CITY OF MERCER ISLAND
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PRELIMINARY LONG PLAT APPROVAL

Staff Report

October 26, 2018

Project Numbers:	SUB17-015/CAO17-015/SEP17-026
Description:	The proposal is a request to subdivide the subject site into five residential lots and one private recreation tract. The proposed subdivision would contain an internal private street serving the five lots, which would range in size from 9,273 to 32,049 square feet. The site is encumbered by three Category III wetlands and Type 3 watercourse, which will be protected by use of a Native Growth Protection Easement. The applicant also proposes to reduce the buffers that apply to the on-site wetlands and watercourse.
Applicant:	Jayson Taylor
Owner:	Alan Chiu
Site Address:	4320 and 4332 Island Crest Way, Mercer Island WA 98040
Zoning:	R-9.6
Staff Recommendation:	Approve with conditions
Staff Contact:	Robin Proebsting, Senior Planner

I. FINDINGS OF FACT

Preliminary Long Plat Approval is listed in Mercer Island City Code ("MICC") 19.15.040 as a Type IV land use review, requiring review and a decision by the Hearing Examiner. The following is an analysis of the proposal against the applicable criteria for approval.

1. **Site Description and History:** The subject site is located on Island Crest Way between SE 43rd and SE 44th St, and is approximately 1.67 acres in area, rectangular, and gently sloping downward from east to west. The site currently contains one single family residence and one accessory dwelling unit, which are proposed to be demolished prior to development of the future residences. The site is sparsely treed and contains three Category III wetlands connected by a Type 3 watercourse.

   The site is the subject of an open code enforcement case (CE16-0014) for removing approximately ten trees and filling one of the wetlands on site with wood chips (Exhibit 6). Proposed restoration, together with proposed mitigation for the requested wetland and watercourse buffer reduction, are both analyzed and addressed separately in the Critical Areas Study submitted by the applicant (Exhibit 5d) and are incorporated into the subdivision design.

During review of the subdivision and critical areas determination applications, the City adopted Ord. 18C-08, which updated the City Code by modifying land use review and approval procedures. The adopted changes became effective on October 1, 2018. In order to remain consistent with all applicable codes, this staff report reviews documents compliance with procedural standards adopted under Ord. 18C-08 and zoning standards in place at the time the applicant submitted a complete application.

2. **MICC 19.08.020(E)(2)**: Public notice of an application for a long subdivision shall be made in accordance with the procedures set forth in MICC 19.15.020 provided notice shall also be published in a newspaper of general circulation within the city.

   Staff analysis: *Notice of application (Exhibit 4) was mailed to property owners within 300 feet, posted on the subject site published in the weekly DSG bulletin, and published in the Mercer Island Reporter, consistent with this code requirement.*

3. **MICC 19.08.020(F)(1)**: All preliminary approvals or denials of long subdivisions or short subdivisions shall be accompanied by written findings of fact demonstrating that: a. The project does or does not make appropriate provisions for the public health, safety, and general welfare and for such open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and schoolgrounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school; b. The public use and interest will or will not be served by approval of the project; and c. The project does or does not conform to applicable zoning and land use regulations.

   Staff analysis: *The proposed subdivision has made appropriate provisions to address this code section as demonstrated by the analysis that follows in this staff report.*

   Safe walking conditions to each of the schools serving the subject site have been demonstrated in Exhibit 5c).

   The proposed subdivision conforms to zoning and land use regulations applicable to subdivisions; future development will be reviewed for zoning compliance at the time of permit application.

4. **MICC 19.08.020(F)(3):** a. At an open record hearing the hearing examiner shall review the proposed long subdivision for its conformance with the requirements of MICC 19.08.030, the comprehensive plan, and other applicable development standards. b. The hearing examiner shall make written findings of fact and conclusions.

   Staff Analysis: *An open record hearing has been scheduled for November 27, 2018, consistent with this standard.*

5. **MICC 19.08.020(F)(4):** Conditions for Preliminary Approval. As a condition of preliminary approval of a project, the hearing examiner in the case of a long subdivision, or the code official in the case of a short subdivision, may require the installation of plat improvements as provided in MICC 19.08.040 which shall be conditions precedent to final approval of the subdivision.

   Staff Analysis: *Plat improvements meeting the standards in MICC 19.08.040 are recommended, and recommended conditions of approval have been added to this staff report requiring installation of plat improvements prior to final plat approval. Plat improvements include a new internal private street, water and sewer lines, and storm drainage.*

6. **MICC 19.08.020(F)(5)(a)**: Expiration of Approval: Once the preliminary plat for a long subdivision has been approved by the city, the applicant has five years to submit a final plat meeting all requirements of this chapter to the city council for approval.

   Staff Analysis: *A recommended condition of approval has been added to this staff report requiring submittal of a final plat within five years of preliminary approval.*

7. **MICC 19.08.020(F)(6)**: No construction of structures, utilities, storm drainage, grading, excavation, filling, or land clearing on any land within the proposed long subdivision, short subdivision, or lot line revision shall be allowed prior to preliminary approval of the application and until the applicant has secured the permits required under the Mercer Island City Code.

   Staff Analysis: *A recommended condition of approval has been added to this staff report prohibiting construction prior to preliminary approval of this application and before the required permits have been secured.*

8. **MICC 19.08.030(A)**: Compliance with Other Laws and Regulations. The proposed subdivision shall comply with arterial, capital facility, and land use elements of the comprehensive plan; all other chapters of the development code; the Shoreline Management Act; and other applicable legislation.

   Staff Analysis: The applicant has documented compliance with the required elements of the comprehensive plan in Exhibit 5b. The preliminary plat has been reviewed for compliance with the applicable legislation, documented in items 9 through 43 below.

9. **MICC 19.08.030(B)(1)**: The subdivision shall be reconciled as far as possible with current official plans for acquisition and development of arterial or other public streets, trails, public buildings, utilities, parks, playgrounds, and other public improvements.

