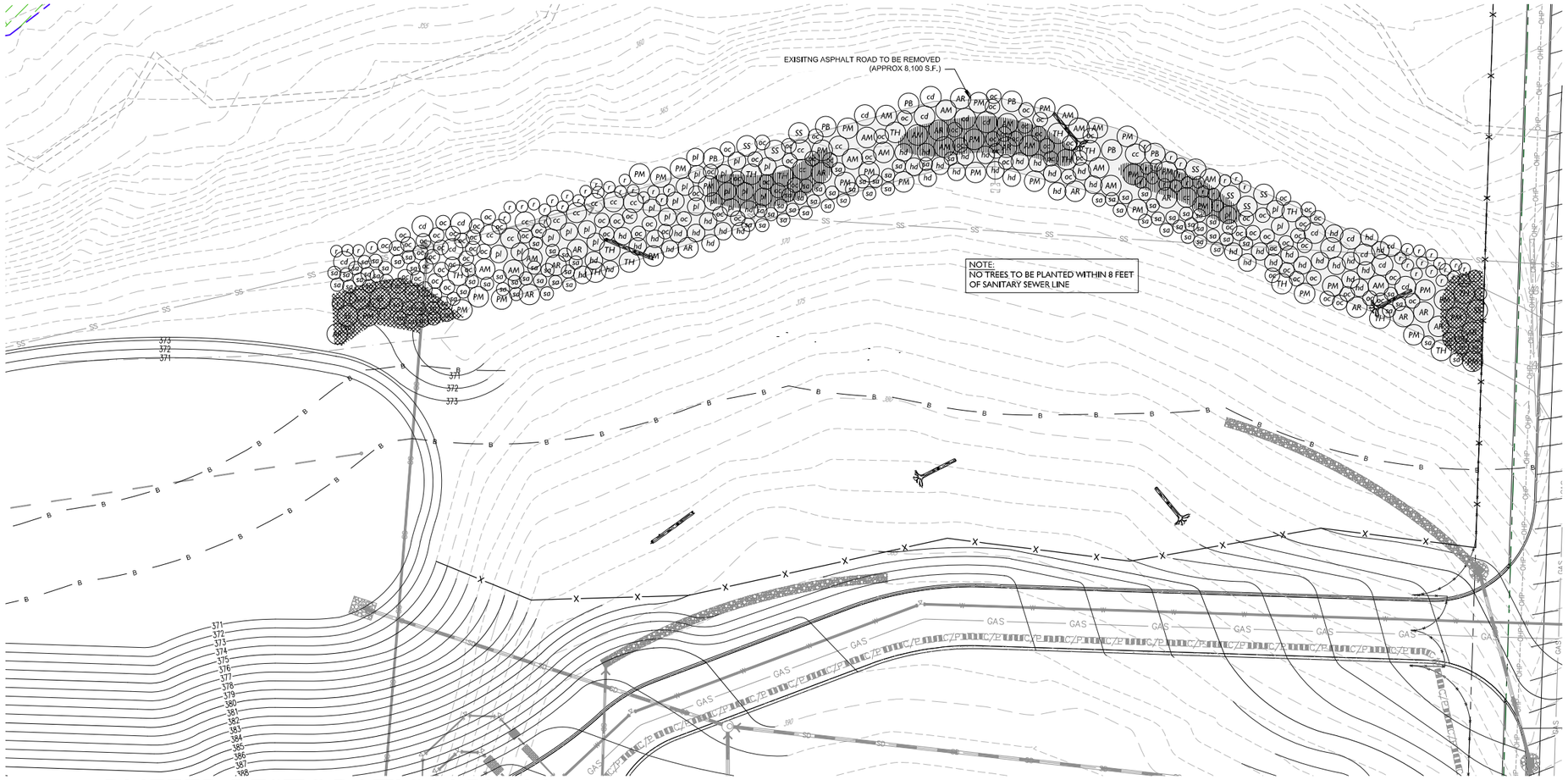


BUFFER RESTORATION PLAN

SCALE: 1" = 20'-0"

0 10' 20' 40' 80'

PLANT SCHEDULE

	PLANT SPECIES	QTY	SIZE
	TREES		
AM	ACER MACROPHYLLA BIG LEAF MAPLE	20	5 GAL.
AR	ALNUS RUBRA RED ALDER	16	5 GAL.
PB	POPULUS BALSAMIFERA BLACK COTTONWOOD	3	5 GAL.
PM	PSEUDOTSUGA MENZIESII DOUGLAS FIR	31	5 GAL.
SS	SALIX SCOULERIANA SCOULER'S WILLOW	10	5 GAL.
TH	TSUGA HETEROPHYLLA WESTERN HEMLOCK	15	5 GAL.
	SHRUBS		
cc	CORYLUS CORNUTA HAZELNUT	13	2 GAL.
cd	CRATAEGUS DOUGLASII DOUGLAS HAWTHORNE	16	2 GAL.
hd	HOLODISCUS DISCOLOR OCEANSPRAY	45	2 GAL.
oc	OEMLERIA CERASIFORMUS OSOBERRY	104	2 GAL.
pl	PHILADELPHUS LEWISII MOCK ORANGE	24	2 GAL.
r	RUBUS SPECTABILIS SALMONBERRY	64	2 GAL.
sa	SYMPHORICARPOS ALBUS SNOWBERRY	104	2 GAL.

