visit is typically a maintenance review in the spring; the summer or fall visit contains the bulk of the fieldwork.

The 2,900 sq ft Juanita Creek bank "layback area" cross-section shows live stakes installed where the bank is excavated. No information on the species is provided. Since this is a portion of the channel subject to summer backwatering and has a southern exposure, this area would benefit from installation of large shading conifers as well. Stakes at the top and middle of the bank will likely not survive

here, as they will not have a reliable hydrology source. In contrast to the cross section drawing, Figure 9 shows this area only sparsely vegetated.

Sedimentation

The text basically admits to placing the oxbow marsh in a depositional area where it can not likely be sustained by ongoing natural processes, as alluded to above, and calls it "restoration." Again, restoration should, by definition, be self-sustaining *or* be the first step along a naturally-occurring succession of habitat changes leading to such restored habitat.

It is stated that sedimentation in the oxbow marsh "is amplified by the reversal of natural seasonal fluctuation of lake levels due to operation of the navigational locks controlling water levels in Lake Washington, which pairs low stream flows in Juanita Creek with high lake levels during the summer." We disagree, and contend that the opposite is true. Deposition in the oxbow marsh area would tend to be much *higher*, not lower, if the lake's hydroperiod were more natural, being in that case higher in the winter and lower in the summer. Sediment is carried primarily by winter high flows and if the lake were higher in the winter it would be deposited at a higher elevation where the stream flows would meet placid lake water farther shoreward, in the oxbow marsh, rather than being carried, as the situation is now, farther lakeward.

The text states that a flow-through system is one of the strategies employed to minimize sedimentation, as opposed to a backwater channel. Again, we disagree. A flow-through system does not necessarily reduce sedimentation because the source of most of the sediment would be the creek, not the lake. Flow-through means that higher volumes of sediment–laden water from the creek will pass through the marsh increasing both sediment loading and likely or potential deposition. The area is essentially a delta, and channel-splitting (in this case induced) and deposition are things that tend to occur in deltas. Trying to fight the trend of the inherent, ongoing natural processes (deposition) within the project area setting can be difficult and frustrating. We disagree that a flow-through design would inherently or necessarily result in less deposition than a backwater design. It is stated in the text that that flow-through maintains circulation, but it fails acknowledge that the flow carries the sediment and, with respect to the marsh, is its source. Deposition cannot occur in quiet water if there's no sediment supply and therefore no sediment present to deposit, descriptive of a backwater area. Deposition does tend to occur in areas where sediment–laden water experiences a combination of decreasing velocities and/or depths (shear stress is dependent on both), an apt description of the proposed oxbow marsh area.

It is stated that an objective is to deliver 25% of the summer low flow to the marsh. The amount or proportion of winter high flow or high event flow would be more relevant to the sedimentation issue. Summer low flows will carry relatively little sediment.

A sediment density of 0.76 tons per cubic yard is given and used in calculations resulting in an estimate of cubic yardage of sediment deposition per year. We suggest that the given ratio, and hence the calculations based on it, are in error. Perhaps the ratio has been inverted, in which case the correct density would be more like 1.3 tons per cubic yard. Water has a density of 0.84 tons per cubic yard; the value given would indicate that the sediment is less dense than water, which is implausible.

Finally, given that the project area is more or less at (and portions at times below) the placid lake level, have the erosional and depositional effects of wave action due to storms been evaluated for the project/project area?

Fish passage
The sheet pile diversion weir is described as being 2 feet wide and 4.5 feet high. Why not make the opening more orifice-like to limit flows during the really high-flow events and thereby further reduce the amount of sediment loading to the marsh?

It is not clear how fish passage would be maintained through the marsh. The sheet pile diversion weir does not look particularly passable on Figure 11C, plunging onto rocks and logs with no pool, though the plunge is not particularly high.

Page 48, second bulleted performance standard from bottom. Flow depth over the weirs, apart from any debris accumulation, is influenced primarily by stream flow, which is not controlled by the project. Hence specifying 3 inches or 12 inches of flow depth at any particular time is not too meaningful. Is it the intent that the depth of flow should be the same over the log weir (at the notch?) as for the sheet pile weir leading to the oxbow marsh at all flow levels? If so, this should be so-stated and the overall performance standard clarified.

Page 49, top bulleted performance standard. If the intent is to check for pools which are disconnected from the channel, the observations should be made when the flows are *lower* than typical as opposed to higher. Any isolated pools would be more likely to still be connected at the higher flows specified.

Figure 11a. Plunges of 0.8 foot rather than the 1 foot shown may be required by WDFW to allow for passage of adult trout and even lower plunges may be needed if juvenile fish passage is required. See WAC 220-110-070. Other appended materials (Appendix D, Tetra Tech memo dated10/17/08) indicate that this issue has already been brought up, but not addressed on the plans or in the main report text.