   Staff Analysis: *The current City of Mercer Island official plans for acquisition and development of arterial or other public streets, trails, public buildings, utilities, parks, playgrounds, and other public improvements do not designate any portion of the subject property for future development.*

10. **MICC 19.08.030(B)(2)**: If the preliminary plat includes a dedication of a public park with an area of less than two acres and the donor has designated that the park be named in honor of a deceased individual of good character, the city shall adopt the designated name.

    Staff Analysis: *The preliminary plat does not propose the dedication of a public park (Exhibit 2). This standard does not apply.*

11. **MICC 19.08.030(C)(1)**: Where the project may adversely impact the health, safety, and welfare of, or inflict expense or damage upon, residents or property owners within or adjoining the project, other members of the public, the state, the city, or other municipal corporations due to flooding, drainage problems, critical slopes, unstable soils, traffic access, public safety problems, or other causes, the city council in the case of a long subdivision, or the code official in the case of a short subdivision or lot line revision, shall require the applicant to adequately control such hazards or give adequate security for damages that may result from the project, or both.

    Staff Analysis:

- *Unstable soils and geologic hazards—The applicant has provided a letter from the project geotechnical engineer providing an analysis of site conditions and concluding that the subject site does not meet the definition of landslide hazard areas, but that the site does contain erosion hazard areas (Exhibit 5f). Recommendations for managing the erosion potential are included in the report, as is a statement of risk meeting the requirements of the City's critical areas code. A condition of approval has been added to this recommendation, requiring that future construction incorporate the project geotechnical engineer's recommendations.*

- *Drainage and stormwater control—conceptual stormwater design plans (Exhibits 2 and 5g) have demonstrated the ability of the proposed subdivision design to meet stormwater design standards at construction.*

- *Traffic access—preliminary traffic analysis (Exhibit 5e) has demonstrated that proposed subdivision design is feasible. A recommended condition of approval has been added to this staff report, requiring a final traffic memorandum documenting the trip generation and sight distance evaluation.*

12. **MICC 19.08.030(C)(2)**: If there are soils or drainage problems, the city engineer may require that a Washington registered civil engineer perform a geotechnical investigation of each lot in the project. The report shall recommend the corrective action likely to prevent damage to the areas where such soils or drainage problems exist. Storm water shall be managed in accordance with the criteria set out in MICC 15.09.030 and shall not increase likely damage to downstream or upstream facilities or properties.

    Staff Analysis: *Recommendations for managing the erosion potential are included in Exhibit 5f, as is a statement of risk meeting the requirements of the City's critical areas code. A condition of approval has been added to this recommendation, requiring that future construction incorporate the project geotechnical engineer's recommendations. Conceptual stormwater design plans have demonstrated the ability of the proposed subdivision design to meet stormwater design standards (Exhibits 2 and 5g) and the City's senior development review engineer has recommended preliminary approval of the subdivision (Exhibit 9b). A recommended condition of approval has been added to this staff report requiring final stormwater design and installation of stormwater drainage improvements at Site Development Permit.*

13. **MICC 19.08.030(C)(3)**: Alternative tightline storm drains to Lake Washington shall not cause added impact to the properties, and the applicant shall submit supportive calculations for storm drainage detention.

    Staff Analysis: *The application does not propose to construct a tightline system (Exhibit 2). A condition of approval has been added to this staff report, requiring the drainage system from the subject site to connect to the City drainage system and to provide stormwater drainage improvements that meet the applicable standards.*

14. **MICC 19.08.030(D)(1)**: The width and location of rights-of-way for major, secondary, and collector arterial streets shall be as set forth in the comprehensive arterial plan.

    Staff Analysis: *No public rights-of-way are proposed to be dedicated as part of the proposed subdivision. This standard does not apply.*

    MICC 19.08.030(D)(2): Public rights-of-way shall comply with the requirements set out in MICC 19.09.030.

Staff Analysis: *No public rights-of-way are proposed to be dedicated as part of the proposed subdivision. This standard does not apply.*

15. **MICC 19.08.030(D)(3)**: Private access roads shall meet the criteria set out in MICC 19.09.040.

    Staff Analysis: *Compliance with the standards in MICC 19.09.040 is addressed in items 30 through 36 of this staff report.*

16. **MICC 19.08.030(D)(4)**: Streets of the proposed subdivision shall connect with existing improved public streets, or with existing improved private access roads subject to easements of way in favor of the land to be subdivided.

    Staff Analysis: *The proposed subdivision includes a private access road connecting to Island Crest Way, and existing improved public street (Exhibit 2, Sheet C9), consistent with this standard.*

17. **MICC 19.08.030(E)(1):** The area, width, and depth of each residential lot shall conform to the requirements for the zone in which the lot is located. Any lot which is located in two or more zones shall conform to the zoning requirements determined by the criteria set out in MICC 19.01.040(G)(2).

    Staff Analysis: *The subject property is contained entirely within the R-9.6 zone. The standards for lot area, width, and depth are contained in MICC 19.02.020. The standards for the R-9.6 zone are an area of at least 9,600 square feet, lot width of at least 75 feet and lot depth of at least 80 feet.*

    The applicant is proposing to utilize the Optional Standards for Development contained in MICC 19.08.030(G), which allows the minimum lot area, width and depth to be 75 percent of the dimension that otherwise would be required for the zone in which the subdivision is located. In the R-9.6 zone, this translates to an area of at least 7,200 square feet, lot width of at least 56.25 feet and lot depth of at least 60 feet.

    As a result of the proposed subdivision, the resulting lots would have the following dimensions, which meet this standard (Exhibit 2, Sheet 4 of 4):

	Lot Area	**Lot Width**	**Lot Depth**
Lot 1	9,636 sq ft	88 ft	61.25 ft
Lot 2	10,197 sq ft	Approx. 56.5 ft	291.62 ft
Lot 3	9,273 sq ft	56.25 ft	Approx. 160 ft
Lot 4	10,400 sq ft	Approx. 56.25 ft	188 ft
Lot 5	32,049 sq ft	Approx. 180 ft	188 ft

18. **MICC 19.08.030(E)(2)**: Each side line of a lot shall be approximately perpendicular or radial to the center line of the street on which the lot fronts.