CRITICAL AREA FENCELINE, SEE DETAIL C THIS SHEET. (APPROX. 940 L.F. W/ 10 SIGNS)

DOWNED WOODY DEBRIS - TO BE FIELD-LOCATED BY THE RESTORATION SPECIALIST

GROUNDCOVER (24" O.C., TRIANGULARLY SPACED)

MAHONIA NERVOSA DULL MAHONIA	250	4 IN. POTS
POLYSTICHUM MUNITUM SWORD FERN	300	1 GAL.

NOTE:
TREES AND SHRUBS HAVE BEEN PROVIDED TO MEET KING COUNTY DENSITY REQUIREMENTS FOR CRITICAL AREAS EXCEPT ADJACENT TO SANITARY SEWER LINES, WHERE TREES HAVE BEEN OMITTED.

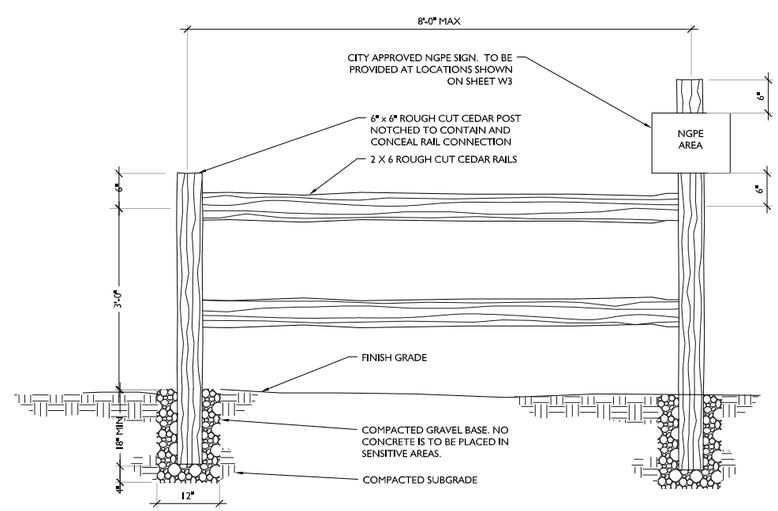
AREA OUTSIDE OF SEWER EASEMENTS: 8,226 SF
TREES REQUIRED (8,303 * 0.012) = 99
TREES PROVIDED = 99

SHRUBS REQUIRED FOR ALL AREAS: 12,500 SF
SHRUBS REQUIRED (12,500 * 0.028): 350
SHRUBS PROVIDED: 370

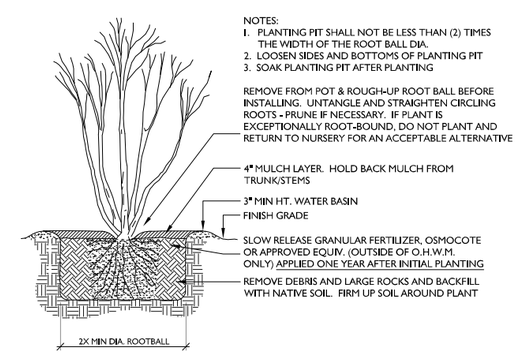
PLANTING NOTES / WORK SEQUENCE

Note: specifications for items in **bold** can be found below under "Material Specifications and Definitions."

1. Notify the **Restoration Specialist** two weeks prior to the start of work to set up a pre-construction meeting at the site.
2. Remove the existing access road, including any gravel subgrade, and dispose of off-site.
3. Grub out all roots of invasive species, especially Himalayan blackberry, and dispose of debris off-site.
4. Remove all non-native/invasive vegetation around the restoration area to a minimum distance of 10 feet. Grub out all roots and dispose of root debris off-site.
5. Remove asphalt and subgrade gravel where present
6. Rough-grade the restoration areas:
   a. In the restoration area, **Restoration Specialist** to inspect subgrade soil. If subgrade soil is found to be suitable for planting, rototill in 4 inches of vegetable compost into the top 9 inches of soil. If soil is found to be unsuitable then the following sequence shall be used
      - Place 6 inches of Cedar Grove 2 way **topsoil mix** after roadway excavation and invasive weed removal.
      - Roto-till buffer soil mix into the prepared subgrade to a depth of 10 inches.
      - Add an additional 6 inches of buffer soil mix over rototilled subgrade for a total of 12 inches of imported buffer soil mix.
   b. Obtain approval from the Restoration Consultant for the grading work and soil condition when completed. Do not track-pack prepared soils. Soils should be left as-is following soil placement.
7. Place stockpiled **Downed Woody Debris** in the locations shown on the grading plan or as directed by the Restoration Specialist.
8. Provide plant material for inspection by the Restoration Specialist.
9. Layout plant material per plan.
10. Install each plant per the planting details.
11. Install plants per the planting plan and plant schedule.
12. Water individual plants thoroughly per best planting practices immediately after planting to eliminate air pockets and to ensure root to soil contact.
13. Mulch the entire planting area with a sheet of wood chip mulch, four inches thick. Pull mulch back a few inches from plant stems to prevent rot.
14. Install a temporary irrigation system capable of covering the entire planted area with a minimum of 2 inches of water per week from June 1st through September 30. Irrigation system shall be maintained for the first two years following installation.
15. Obtain final sign-off from the Restoration Specialist.