Appendix D, Tetra Tech memo dated 10/17/08, Figure 1. Why are plunges created below each of the installed weirs at all, complicating the design with fish passage issues? Couldn't each of the weirs be lowered by, nominally, a foot to serve simply as gradient controls without the plunges? Alternatively, couldn't the marsh channel profile just be set to match the sheet pile weir elevation at the upstream end, regardless of what that elevation is?

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Hugh Mortensen

Hugh Mortensen, PWS
Senior Ecologist

Gregory P. Johnston

Gregory P. Johnston, EIT/CFP
Senior Fisheries Biologist

Appendix B: City of Kirkland Wetland Field Rating Sheets

City of Kirkland KZC Plate 26
WETLAND FIELD DATA RATING FORM

Project: Juanita Beach Master Plan – Phase I
Wetland Name: Wetland A
Prepared By: Douglass Consulting, January 19, 2009

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:
a. The wetland is contiguous to Lake Washington;
b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
e. The wetland contains state or federally listed threatened or endangered plant species.
IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.
IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.
Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area
Estimate wetland area and score from choices Acres Point Value Points
>20.00 = 6
10-19.99 = 5
5-9.99 = 4
1-4.99 = 3
0.1-0.99 = 2
<0.1 = 1

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.
# of Classes
Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area
1=1
Aquatic Beds: if the area of aquatic beds is >10% of the open water area or >1/2 acre
2=3
Emergent: if the area of emergent class is >1/2 acre or >10% of the total wetland area
3=5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre or >10% of the total wetland area
4=7

Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area
5=10

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class # of Species Point Value Class # of Species Point Value
Aquatic Bed 1-2 = 1
Scrub-Shrub
1-2 = 1
3 = 2 3-4 = 2
>3 = 3 >4 = 3

Emergent 1-2 = 1
Forested 1-2 = 1
3-4 = 2 3-4 = 2
>4 = 3 >4 = 3

4. Structural diversity.

If the wetland has a forested class, add 1 point for each of the following attributes present:
Trees >50' tall = 1
Trees 20' to 49' tall = 1
shrubs = 1
Herbaceous ground cover = 1

5. Interspersion between wetland classes.

Decide from the diagrams below whether interspersion between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None

6. Habitat features

Add points associated with each habitat feature listed:
Is there evidence of current use by beavers? = **3**
Is a heron rookery located within 300'? = 2
Are raptor nest(s) located within 300'? = 1
Are there at least 2 standing dead trees (snags) per acre? = 1
Are there any other perches (wires, poles, or posts)? = 1
Are there at least 3 downed logs per acre? = 1

7. Connection to streams

Is the wetland connected at any time of the year via surface water? (score one answer only)
Is the wetland connected at any time of the year via surface water?
To a perennial stream or a seasonal stream with fish = 5
To a seasonal stream without fish = 3

Is not connected to any stream = 0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

% of Buffer Step 1 Width Factor Step 2

Roads, buildings or parking lots **0%** X 0 = **0**

Lawn, grazed pasture, vineyards or annual crops **100%** X 1 = **100%**

Ungrazed grassland or orchards **0%** X 2 = **0**

Open water or native grasslands **0%** X 3 = **0**

Forest or shrub **0%** X 4 = **0**

Add buffer total **100**

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50'

By 2 if buffer width is 50-100'

By 3 if buffer width is >100'

Enter results and add subscores **100x2= 200**

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = **5**

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

10. Scoring

Add the scores to get a total: **18**

Question: Is the total greater than or equal to 22 points?

Answer**: NO**

Yes = Type 2

No = Type 3

City of Kirkland KZC Plate 26
WETLAND FIELD DATA RATING FORM

Project: Juanita Beach Master Plan – Phase I
Wetland Name: Wetland B
Prepared By: Douglass Consulting, January 19, 2009

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:
a. The wetland is contiguous to Lake Washington;
b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
e. The wetland contains state or federally listed threatened or endangered plant species.
IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.
IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.
Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area
Estimate wetland area and score from choices Acres Point Value Points
>20.00 = 6
10-19.99 = 5
5-9.99 = 4
1-4.99 = 3
0.1-0.99 = 2
<0.1 = 1

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.
# of Classes
Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area
1=1
Aquatic Beds: if the area of aquatic beds is >10% of the open water area or >1/2 acre
2=3
Emergent: if the area of emergent class is >1/2 acre or >10% of the total wetland area
3=5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre or >10% of the total wetland area
4=7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area
5=10