    Staff analysis: *All side lot lines are perpendicular to the private access road that the lots front (Exhibit 2).*

19. **MICC 19.08.030(F)(1)**: Subdivisions abutting an arterial street as shown on the comprehensive arterial plan shall be oriented to require the rear or side portion of the lots to abut the arterial and provide for internal access streets.

    Staff analysis: *The subject site abuts Island Crest Way, which is classified as a Secondary Arterial in the comprehensive plan at the location of the subject site. The two lots adjacent to Island Crest Way meet this standard by having their rear (Lot 1) and side (Lot 3) yards abutting Island Crest Way (Exhibit 2). The subdivision contains an internal access street, consistent with this code standard.*

20. **MICC 19.08.030(F)(2)**: Where critical areas meeting the criteria set out in Chapter 19.07 MICC are present within the subdivision, the code official or city council may: a. Require that certain portions of the long subdivision or short subdivision remain undeveloped with such restrictions shown on the official documents; b. Increase the usual building set-back requirements; and/or c. Require appropriate building techniques to reduce the impact of site development.

    Staff analysis: *The site contains wetlands and a watercourse, which are critical areas meeting the criteria set out in Chapter 19.07. The applicant proposes to protect the critical areas and associated buffers by designating these areas as a Native Growth Protection Area (NGPA), in which certain activities are prohibited and maintenance is required by property owners. The recommended conditions of approval require the identification of a NGPA, or equivalent restriction approved by the City, on the face of the final plat.*

21. **MICC 19.08.030(G)(1)**: The use of the land in the long subdivision or short subdivision shall be one permitted in the zone in which the long subdivision or short subdivision is located.

    Staff analysis: *The proposed subdivision would create five single family lots and a recreational tract (Exhibit 5a), which are allowed uses in the R-9.6 zone (MICC 19.02.010).*

22. **MICC 19.08.030(G)(2)**: The number of lots shall not exceed the number that would otherwise be permitted within the area being subdivided, excluding the shorelands part of any such lot and any part of such lot that is part of a street.

    Staff analysis: *Five lots are proposed, and the area being subdivided is approximately 72,900 sq ft, which would allow seven lots of 9,600 sq ft to be created under R-9.6 zoning. The number of proposed lots therefore does not exceed the number that would otherwise be permitted.*

23. **MICC 19.08.030(G)(3)**: An area suitable for a private or public open space tract shall be set aside for such use.

    Staff analysis: *The area to be designated as recreational space in Tract A is suitable for recreational uses and will include a landscaping to provide screening from Island Crest Way and a picnic table for recreational use (Exhibit 5a).*

24. **MICC 19.08.030(G)(4)**: The lots may be of different areas, but the minimum lot area, minimum lot width, and minimum lot depth shall each be at least 75 percent of that otherwise required in the zone in which the long subdivision or short subdivision is located. In no case shall the lot area be less than 75 percent of that otherwise required in the zone. Lot size averaging must be incorporated if lot width or depth requirements are 75 percent of the minimum that would otherwise be required for the zone without utilizing the optional development standards. Any designated open space or recreational tract shall not be considered a lot.

Staff analysis: *The lot dimensions conform to the standards in this code provision, as demonstrated in #17 above. The recreational tract is designated as Tract A on the preliminary plat and is not considered a lot.*

25. **MICC 19.08.030(G)(5)**: The ownership and use of any designated open space or recreational tract, if private, shall be shared by all property owners within the long subdivision or short subdivision. In addition, a right of entry shall be conveyed to the public to be exercised at the sole option of the city council if such area shall cease to be an open space or recreational tract.

    Staff analysis: *The ownership of the recreational tract is proposed to be divided equally among the owners of lots 1-5, consistent with this standard (Exhibit 2, sheet 2 of 4).*

26. **MICC 19.08.030(G)(6)**: The open space or recreational tract must remain in its approved configuration and be maintained in accordance with approved plans. Any deviation from the foregoing conditions must receive expressed approval from the planning commission.

    Staff analysis: *A recommended condition to appear on the face of the final plat has been added to this staff report, requiring express approval from the City if any change is proposed to the configuration or maintenance of the recreational tract.*

27. **MICC 19.02.010(A)**: Uses Permitted in Zones R-8.4, R-9.6, R-12, R-15. (1) Single-family dwelling […] (3) Private recreation areas.

    Staff analysis: *The proposed subdivision would create five single family lots and a recreational tract (Exhibit 5a), which are allowed uses in the R-9.6 zone.*

28. **MICC 19.07.070(B)(2)(a)**: The code official may allow the standard buffer width to be reduced to not less than the above listed minimum width in accordance with an approved critical area study when he/she determines that a smaller area is adequate to protect the watercourse, the impacts will be mitigated by using combinations of the below mitigation options, and the proposal will result in no net loss of watercourse and buffer functions. However, in no case shall a reduced buffer contain a steep slope.

    Staff analysis: *The applicant has demonstrated that the proposed smaller buffer area is adequate to protect the watercourse, and with the recommendations of the City's consulting biologist, will result in no net loss of watercourse and associated buffer functions. In addition, impacts caused by the unauthorized tree removal and wetland filling, which was the subject of code enforcement case CE16-0014, have been adequately mitigated (Exhibits 5d and 9a). A condition of approval has been added to this staff report, requiring that mitigation performance standards be updated to require 30% cover of emergent plants by Year 3 and 60% cover by Year 5, based on the recommendation of the City's consulting biologist.*

29. **MICC 19.07.080(C)(2)**: The code official may allow the standard wetland buffer width to be reduced to not less than the minimum buffer width in accordance with an approved critical area study when he/she determines that a smaller area is adequate to protect the wetland functions, the impacts will be mitigated consistent with MICC 19.07.070(B)(2), and the proposal will result in no net loss of wetland and buffer functions.