A SPLIT RAIL FENCE DETAIL
NTS



NOTES:
1. PLANTING PIT SHALL NOT BE LESS THAN (2) TIMES THE WIDTH OF THE ROOT BALL DIA.
2. LOOSEN SIDES AND BOTTOMS OF PLANTING PIT
3. SOAK PLANTING PIT AFTER PLANTING

REMOVE FROM POT & ROUGH-UP ROOT BALL BEFORE INSTALLING. UNTANGLE AND STRAIGHTEN CIRCLING ROOTS - PRUNE IF NECESSARY. IF PLANT IS EXCEPTIONALLY ROOT-BOUND, DO NOT PLANT AND RETURN TO NURSERY FOR AN ACCEPTABLE ALTERNATIVE

B TREE & SHRUB PLANTING DETAIL
NTS

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Science & Design

FINN HILL JUNIOR HIGH
ENVIRONMENTAL AND ADVENTURE SCHOOL
PREPARED FOR
LAKE WASHINGTON SCHOOL DISTRICT
SITE ADDRESS: 8040 NE 132ND STREET
KIRKLAND, WA 98034

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	09-21-09	MITIGATION REVIEW SET	MG
2	10-30-09	PER WT	CL

GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: NL
DESIGNED: MG
DRAFTED: MG
CHECKED: NL/HM
JOB NUMBER: 080617
SHEET NUMBER: WM-002

DATE 12/2/2009 | PRINTED BY MARK GARFF | FILENAME FHJH_MITIGATION-WM DWG

PLANT INSTALLATION SPECIFCATIONS

NOTE: THESE SPECIFICATIONS ARE A LEGALLY BINDING CONTRACT

GENERAL NOTES

QUALITY ASSURANCE
1. PLANTS SHALL MEET OR EXCEED THE SPECIFICATIONS OF FEDERAL, STATE, AND LOCAL LAWS REQUIRING INSPECTION FOR PLANT DISEASE AND INSECT CONTROL.
2. PLANTS SHALL BE HEALTHY, VIGOROUS, AND WELL-FORMED, WITH WELL DEVELOPED, FIBROUS ROOT SYSTEMS, FREE FROM DEAD BRANCHES OR ROOTS. PLANTS SHALL BE FREE FROM DAMAGE CAUSED BY TEMPERATURE EXTREMES, LACK OR EXCESS OF MOISTURE, INSECTS, DISEASE, AND MECHANICAL INJURY. PLANTS IN LEAF SHALL BE WELL FOLIATED AND OF GOOD COLOR. PLANTS SHALL BE HABITUATED TO THE OUTDOOR ENVIRONMENTAL CONDITIONS INTO WHICH THEY WILL BE PLANTED (HARDENED-OFF).
3. TREES WITH DAMAGED, CROOKED, MULTIPLE OR BROKEN LEADERS WILL BE REJECTED. WOODY PLANTS WITH ABRASIONS OF THE BARK OR SUNSCALD WILL BE REJECTED.

DEFINITIONS
1. PLANTS/PLANT MATERIALS. PLANTS AND PLANT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL USED ON THE PROJECT. THIS INCLUDES BUT IS NOT LIMITED TO CONTAINER GROWN, B&B OR BAREROOT PLANTS; LIVE STAKES AND FASCINES (WATTLES); TUBERS, CORMS, BULBS, ETC.; SPRIGS, PLUGS, AND LINERS.
2. CONTAINER GROWN. CONTAINER GROWN PLANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN A POT OR BAG IN WHICH THAT PLANT GREW.

SUBSTITUTIONS
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SPECIFIED MATERIALS IN ADVANCE IF SPECIAL GROWING, MARKETING OR OTHER ARRANGEMENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFIED MATERIALS.
2. SUBSTITUTION OF PLANT MATERIALS NOT ON THE PROJECT LIST WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE LANDSCAPE ARCHITECT / CONSULTANT.
3. IF PROOF IS SUBMITTED THAT ANY PLANT MATERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF THE NEAREST EQUIVALENT SIZE OR ALTERNATIVE SPECIES, WITH CORRESPONDING ADJUSTMENT OF CONTRACT PRICE.
4. SUCH PROOF WILL BE SUBSTANTIATED AND SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION.