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class # of Species Point Value Class # of Species Point Value
Aquatic Bed 1-2 = 1
Scrub-Shrub
1-2 = 1
3 = 2 3-4 = 2
>3 = 3 >4 = 3

Emergent 1-2 = 1
Forested 1-2 = 1
3-4 = 2 3-4 = 2
>4 = 3 >4 = 3

4. Structural diversity.

If the wetland has a forested class, add 1 point for each of the following attributes present:
Trees >50' tall = 1
Trees 20' to 49' tall = 1
shrubs = 1
Herbaceous ground cover = 1

5. Interspersion between wetland classes.

Decide from the diagrams below whether interspersion between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None

6. Habitat features

Add points associated with each habitat feature listed:
Is there evidence of current use by beavers? = **3**
Is a heron rookery located within 300'? = 2
Are raptor nest(s) located within 300'? = 1
Are there at least 2 standing dead trees (snags) per acre? = 1
Are there any other perches (wires, poles, or posts)? = 1
Are there at least 3 downed logs per acre? = 1

7. Connection to streams

Is the wetland connected at any time of the year via surface water? (score one answer only)
Is the wetland connected at any time of the year via surface water?
To a perennial stream or a seasonal stream with fish = 5
To a seasonal stream without fish = 3
Is not connected to any stream = 0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

% of Buffer Step 1 Width Factor Step 2

Roads, buildings or parking lots **0%** X 0 = **0**

Lawn, grazed pasture, vineyards or annual crops **100%** X 1 = **100%**

Ungrazed grassland or orchards **0%** X 2 = **0**

Open water or native grasslands **0%** X 3 = **0**

Forest or shrub **0%** X 4 = **0**

Add buffer total **100**

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50'

By 2 if buffer width is 50-100'

By 3 if buffer width is >100'

Enter results and add subscores **100x2= 200**

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = **5**

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

10. Scoring

Add the scores to get a total: **18**

Question: Is the total greater than or equal to 22 points?

Answer: **NO**

Yes = Type 2

No = Type 3

City of Kirkland KZC Plate 26
WETLAND FIELD DATA RATING FORM

Project: Juanita Beach Master Plan – Phase I
Wetland Name: Wetland C
Prepared By: Douglass Consulting, January 19, 2009

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:
a. The wetland is contiguous to Lake Washington;
b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
e. The wetland contains state or federally listed threatened or endangered plant species.
IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.
IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.
Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area
Estimate wetland area and score from choices Acres Point Value Points
>20.00 = 6
10-19.99 = 5
5-9.99 = 4
1-4.99 = 3
0.1-0.99 = 2
<0.1 = 1

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.
# of Classes
Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area
1=1
Aquatic Beds: if the area of aquatic beds is >10% of the open water area or >1/2 acre
2=3
Emergent: if the area of emergent class is >1/2 acre or >10% of the total wetland area
3=5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre or >10% of the total wetland area
4=7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area
5=10

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class # of Species Point Value Class # of Species Point Value
Aquatic Bed 1-2 = 1
Scrub-Shrub
1-2 = 1
3 = 2 3-4 = 2
>3 = 3 >4 = 3

Emergent 1-2 = 1
Forested 1-2 = 1
3-4 = 2 3-4 = 2
>4 = 3 >4 = 3

4. Structural diversity.

If the wetland has a forested class, add 1 point for each of the following attributes present:
Trees >50' tall = 1
Trees 20' to 49' tall = 1
shrubs = 1
Herbaceous ground cover = 1

5. Interspersion between wetland classes.

Decide from the diagrams below whether interspersion between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None

6. Habitat features

Add points associated with each habitat feature listed:
Is there evidence of current use by beavers? = **3**
Is a heron rookery located within 300'? = 2
Are raptor nest(s) located within 300'? = 1
Are there at least 2 standing dead trees (snags) per acre? = 1
Are there any other perches (wires, poles, or posts)? = 1
Are there at least 3 downed logs per acre? = 1

7. Connection to streams

Is the wetland connected at any time of the year via surface water? (score one answer only)
Is the wetland connected at any time of the year via surface water?
To a perennial stream or a seasonal stream with fish = 5
To a seasonal stream without fish = 3
Is not connected to any stream = 0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

% of Buffer Step 1 Width Factor Step 2

Roads, buildings or parking lots **0%** X 0 = **0**

Lawn, grazed pasture, vineyards or annual crops **100%** X 1 = **100%**

Ungrazed grassland or orchards **0%** X 2 = **0**

Open water or native grasslands **0%** X 3 = **0**

Forest or shrub **0%** X 4 = **0**

Add buffer total **100**

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50'

By 2 if buffer width is 50-100'

By 3 if buffer width is >100'

Enter results and add subscores **100x2= 200**

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = **5**

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

10. Scoring

Add the scores to get a total: **18**

Question: Is the total greater than or equal to 22 points?