    Staff analysis: *The applicant has demonstrated that the smaller buffer area is adequate to protect the wetlands, and with the recommendations of the City's consulting biologist, will result in no net loss of wetland and associated buffer functions. In addition, impacts caused by the unauthorized*

tree removal and wetland filling, which was the subject of code enforcement case CE16-0014, have been adequately mitigated (Exhibits 5d and 9a). A condition of approval has been added to this staff report, requiring that mitigation performance standards be updated to require 30% cover of emergent plants by Year 3 and 60% cover by Year 5, based on the recommendation of the City's consulting biologist.

30. **MICC 19.09.040(A)**: The following are the minimum requirements for private access roads. To accommodate fire suppression and rescue activities, the Mercer Island fire chief may require that the widths of private access roads or the size of turn-arounds be increased or that turn-arounds be provided when not otherwise required by this section.

    Staff analysis: *The Mercer Island Fire Dept. has not required an increase in width or turnarounds for the private access road.*

31. **MICC 19.09.040(B)**: All private access roads serving three or more single-family dwellings shall be at least 20 feet in width. All private access roads serving less than three single-family dwellings shall be at least 16 feet in width, with at least 12 feet of that width consisting of pavement and the balance consisting of well compacted shoulders.

    Staff analysis: *The private access road serving the five proposed lots within the subdivision are proposed to be 20 feet in width, consistent with this standard (Exhibit 2, sheet C9).*

32. **MICC 19.09.040(C)**: All corners shall have a minimum inside turning radius of 28 feet.

    Staff analysis: *The proposed private access road does not contain any corners (Exhibit 2, sheet C9). This standard does not apply.*

33. **MICC 19.09.040(D)**: All private access roads in excess of 150 feet in length, measured along the centerline of the access road from the edge of city street to the end of the access road, shall have a turnaround with an inside turning radius of 28 feet.

    Staff analysis: *The private access road is less than 150 ft in length (Exhibit 2, sheet C9). This standard does not apply.*

34. **MICC 19.09.040(E)**: All cul-de-sacs shall be at least 70 feet in diameter; provided, cul-de-sacs providing access to three or more single-family dwellings shall be at least 90 feet in diameter.

    Staff analysis: *The subdivision does not contain a cul-de-sac (Exhibit 2, sheet C9). This standard does not apply.*

35. **MICC 19.09.040(F)(1)**: No access road or driveway shall have a gradient of greater than 20 percent.

    Staff analysis: *The steepest portion of the private access road is 15% grade (Exhibit 2, sheet C9). This standard is met.*

36. **MICC 19.09.040(F)(2)**: For all access roads and driveways with a gradient exceeding 15 percent, the road surface shall be cement concrete pavement with a brushed surface for traction. Access roads and driveways with gradients of 15 percent or less may have asphalt concrete surface.

    Staff analysis: *The steepest portion of the private access road is 15% grade (Exhibit 2, sheet C9). Future road construction will be consistent with the applicable construction standards.*

37. **MICC 19.09.090(A)**: Designation. New subdivisions must designate a building pad for each lot as follows: 1. The applicant must determine the location of a building pad by considering vegetation, topography, critical areas, and the relationship of the proposed building pad to existing/proposed homes. Access to the building pad must be consistent with the standards for driveway access contained in MICC 19.09.040. 2. Building pads shall not be located within yard setbacks, rights-of-way and critical areas or its buffers; provided, however, building pads may be located within landslide hazard areas when all of the following are met: (a) a qualified professional determines that the criteria of MICC 19.07.060(D), Site Development, is satisfied; (b) building pads are sited to minimize impacts to the extent reasonably feasible; and (c) building pads are not located in steep slopes or within 10 feet from the top of a steep slope, unless such slopes, as determined by a qualified professional, consist of soil types determined not to be landslide prone.

    Staff analysis: *Building pads have been designated that meet the above standards (Exhibit 2, Sheet 4 of 4)*

38. **MICC 19.09.100**: The applicant must use reasonable best efforts to comply with the following preferred development practices: A. Use common access drives and utility corridors.
    B. Development, including roads, walkways and parking areas in critical areas, should be avoided, or if not avoided, adverse impacts to critical areas will be mitigated to the greatest extent reasonably feasible. C. Retaining walls should be used to maintain existing natural slopes in place of graded artificial slopes.

    Staff analysis: *The subdivision design collocates utilities with the common access drive (Exhibit 2, Sheet C6 and C7). Development has been located outside of critical areas and reduced buffers, avoiding impacts to critical areas (Exhibit 2, Sheet 4 of 4). A retaining wall is proposed adjacent to the private access road to maintain existing natural slopes on the future lots while allowing the private access road to be at grades that meet the applicable standards (Exhibit 2, sheet C6). Each of these preferred practices has been used.*

39. **MICC 19.10.020(B)(1):** A tree permit is required to cut any large tree as a result of construction work.