INSPECTION
1. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE CONSULTANT FOR CONFORMANCE TO SPECIFICATIONS, EITHER AT TIME OF DELIVERY ON-SITE OR AT THE GROWER'S NURSERY. APPROVAL OF PLANT MATERIALS AT ANY TIME SHALL NOT IMPAIR THE SUBSEQUENT RIGHT OF INSPECTION AND REJECTION DURING PROGRESS OF THE WORK.
2. PLANTS INSPECTED ON SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RED-TAGGED AND REMOVED AS SOON AS POSSIBLE.
3. THE CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH. AFTER INSPECTION AND ACCEPTANCE, THE CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.

MEASUREMENTS OF PLANTS
1. PLANTS SHALL CONFORM TO SIZES SPECIFIED UNLESS SUBSTITUTIONS ARE MADE AS OUTLINED IN THIS CONTRACT.
2. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THEIR BRANCHES OR ROOTS ARE IN THEIR NORMAL POSITION.
3. WHERE A RANGE OF SIZE IS GIVEN, NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12" TO 18", AT LEAST 50% OF PLANTS MUST BE 15" TALL.)

SUBMITTALS

PROPOSED PLANT SOURCES
1. WITHIN 45 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT A COMPLETE LIST OF PLANT MATERIALS PROPOSED TO BE PROVIDED DEMONSTRATING CONFORMANCE WITH THE REQUIREMENTS SPECIFIED. INCLUDE THE NAMES AND ADDRESSES OF ALL GROWERS AND NURSERIES.

PRODUCT CERTIFICATES
1. PLANT MATERIALS LIST - SUBMIT DOCUMENTATION TO CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION THAT PLANT MATERIALS HAVE BEEN ORDERED. ARRANGE PROCEDURE FOR INSPECTION OF PLANT MATERIAL WITH CONSULTANT AT TIME OF SUBMISSION.
2. HAVE COPIES OF VENDOR'S OR GROWERS' INVOICES OR PACKING SLIPS FOR ALL PLANTS ON SITE DURING INSTALLATION. INVOICE OR PACKING SLIP SHOULD LIST SPECIES BY SCIENTIFIC NAME, QUANTITY, AND DATE DELIVERED (AND GENETIC ORIGIN IF THAT INFORMATION WAS PREVIOUSLY REQUESTED).

DELIVERY, HANDLING, & STORAGE

NOTIFICATION
CONTRACTOR MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS
1. TRANSPORTATION - DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BREAKAGE AND DRYING. PROPER VENTILATION AND PREVENTION OF DAMAGE TO BARK, BRANCHES, AND ROOT SYSTEMS MUST BE ENSURED.
2. SCHEDULING AND STORAGE - PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
3. HANDLING - PLANT MATERIALS SHALL NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT ONLY BY THE CONTAINER, BALL, BOX, OR OTHER PROTECTIVE STRUCTURE, EXCEPT BAREROOT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEM.
4. LABELS - PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. TEN PERCENT OF CONTAINER GROWN PLANTS IN INDIVIDUAL POTS SHALL BE LABELED. PLANTS SUPPLIED IN FLATS, RACKS, BOXES, BAGS, OR BUNDLES SHALL HAVE ONE LABEL PER GROUP.

WARRANTY

PLANT WARRANTY
PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

REPLACEMENT
1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONSULTANT'S DISCRETION.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

GENERAL
1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS SUCH.

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS.

ROOT TREATMENT
1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.
3. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.

MITIGATION NOTES

Executive Summary

This plan seeks to mitigate for temporary and permanent wetland buffer impacts associated with site improvements at Lake Washington School District's Finn Hill Junior High School located at 8040 NE 132nd Street in unincorporated King County (parcel number 2426049128). The school district is replacing the existing one-story school with a new higher capacity facility that incorporates low impact development (LID) into the design. In keeping with the school's environmental teaching philosophy, the project includes innovative design elements, such as a series of small rain gardens and one large rain garden. To better manage stormwater drainage through the site and reduce vault capacity needs, a large rain garden is proposed north of the new building. This rain garden will extend into the standard 187.5-foot buffer associated with the Finn Hill wetland area. Existing buffer conditions provide an opportunity to improve and maintain buffer functions despite the proposed buffer intrusions. A combination of buffer reduction with enhancement and buffer averaging is proposed to offset impacts. Additionally, street frontage improvements are required along 84th Avenue NE and 132nd Street. These unavoidable impacts will be offset through buffer enhancement with native trees and shrubs. Temporary buffer impact areas will be re-seeded.

Existing Conditions

School buildings and associated athletic/recreation areas cover most of the 28.5-acre property. The site contains a total of three wetland areas on the north and southwest property fringes.