Answer: **NO**

Yes = Type 2

No = Type 3

City of Kirkland KZC Plate 26
WETLAND FIELD DATA RATING FORM

Project: Juanita Beach Master Plan – Phase I
Wetland Name: Wetland D
Prepared By: Douglass Consulting, January 19, 2009

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:
a. The wetland is contiguous to Lake Washington;
b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
e. The wetland contains state or federally listed threatened or endangered plant species.
IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.
IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.
Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area
Estimate wetland area and score from choices Acres Point Value Points
>20.00 = 6
10-19.99 = 5
5-9.99 = 4
1-4.99 = 3
0.1-0.99 = 2
<0.1 = 1

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.
# of Classes
Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area
1=1
Aquatic Beds: if the area of aquatic beds is >10% of the open water area or >1/2 acre
2=3
Emergent: if the area of emergent class is >1/2 acre or >10% of the total wetland area
3=5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre or >10% of the total wetland area
4=7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area
5=10

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class # of Species Point Value Class # of Species Point Value
Aquatic Bed 1-2 = 1
Scrub-Shrub
1-2 = 1
3 = 2 3-4 = 2
>3 = 3 >4 = 3

Emergent 1-2 = 1
Forested 1-2 = 1
3-4 = 2 3-4 = 2
>4 = 3 >4 = 3

4. Structural diversity.

If the wetland has a forested class, add 1 point for each of the following attributes present:
Trees >50' tall = 1
Trees 20' to 49' tall = 1
shrubs = 1
Herbaceous ground cover = 1

5. Interspersion between wetland classes.

Decide from the diagrams below whether interspersion between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None

6. Habitat features

Add points associated with each habitat feature listed:
Is there evidence of current use by beavers? = **3**
Is a heron rookery located within 300'? = 2
Are raptor nest(s) located within 300'? = 1
Are there at least 2 standing dead trees (snags) per acre? = 1
Are there any other perches (wires, poles, or posts)? = 1
Are there at least 3 downed logs per acre? = 1

7. Connection to streams

Is the wetland connected at any time of the year via surface water? (score one answer only)
Is the wetland connected at any time of the year via surface water?
To a perennial stream or a seasonal stream with fish = 5
To a seasonal stream without fish = 3
Is not connected to any stream = 0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

% of Buffer Step 1 Width Factor Step 2
Roads, buildings or parking lots **0%** X 0 = **0**
Lawn, grazed pasture, vineyards or annual crops **100%** X 1 = **100%**
Ungrazed grassland or orchards **0%** X 2 = **0**
Open water or native grasslands **0%** X 3 = **0**
Forest or shrub **0%** X 4 = **0**
Add buffer total **100**

Step 2: Multiply result(s) of step 1:
By 1 if buffer width is 25-50'
By 2 if buffer width is 50-100'
By 3 if buffer width is >100'
Enter results and add subscores **100x2= 200**

Step 3: Score points according to the following table:
Buffer Total
900-1200 = 4
600-899 = 3
300-599 = 2
100-299 = 1

9. Connection to other habitat areas:
Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = **5**
Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

10. Scoring

Add the scores to get a total: **18**

Question: Is the total greater than or equal to 22 points?

Answer: **NO**

Yes = Type 2
No = Type 3

Memorandum

3518 Fremont Avenue North #536
Seattle, WA 98103
Phone: (206) 545-7394
Mobile: (360) 220-1422
Fax: (206) 260-2436
e-mail: dld@douglassconsulting.net

DATE: April 13, 2009

TO:	**Jim Brennan, JA Brennan Associates**
FROM:	Desiree Douglass
SUBJECT:	Response to Comments and 2009 Addendum to *2008 Wetland and Stream Mitigation Plan*
Project:	Juanita Beach Park Master Plan, Phase 1
No. Pages	22

This response to comments and addendum to the *Wetland and Stream Mitigation Plan for Juanita Beach Park – Phase I* (Douglass Consulting, December 2008) documents the design team responses to comments received by the City of Kirkland and other agencies since the Wetland and Stream Mitigation Plan was submitted in December 2008 as part of the Joint Aquatic Resource Permit Application (JARPA) for the Juanita Beach Park Master Plan Phase I project.

Very Sincerely,

Desiree Douglass
DOUGLASS CONSULTING

Attachments:

1. Watershed Company Comment Letter on behalf of the City of Kirkland Letter, dated January 16, 2009
2. S-1*****
3. TetraTech Memorandums, dated ****
4. Revised JARPA Graphics