    Staff analysis: *The City Arborist has found that provided recommended conditions of approval that ensure consistency with Chapter 19.10 MICC.*

40. MICC 19.10.040(B)(2): When a tree permit is required to cut a tree on private property, the tree permit will be granted if it meets any of the following criteria: It is necessary to enable construction work on the property to proceed and the owner has used reasonable best efforts to design and locate any improvements and perform the construction work in a manner consistent with the purposes set forth in MICC 19.10.010

    Staff analysis: *The City Arborist has found that the applicant has met the standard in MICC 19.10.040(B)(2) by using reasonable best efforts to locate improvements in a manner consistent with the purposes listed in MICC 19.10.010 (Exhibit 9c). The applicant has also documented that adequate limits of disturbance have been established by keeping tree protection outside of critical root zones field located using air-excavation. Building pads have been situated to allow retention of the highest quality trees on site (Exhibit 2, Sheet W4.0).*

41. **MICC 19.17.070(A) and (D)**: The city shall collect impact fees, based on the city's permit and impact fee schedule, from any applicant seeking a residential building permit from the city.[…] For building permits within new subdivisions approved under Chapter 19.08 MICC (Subdivisions), a

credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

Staff analysis: *A recommended condition of approval has been added to this staff report and is recommended to be added to the face of the final plat, requiring that school impact fees shall be paid at the issuance of each building permit unless deferral of payment is sought pursuant to MICC 19.17.080. Impact fees are not subject to vesting and the amount paid will be the impact fee amount in effect at the time of payment.*

42. **MICC 19.18.050(A) and (D):** The city shall collect impact fees, based on the city's permit and impact fee schedule, from any applicant seeking a residential building permit from the city. For building permits within new subdivisions approved under Chapter 19.08 MICC, Subdivisions, a credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

    Staff analysis: *A recommended condition of approval has been added to this staff report and is recommended to be added to the face of the final plat, requiring that school impact fees shall be paid at the issuance of each building permit, unless deferral of payment is sought pursuant to MICC 19.18.060. Impact fees are not subject to vesting and the amount paid will be the impact fee amount in effect at the time of payment.*

43. **MICC 19.19.050(A) and (C)**: The city shall collect impact fees, based on the city's permit and impact fee schedule, from any applicant seeking a building permit from the city. For building permits within new subdivisions approved under Chapter 19.08 MICC (Subdivisions), a credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

    Staff analysis: *A recommended condition of approval has been added to this staff report and is recommended to be added to the face of the final plat, requiring that school impact fees shall be paid at the issuance of each building permit, unless deferral of payment is sought pursuant to 19.19.060. Impact fees are not subject to vesting and the amount paid will be the impact fee amount in effect at the time of payment.*

44. **Public comment:** Two public comment letters were received during review of this project covering the following topics (Exhibits 8a and 8b):

    1. Clarity regarding access on the south end of the site.

    Staff analysis: *There are currently two driveways close to each other along the southern property line of the subject site, with one driveway on the subject site, and the other driveway on the adjacent property to the south. There was a concern that removal of the existing southern driveway on the subject site would impact the driveway on the neighboring property.*

No off-site changes are proposed as part of this subdivision, including to the driveway on the neighboring property.

2. Concerns over drainage from the upslope property.

Staff analysis: *Past unauthorized placement of stones, logs, and plant materials had previously blocked the flow of water and caused backups on the upslope property. As part of the proposed mitigation plans recommended for approval, all unauthorized fill materials will be removed, addressing the cause of previous water backups. Additionally, the mitigation plan proposes to install native vegetation, which will encourage infiltration of runoff. Lastly, the wetlands, watercourse, and associated buffer are proposed to be protected by a Native Growth Protection Easement, will deter future unauthorized activities.*

45. SEPA Compliance

Staff analysis: *A Determination of Non-Significance was issued on Oct. 15, 2018 (Exhibit 7).*

II. CONCLUSIONS OF LAW

Based on the above Findings of Facts, the following Conclusions of Law have been made:

1. The proposed subdivision makes appropriate provisions for the public health, safety, and general welfare and for such open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and schoolgrounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school

2. The proposed short subdivision confirms to applicable zoning and land use regulations.

3. The public use and interest will be served by approval of the proposed short subdivision.

III. RECOMMENDATION

Based upon the above noted Findings of Fact and Conclusions of Law, short subdivision application SUB17-001, as depicted in Exhibit 7, is hereby preliminarily **APPROVED**. This decision is final, unless appealed in writing consistent with adopted appeal procedures, MICC 19.15.020(J), and all other applicable appeal regulations.

IV. RECOMMENDED CONDITIONS OF APPROVAL AND REGULATORY REQUIREMENTS

The following conditions of approval and regulatory requirements shall be binding on the "Applicant," which shall include owner or owners of the property, heirs, assigns, and successors.

General:

1. The proposed subdivision shall comply with all applicable federal, state, and local laws.

2. A final plat that is substantially consistent with the preliminary plat drawings attached as Exhibit X) and meeting the requirements of MICC 19.08, shall be submitted within five years of preliminary approval for review and approval by the City of Mercer Island City Council.

3. No construction of structures, utilities, storm drainage, grading, excavation, filling, or land clearing on any land within the proposed long subdivision shall be allowed prior to preliminary approval of the application and until the applicant has secured the permits required under the Mercer Island City Code.

Planning:

4. Prior to issuance of the Site Development Permit, the applicant shall submit a bond quantity worksheet reflecting the expected cost of implanting the mitigation plan, including plant material, maintenance and monitoring costs.

5. Prior to the issuance of the Site Development Permit, the applicant shall revise the mitigation plan performance standards to require 30% cover of emergent plants by Year 3 and 60% cover by Year 5.

6. Prior to issuance of the Site Development Permit, the applicant shall post a financial guarantee in the amount on 125% of the total shown on the bond quantity worksheet.

7. Prior to issuance of the Site Development Permit, the applicant shall provide proposed easement language for the access easement shared by the proposed lots for review and approval by the City.

8. Prior to the recording of the final plat, the applicant shall identify the extent, limitations and terms of the proposed Native Growth Protection Easement, or equivalent restriction approved by the City, on the face of the final plat. Draft language shall be provided to the City for review and approval prior to final plat approval.

9. At building permit application, the applicant shall pay school impact fees based on the fee schedule in place at the time of application. A credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

10. At building permit application, the applicant shall pay parks impact fees based on the fee schedule in place at the time of application. A credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

11. At building permit application for the future residences, the applicant shall pay transportation impact fees based on the fee schedule in place at the time of application. A credit shall be applied for any dwelling unit that exists on the land within the subdivision prior to the subdivision if the dwelling unit is demolished. The credit shall apply to the first complete building permit application submitted to the city subsequent to demolition of the existing dwelling unit, unless otherwise allocated by the applicant of the subdivision as part of approval of the subdivision.