A portion of a large Category I wetland (Wetland A) extends onto the north end of the property. Due in part to high habitat functions, this wetland requires a standard 187.5-foot buffer. Approximately the first 100 feet of buffer is densely vegetated by a mixed forest with an understory of native plants. A narrow and highly compacted informal footpath winds through this forested buffer edge. A chain-link fence follows the treeline and Himalayan blackberry thickets have formed along that boundary. The outer buffer area contains sparse trees and is primarily mowed lawn. An old paved access road off 84th Avenue NE follows the treeline and covers approximately 8,100 square feet of buffer. An athletic track and a paved path pass through the west end of the buffer.

Two other wetlands are located in the southwest property corner, referred to as Wetlands B and C. Wetland C is a small depressional wetland dominated by hardhack spirea. Wetland B is a larger depressional wetland that extends off-site to the west. Deciduous forest and Himalayan blackberry thickets surround both wetlands. Wetlands B and C are Category II and III wetlands, respectively with low habitat functions. Standard buffer widths are 75 feet for Wetland C and 100 feet for Wetland B.

A wildlife restoration specialist also conducted a habitat assessment to determine if any species requiring special management were located in the immediate project vicinity. None were found.

Assessment of Impacts

The proposed rain garden will impact 25,880 square feet of the standard Wetland A buffer. This impact would occur in an area that is currently mowed lawn. No trees are present in this area.

The required street frontage improvements will permanently impact 1,905 square feet of Wetland A buffer and 853 square feet of Wetland B buffer. Grading will temporarily impact another 2,599 square feet of buffer, which is currently vegetated with grass and invasive Himalayan blackberry.

Mitigation Approach

Mitigation Sequencing
Avoidance: To the extent practicable the proposed site improvements are concentrated outside the standard wetland buffers. However, the linear nature of required street frontage improvements will result in unavoidable wetland buffer impacts. Existing site topography and stormwater infrastructure dictated design and placement of the large rain garden. It was not possible to wholly avoid wetland buffer impacts in this design.

Minimization: To minimize wetland buffer impacts, the large rain garden was sited in a lawn area with no trees. Placing the rain garden as far toward the outer buffer edge as feasible given site topography and design constraints will also minimize impacts.

Mitigation: To achieve site improvement goals while maintaining wetland buffer functions and values, a combination of buffer reduction with enhancement and buffer averaging are proposed. The standard buffer of Wetland A will be impacted by the large rain garden. Street frontage improvements along 84th Avenue NE and NE 132nd Street will impact the buffers of Wetlands A and B. Permanent buffer impacts due to road improvements, totaling 2,758 square feet, will be mitigated through enhancement at a 1:1 ratio. Buffer areas impacted by the rain garden will be mitigated through a reduction with enhancement plus averaging. The buffer width will be reduced by 25-feet in the rain garden area, resulting in a 9,483 square foot reduction. Employing the mitigation measures in KCC 21A.24.325.A.3.b will offset this reduction. Those measures include directing lights away from the wetland, placing activity that generates noise away from the wetland, routing untreated runoff away from the wetland, discouraging pet or human disturbance, and enhancing an equivalent area of the remaining buffer. The remaining 16,397 square feet of buffer impacted by the rain garden will be off-set through buffer gain at a 1:1 ratio. These mitigation measures are designed to maintain and improve Wetland A buffer functions.

Table 1. Impact and Mitigation Summary

Impact type / description	Area	Mitigation	Mitigation Ratio
Permanent buffer loss - Road improvements	2,758 SF	Buffer enhancement: Remove old asphalt road and enhance 12,250 SF of Wetland A buffer	1:1
Permanent buffer reduction - Rain garden	9,483 SF		
Permanent buffer loss - Rain garden	16,397 SF	Buffer averaging: Expand remaining buffer by 16,400 SF	1:1
Temporary buffer impacts- road improvements / grading	2,599 SF	Current condition is grass with some invasive weeds. Weeds will be removed and the area stabilized with hydroseed.	1:1

Goals

1. Improve the functions and values of the wetland buffer.
   a. Remove un-detained, untreated impervious surfaces from the buffer
   b. Establish native shrubs, trees and herbaceous vegetation in area specified on the plan.
   c. Allow the natural successional reforestation process to occur in unplanted portions of the buffer that are currently mowed lawn.
   d. Improve buffer habitat through the addition of woody debris.

Performance Standards

The standards listed below shall be used to judge the success of the plan over time.
1. Soil structure
   a. Achieve decompacted, fertile soils throughout the buffer, including the existing asphalt road section. This standard to be verified during construction and documented in the as-built report.
2. Plant Survival and Cover:
   a. Achieve 100% survival of installed vegetation by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.
   b. Achieve 60% cover of native trees and shrubs by the end of Year 3.
3. Species diversity: Establish at least 4 native tree species, 5 native shrub species and one native low-cover species by Year 3. Volunteer species may count towards this standard.
4. Invasive cover: No more than 10% cover by invasive weed species in the mitigation enhancement areas in any monitoring year.
5. Retain at least 6 pieces of large woody debris in the buffer and ensure good ground contact as specified on the plans.