12. Prior to final inspection of plat improvements constructed under the Site Development Permit, the plattor shall stabilize all disturbed areas with erosion control measures acceptable to the City Engineer.

13. Prior to final inspection of plat improvements constructed under the Site Development Permit, all plantings as shown on the Mitigation and Restoration Plan prepared by The Watershed Company, dated April 18, 2018 shall be installed, inspected and approved by the City, and the plattor shall submit as-built plans to the City.

Trees:

14. Only trees needing to be removed for site development improvements may be removed at Site Development Permit issuance. Tree removal shall be consistent with the Tree Preservation Plan on sheet W4.0 or as otherwise approved in writing by the City Arborist.

15. Only trees needing to be removed for future house construction may be removed at building permit issuance. Tree removal shall be consistent with the Tree Preservation Plan on sheet W4.0 of the Long Plat Mitigation and Restoration Plan dated April 18, 2018 or as otherwise approved in writing by the City Arborist.

16. Prior to Site Development Permit issuance, tree protection fencing shall be installed consistent with Sheet C4 of the plan set prepared by CHS Engineers dated April 18, 2018.

17. Prior to recording of the final plat, the applicant shall include a sheet showing the locations and tree numbers of trees proposed for retention, consistent with the approved retention plan.

Civil Engineering:

18. Easements for shared access, utilities, and storm drainage facilities shall be depicted on the face of the final plat. Language which indicates joint rights and responsibilities of each lot with respect to all utilities and roadways shall be shown along with individual lot Joint Maintenance Easement Agreements (where applicable) for all shared usage and filed with the King County Recorder and noted on the final plat. The easement shall indicate whether it is public or private, existing or proposed.

19. Damage to adjacent properties or public rights-of-way resulting from construction (e.g. siltation, mud, runoff, roadway damage caused by construction equipment or hauling) shall be expeditiously mitigated and repaired by the contractor, at no expense to the City. Failure to mitigate and repair said damage, or to comply with the approved construction plans, the permits issued by the City, or the City requirement for corrective action may be cause for the issuance of a "Stop Work" order, foreclosure on the plat bond/security, and/or other measures deemed appropriate by the City Engineer or Code Official to ensure construction consistent with the approved plans and protection of public safety.

20. The final plat shall be prepared in conformance with Title 58 RCW and Surveys shall comply with Chapter 332-130 WAC. Submit using Mercer Island's datum and tie the plat to at least two City monuments.

21. A City of Mercer Island title block for approval signatures (City Engineer and the Mayor) shall be provided on the final plat along with the designated Long Plat number.

22. A final traffic memorandum documenting the trip generation and sight distance evaluation shall be submitted as a part of the Site Development Permit submittal package. All mitigation measures recommended in the memorandum shall be incorporated into the Site Development Permit.

23. Construction of all improvements for access, utilities, storm drainage, and site work shall comply with current City ordinances and the requirements of the City Engineer.

24. All utilities serving the plat shall be under grounded (MICC 19.08.040) and shall be designed and constructed in accordance with City of Mercer Island Ordinances.

25. Plat improvement plans prepared by a Washington State licensed engineer shall be submitted for review and approval by the City Engineer. The improvement plans shall include, at a minimum, the following:

    a. Plat access road - Comply with the Fire Code requirements and standards contained in MICC 19.09.040. Site distance mitigation measures recommended by in the site distance evaluation.

    b. Temporary Erosion Control measurements.

    c. Grading Plan.

    d. Water main, water meters, and appurtenances

        i. Provide water services for each lot. Locate water meters outside of the future driveway areas and any paved areas.

        ii. Abandon all existing water services currently serving the existing lot at the City water main.

    e. Sanitary sewer and appurtenances

        i. Provide sewer connections for each lot. Show the sanitary sewer stub outs.

        ii. Abandon all existing side sewers at the City sewer main.

        iii. The sanitary sewer system serving all lots will be a private sewer system.

    f. Stormwater

        i. Provide drainage improvements in compliance with MICC 15.09.

        ii. Show the storm drainage stub outs for all lots.

        iii. A Department of Ecology Construction General Permit is required for this project.

    g. Dry utilities

        i. Show the proposed dry (power, gas, etc.) utility corridor on the plan.

26. Right of Way Restoration

    a. The existing driveway apron in the City Right of Way located at the south end of the property frontage must be remove.

b. Roadway, sidewalk, and curb replacement limits shall be determined by the City Engineer and will likely include a full lane width grind and overlay of the existing roadway section on Island Crest Way and replacement of curb/gutter/sidewalk along the entire frontage of the property.

c. Clearing and grading within the City Right of Way to achieve clear sight lines for the proposed driveway must be reviewed as a part of the Site Development Permit. Trimming of tree branches shall only be performed under the direction of a certified arborist.

27. All plat improvements shall be completed prior to final plat approval or bonded and completed prior to issuance of building permits when allowed by the City Engineer. A survey grade as-built drawing in PDF format that shows all utilities and plat improvements shall be submitted to the City Engineer upon completion of the work.

The following notes shall be placed on the final plat:

1. Maintenance and repair of the private sanitary sewer system and joint use side sewers (sewer lines from the building to the private sewer main), shared roads, access easements, public trail, private storm drainage facilities shall be the responsibility of the owners of each lot served (with the exception that owners of any lot which is lower in elevation shall not be responsible for that portion of a private side sewer above their connection). If maintenance and repair of any facilities enumerated above are not performed to the satisfaction of the City Engineer, after a timely demand has been made for such action, the City or its agent shall have the right to enter upon the premises and perform the necessary maintenance and repair to protect the safety and general welfare of the public and shall have the right to charge the owner of each lot an equal share of the total maintenance and repair costs. The City or the owner of any lot within this plat shall have the right to bring action in Superior Court to require any maintenance or repair and to recover the costs incurred in making or effecting repairs to improvements.