Monitoring Plan

This monitoring program is designed to track the success of the mitigation site over time and to measure the degree to which it is meeting the performance standards outlined elsewhere in this document.

An as-built plan and report will be prepared by the restoration specialist prior to the beginning of the monitoring period. The as-built plan shall be a mark-up of the planting plans included in this plan set. The as-built report will document any departures in plant placement or other components from the proposed plan.

Transects

During the as-built inspection, the monitoring restoration specialist shall install monitoring transects. Approximate transect locations shall be marked on the as-built plan. Five 50-foot transects shall be established in the planted area. During each monitoring event, randomly located sub-transects will be established to measure percent cover values. At least two sub-transects will be established along each main transect. These shall be situated roughly perpendicular to the main transects and extend to the limit of the planted area/zone or 50 feet, whichever is first reached.

All other planted areas not directly covered by transects will be visually assessed and noted as to how they are meeting the performance standards.

Monitoring should take place twice annually for 3 years. During each monitoring year there shall be a spring and a late summer or fall visit. First-year monitoring should commence in the first summer or fall subsequent to installation.

The spring monitoring visit will record maintenance needs such as plant replacement and weeding needs. Following the spring visit the restoration specialist will notify the owner and/or maintenance crews of necessary early growing season maintenance. The second annual monitoring visit will contain the bulk of the site assessment and will take place in the late summer or early fall. The late-season formal monitoring visit shall record and report the following in an annual report submitted to King County Department of Development and Environmental Services.

1. General summary of the spring visit.
2. Counts of live and dead trees and shrubs plants by species in the planted areas in Year 1. Significant die-off should be reported by species and quantity in any monitoring year.
3. Estimate of native sapling tree and shrub cover using the line-intercept method along established transects in the planted area.
4. Estimate of invasive cover using the line-intercept method along established transects in the planted area.
5. Estimate of invasive weed cover using the cover class method site-wide.
6. Document presence of **large woody debris** and current condition.
7. Photographic documentation from fixed reference points in each planting area.
8. Intrusions into the planting areas, vandalism or other actions that impair the intended functions of the planted areas.
9. Recommendations for maintenance or repair of any portion of the mitigation area.

Construction Notes and Specifications

Note: specifications for items in bold can be found below under "Material Specifications and Definitions."
Note: The Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects, shall monitor:
1. All site preparation
   a. Remove old asphalt road.
   b. Invasive removal and soil preparation.
2. Plant material inspection
   a. Plant material delivery inspection.
   b. 50% plant installation inspection.
   c. 100% plant installation inspection.

General Work Sequence

1. Arrange with the general contractor to have a variety of **large woody debris** stockpiled for use in the buffer. Debris to be generated from on-site clearing necessary for school improvements.
2. Remove old asphalt road and sub-grade gravel, if present. Depending on depth of unsuitable sub-grade, the addition of **topsoil** may be needed. Restoration specialist to inspect sub-grade following asphalt removal and determine if **topsoil** is necessary.
3. Should sub-asphalt soils be suitable, they shall be amended by incorporating up to 4 inches of **compost** (up to 100 cubic yards needed). Incorporation shall be by tilling compost into the top 9 inches of soil. Should **topsoil** be needed, follow the instructions found in the planting notes on Sheet 2.
4. Roto-**till** lawn areas that will be planted to decompact and deconsolidate the **soil**. Do not roto-**till** within the dripline of any existing trees to remain.
5. Place woody debris as directed by the restoration specialist. Decompact by roto-**tilling** any planting area soils traversed by heavy equipment.
6. All plant installation is to take place during the dormant season (October 15th - March 1st), for best survival.
7. Prepare a planting pit for each plant and install per the planting details on sheet 2.
8. Mulch the entire planting area with a uniform 4-inch thick application of **wood chip mulch** (163 cubic yards needed). Pull mulch back a few inches from plant stems to prevent rot. Alternatively, mulch may be applied before planting.
9. Install a temporary, aboveground **irrigation system** to provide full coverage to all plants within the restoration area.
10. Install split-rail fencing and sensitive area signage as per the plan detail provided on sheet 2.

Material Specifications and Definitions

1. **Compost:** Cedar Grove Compost or equivalent product. 100% vegetable compost with no appreciable quantities of sand, gravel, sawdust, or other non-organic materials. Amendment quantity required: up to 100 cubic yards.
2. **Fertilizer:** Slow release, granular fertilizer. Follow manufacturer's instructions for application. Keep fertilizer in a weather-tight container while on site. Note that fertilizer is to be applied only in Years two and three and not in the first year.
3. **Irrigation system:** Automated system capable of delivering at least two inches of water per week from June 1 through September 30 for the first two years following installation.
4. **Large woody debris:** Trees salvaged from on-site clearing, including logs, rootwads, and limbs which are to be placed on the ground at the direction of the **Restoration Specialist**. These pieces of downed wood should have a diameter of at least 12 inches and a minimum length of 10 feet. Debris to be placed to maximize ground contact. Substitutions based on available stockpiled material may be approved by the **Restoration Specialist.**
5. **Restoration Specialist:** Watershed Company [(425) 822-5242] personnel, or other person qualified to evaluate environmental restoration projects.
6. **Topsoil:** Loam soil and compost mixture. This material is sold as "2-way topsoil" at Cedar Grove topsoil [(425) 884-7645].
7. **Wood chip mulch:** "Arborist chips" (chipped woody material) approximately 1 to 3 inches in maximum dimension (not sawdust or coarse hog fuel). This material is sold as "Animal Friendly Hog Fuel" at Pacific Topsoils [(800) 884-7645]. Mulch shall not contain appreciable quantities of garbage, plastic, metal, soil, and dimensional lumber or construction/demolition debris. Quantity required: 163 cubic yards.

Maintenance Plan

The site will be maintained for three years following completion of the construction. Note: specifications for items in bold can be found above under "Material Specifications and Definitions."
1. Replace each plant found dead in the summer monitoring visits during the upcoming fall dormant season (October 15th to March 1st).
2. Follow the recommendations noted in the spring monitoring site visit.
3. Himalayan blackberry control: Remove all occurrences of Himalayan blackberry throughout the planting area and within ten feet of the planting area. Using hand tools, grub out blackberry canes by the root.
4. General weeding for all planted areas:
   a. At least twice-yearly, remove all competing weeds and weed roots from beneath each installed plant and any desirable volunteer vegetation to a distance of 18 inches from the main plant stem. Weeding should occur at least twice during the spring and summer. Frequent weeding will result in lower mortality and lower plant replacement costs.
   b. More frequent weeding may be necessary depending on weed conditions that develop after plan installation.
   c. Do not weed the area near the plant bases with string trimmer (weed whacker/weed eater). Native plants are easily damaged or killed, and weeds easily recover after trimming.
5. Apply slow release granular fertilizer to each installed plant annually in the spring (by June 1) of Years two and three.
6. Mulch the weeded areas beneath each plant with wood chips as necessary to maintain a 4-inch thick mulch ring and keep down weeds.
7. The school district shall ensure that water is provided for the entire planted area with a minimum of 1 inches of water provided per week from June 1 through September 30 for the first two years following installation. Additional watering in Year 3 may be needed depending on conditions and replanting needs.

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Science & Design

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ENVIRONMENTAL AND ADVENTURE SCHOOL
PREPARED FOR
LAKE WASHINGTON SCHOOL DISTRICT
SITE ADDRESS: 8040 NE 132ND STREET
KIRKLAND, WA 98034

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	09-21-09	MITIGATION REVIEW SET	MG
2	10-30-09	PERMIT	CL

GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: NL
DESIGNED: MG
DRAFTED: MG
CHECKED: NL/HM
JOB NUMBER: 080617
SHEET NUMBER: WM-003

DATE: 12/2/2009 | PRINTED BY: MARK GARFF | FILENAME: FHJH_MITIGATION09.DWG

90.40 Permitted Activities, Improvements or Uses Subject to Development Standards

1. Permitted Activities, Improvements and Uses – Activities, improvements and uses identified in this section are permitted subject to the following approval and development standards. Those activities and uses not identified or not meeting the standards in this section may be proposed under other sections of this chapter.

2. Process – The Planning Official shall review and decide on an application for a permitted activity or use. The general and specific standards in subsections (5) and (6) of this section along with the mitigation plan shall be conditions of approval.

3. Decisional Criteria – The Planning Official may approve a permitted activity or use if it is determined that:

a. There is no practical alternative location with less adverse impact on the critical area or its buffer based on a critical area report and mitigation sequencing pursuant to KZC 90.145;

b. The mitigation plan pursuant to KZC 90.145 sufficiently mitigates impacts; and

c. The project plans meet the general and specific standards in subsections (5) and (6) of this section.

4. Critical Area Determination and Report – The applicant shall submit a critical area determination pursuant to KZC 90.105 and a critical area report pursuant to KZC 90.110.

5. Standards

a. Application for permitted activities, improvements or uses identified in this section shall demonstrate that they meet the following standards except as noted in subsection (6) of this section.

1) General mitigation requirements including mitigation sequencing pursuant to KZC 90.145;

2) If located in a wetland or wetland buffer, requirements for wetland compensatory mitigation, pursuant to KZC 90.150;

3) Implement a mitigation plan pursuant to KZC 90.145 and/or KZC 90.150;

4) If located in a fish or wildlife habitat conservation area, requirements of KZC 90.95;

5) Monitoring and maintenance requirements pursuant to KZC 90.160;

6) Financial security requirements pursuant to KZC 90.165;

7) Critical area markers, fencing and signage requirements pursuant to KZC 90.190;

8) Dedication of critical area and buffers requirements pursuant to KZC 90.210;

9) No adverse impact on water quality or conveyance or degradation of critical area functions and values;

10) Structures and improvements located to minimize removal of significant trees; and

11) Restoration of temporary disturbance areas associated with the work to pre-project conditions or better shown on construction drawings and expeditiously done.

b. Except as provided in subsection (5)(a) of this section, the list of permitted activities, improvements or uses are not subject to general standards pursuant to KZC 90.105 through 90.225.

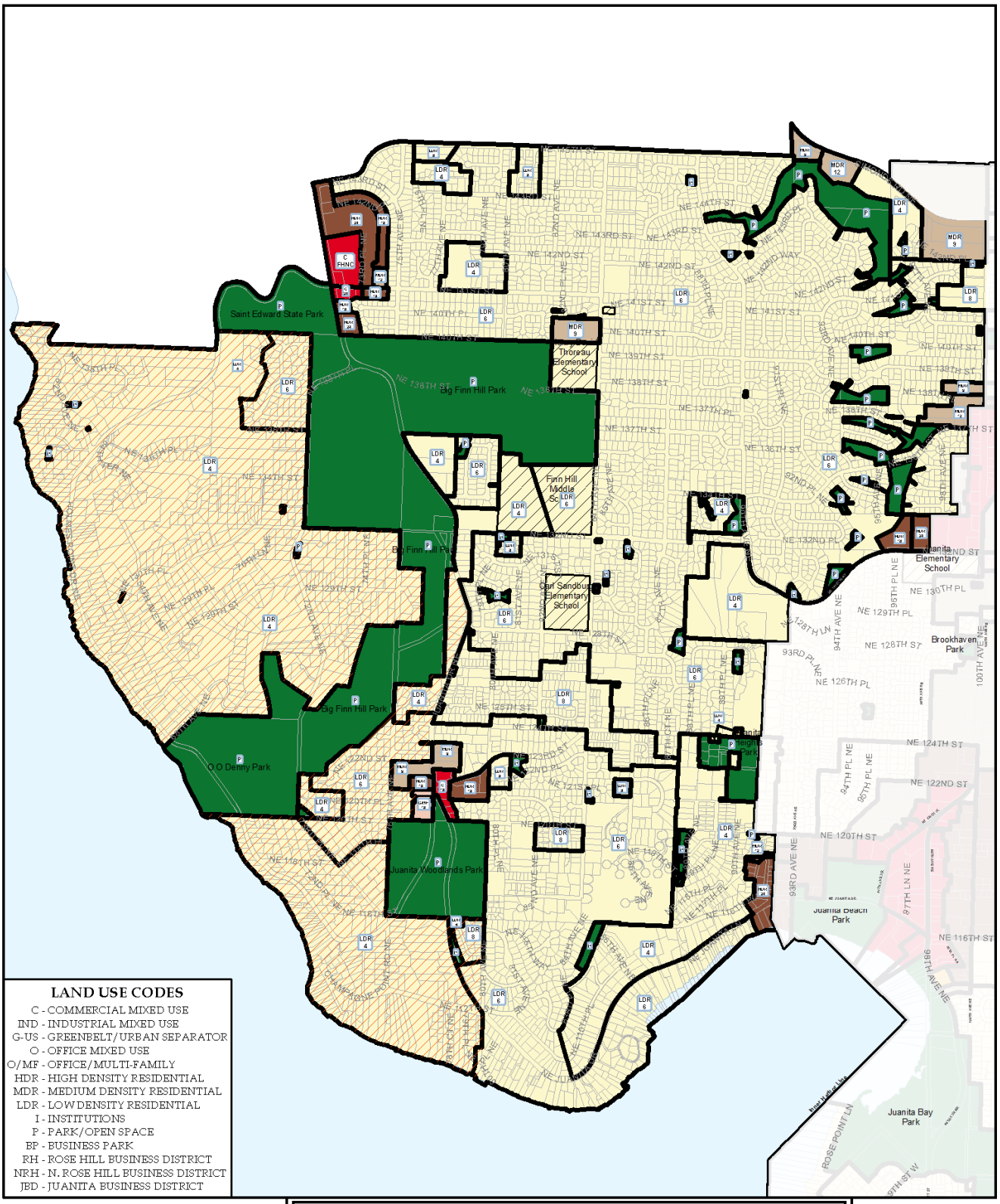
6. List of Permitted Activities, Improvements and Uses – The following activities and uses may be permitted; provided, that the specific standards applicable to each activity or use and the general standards in subsection (5) of this section are met.

3) New piped storm water outfalls and associated dissipation devices, such as flow spreaders and rock pads, within critical area buffers, provided:

(a) Discharge of storm water outside of the buffer is not feasible as determined by the City; or

(b) If property adjoining the buffer is greater than 15 percent slope, a specific study by a geotechnical engineer or engineering geologist must show that discharge outside of the buffer will cause slope instability or excessive erosion, and therefore the discharge needs to be in the buffer; and

(c) The outfall is located as far as possible from the critical area;



Finn Hill Neighborhood
Land Use Map

ORDINANCE NO. 4774
ADOPTED by the Kirkland City Council
December 14, 2021

Maps produced March 2, 2022
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