2. Private stormwater facilities shall be inspected and maintained in conformance with MICC 15.09.070.

3. All staging for construction shall occur on site and shall not be located in the public right-of-way.

4. No permanent landscaping, structures, or fences shall be placed on or within public utility, storm drainage, or pedestrian path easements without the written approval of the City Engineer.

5. If in the opinion of the City Engineer, utilities or storm drainage facilities require maintenance, repair or replacement, the City or its agent shall have the right to enter those lots adjoining the facility for the purpose of maintaining, repairing, relocating or replacing said facilities.

6. Installation of landscaping and/or structures including trees, shrubs, rocks, berms, walls, gates, and other improvements are not allowed within the public right-of-way without an approved encroachment license agreement from the City prior to the work occurring (MICC 19.06.060).

7. No tree identified for retention may be removed unless otherwise approved by the City arborist.

8. All disturbed areas outside of building footprints and impervious surfaces on Lots 3 and 4 shall be landscaped.

9. No change may be made to the configuration or maintenance requirements of Tract A without express approval from the City.

10. All areas outside of building footprints and impervious surfaces shall be landscaped prior to final inspection of building permits on each lot. (MICC 19.07.060(D)(1)(d))

11. The applicant shall include a note addressing maintenance and ownership of Tract A

12. The applicant shall include a note addressing maintenance of the Native Growth Protection Easement.

13. School, traffic and park impact fees will be due at building permit issuance or may be deferred in accordance with MICC 19.17, 19.18, and 19.19.

Exhibit List:

1. Development Application signed Oct. 31, 2017

2. Plan Set prepared by CHS Engineers, dated April 18, 2018

3. Mercertech International LLC Long Plat Mitigation and Restoration Plan prepared by The Watershed Company, dated April 18, 2018

4. Notice of Application for project SUB17-015/CAO17-015/SEP17-026 dated Dec. 4, 2017

5. Technical Reports and Memos

    a. Project Narrative prepared by Jayson Taylor, dated October 31, 2017

    b. Response letter prepared by Jayson Taylor, dated April 25, 2018

    c. Safe walking path to school exhibit prepared by Jayson Taylor, dated April 25, 2018

    d. Critical Areas Study prepared by The Watershed Company, dated April 20, 2018

    e. Trip Generation & Sight Distance Evaluation Memo prepared by Transportation Engineering Northwest, dated August 22, 2017

    f. Geotechnical consultation letter prepared by Earth Solutions NW, LLC dated April 19, 2018

    g. Meeting debrief and drainage memo prepared by CHS Engineers dated September 1, 2018

6. Notice of Correction issued by Jimmi Serfling, Code Compliance Officer (City of Mercer Island) dated August 10, 2016

7. SEPA Determination issued by Robin Proebsting, Senior Planner (City of Mercer Island) dated October 15, 2018

8. Comment Letters

a. Karnes

b. Singh

9. Review memos

a. ESA

b. Ruji Ding, Senior Development Review Engineer

c. John Kenney, City Arborist

CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP

9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org

CITY USE ONLY		
PERMIT #	RECEIPT #	FEE
Date Received:		

DEVELOPMENT APPLICATION

Received By:

STREET ADDRESS/LOCATION	ZONE
4320 AND 4332 ISLAND CREST WAY	R-9.6
COUNTY ASSESSOR PARCEL #'S	**PARCEL SIZE (SQ. FT.)**
182405-9031	72,745

PROPERTY OWNER *(required)*	ADDRESS *(required)*	CELL/OFFICE *(required)*
ALAN CHIU	6955 SE 33RD ST. MERCER ISLAND, WA	(206) 992-6982 E-MAIL *(required)* ALAN_CHIU@COMCAST.NET
PROJECT CONTACT NAME	ADDRESS	CELL/OFFICE
JAYSON TAYLOR		(509) 863-1966 E-MAIL JAYSON.M.TAYLOR@GMAIL.COM
TENANT NAME	ADDRESS	CELL PHONE E-MAIL

DECLARATION: I HEREBY STATE THAT I AM THE OWNER OF THE SUBJECT PROPERTY OR I HAVE BEEN AUTHORIZED BY THE OWNER(S) OF THE SUBJECT PROPERTY TO REPRESENT THIS APPLICATION, AND THAT THE INFORMATION FURNISHED BY ME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

Alan Chiu — SIGNATURE

10/31/2017 — DATE

PROPOSED APPLICATION(S) AND CLEAR DESCRIPTION OF PROPOSAL (PLEASE USE ADDITIONAL PAPER IF NEEDED)**:**

This project is 5 lot long plat. This includes constructing a private road, stormwater detention system, and bringing in utilities from Island Crest Way. The lot also contains critical areas, and extenstive work will be done to restore wetlands and improve wetland buffers.

ATTACH RESPONSE TO DECISION CRITERIA IF APPLICABLE

CHECK TYPE OF LAND USE APPROVAL REQUESTED:

APPEALS	DEVIATIONS Continued	SUBDIVISION SHORT PLAT Continued
☐ Building (+cost of file preparation)	☐Impervious Surface (5% Lot overage)	☐ Short Plat Amendment
☐ Land use (+cost of verbatim transcript)	☐Shoreline	☐ Final Short Plat Approval
☐ Code Interpretation	☐Wet Season Construction Moratorium	**VARIANCES (Plus Hearing Examiner Fee)**
CRITICAL AREAS	**ENVIRONMENTAL REVIEW (SEPA)**	☐ Type 1**
☐ Determination	☐ Checklist: Single Family Residential Use	☐ Type 2***
☐ Reasonable Use Exception	☐ Checklist: Non-Single Family Residential Use	**OTHER LAND USE**
DESIGN REVIEW	☐ Environmental Impact Statement	☐ Accessory Dwelling Unit
☐ Administrative Review	**SHORELINE MANAGEMENT**	☐ Code Interpretation Request
☐ Design Review – **Major**	☐ Exemption	☐ Comprehensive Plan Amendment (CPA)
☐ Design Review – **Minor**	☐ Semi-Private Recreation Tract (modification)	☐ Conditional Use (CUP)
WIRELESS COMMUNICATIONS FACILITIES	☐ Semi-Private Recreation Tract (new)	☐ Lot Line Revision
☐ Wireless Communications Facilities-6409 Exemption	☐ Substantial Dev. Permit	☐ Lot Consolidation
	SUBDIVISION LONG PLAT	☐ Noise Exception
☐ New Wireless Communications Facility	■ Long Plat	☐ Reclassification of Property (Rezoning)
DEVIATIONS	☐ Subdivision Alteration to Existing Plat	☐ ROW Encroachment Agreement (*requires separate ROW Use Permit*
☐ Changes to Antenna requirements	☐ Final Subdivision Review	
☐Changes to Open Space	**SUBDIVISION SHORT PLAT**	☐ Zoning Code Text Amendment
☐Fence Height	☐ Short Plat	
☐Critical Areas Setback	☐ Deviation of Acreage Limitation	

***Includes all variances of any type or purpose in all zones other than single family residential zone: B,C-O,PBZ,MF-2,MF2L,MF-2L, MF-3,TC,P)*

****Includes all variances of any type or purpose in single family residential zone: R-8.4, R-9.6, R-12, R-15)*

Exhibit 1

PRELIMINARY PLAT

SUB17-015

4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040



AREA MAP
NO SCALE



VICINITY MAP
NO SCALE

PRELIMINARY
NOT FOR
CONSTRUCTION

SHEET INDEX

CS	COVER SHEET
C1	GENERAL NOTES, LEGEND, AREA MAP, VICINITY MAP & SHEET INDEX
C2	EXISTING SITE PLAN
C3	COMPOSITE SITE PLAN
C4	TESC, DEMOLITION, AND TREE REMOVAL
C5	TESC, DEMOLITION, TREE REMOVAL, CLEARING & GRADING NOTES
C6	TESC, DEMOLITION, TREE REMOVAL, CLEARING, GRADING, WETLAND, GENERAL AND CONSTRUCTION NOTES
C7	STORM WATER & ROAD PLAN
C8	STORM WATER & ROAD PROFILE
C9	DETAILS
C10	DETAILS
C11-C14	PRELIMINARY PLAT DRAWINGS
C15 - C20	OLDCASTLE PRECASE SHEETS
C21	CONTECH SHEET
W1.0	EXISTING CONDITIONS
W2.0	IMPACT PLAN
W3.0	RESTORATION AND MITIGATION PLAN
W4.0	TREE PRESERVATION PLAN
W4.1	TREE INVENTORY TABLES 1-3
W4.2	TREE INVENTORY TABLES 4-6
W4.3	TREE INVENTORY TABLE 7 AND TREE PRESERVATION DETAILS
W5.0	TESC AND SITE PREPARATION PLAN
W5.1	TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES
W6.0	WETLAND CREATION AREA GRADING PLAN
W7.0	PLANTING PLAN
W7.1	TYPICAL PLANTING SCHEDULES
W7.2	PLANT INSTALLATION DETAILS AND NOTES
W8.0	MITIGATION AND RESTORATION NOTES

CITY OF MERCER ISLAND · WASHINGTON ·

MERCERTECH INTERNATIONAL LLC
6955 SE 33RD ST
MERCER ISLAND, WA 98040

REVISION:

	CITY COMMENT RESPONSE
1	

4320 ISLAND CREST WAY
LONG PLAT

4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

DATE APRIL 25, 2018
DRAWN BKT | CHECKED JMT
DRAWING TITLE
COVER SHEET
Sheet No.
CS

Exhibit 2

MERCERTECH. INTERNATIONAL, LLC

4320 ISLAND CREST WAY - LONG PLAT

CITY OF MERCER ISLAND - KING COUNTY, WA

LEGEND

PROPOSED	EXISTING	DESCRIPTION
SS	SS	SEWER MAIN/SERVICE LINE
Ⓢ	Ⓢ	SEWER MH
○		SEWER CLEANOUT
W	W	WATER MAIN/SERVICE LINE (W/SLEEVE)
⊞	⊞	WATER METER
		FIRE STATION
	⧖	WATER VALVE
SD	SD	SD LINE
▥ ◎	◎ ▤	SD CATCH BASIN/MH
□		CATCH BASIN PROTECTION
OH PWR	OH PWR	OVERHEAD POWER LINE
		POWER POLE & GUY ANCHOR
		RIGHT OF WAY
		PROPERTY LINE
		EASEMENT LINE
		BUILDING SETBACK LINE
		STREAM CENTERLINE
		WETLAND DELINEATION
	A-25	WETLAND FLAG
		WETLAND BUFFER
		EDGE OF ASPHALT
		STRUCTURE
		GRAVEL SURFACE
	DP-1	WETLAND DATA POINT
	TP-1	GEOTECHNICAL TEST PIT
280		TEMPORARY SURVEY BENCHMARK (TBM)
FFE=286.5±	286	CONTOUR
+ + +		FINISHED FLOOR ELEVATION
		WETLAND REDUCTION
		WETLAND ADDITION
		EXISTING TREES
		EXISTING TREE TO BE REMOVED UPON INITIAL PLAT IMPROVEMENTS
		EXISTING TREE TO BE REMOVED UPON SUBSEQUENT PLAT IMPROVEMENTS
		EXISTING TREE TO REMAIN, TREE PROTECTION FENCING SHOWN
		EXISTING STRUCTURE/FEATURE TO BE DEMOLISHED
X X X X X X		TEMPORARY SILT FENCE
		TREE PROTECTION FENCING
XXXXX		STRAW WATTLE
		TREE DRIPLINE

SHEET INDEX

C1	GENERAL NOTES, LEGEND, AREA MAP, VICINITY MAP & SHEET INDEX
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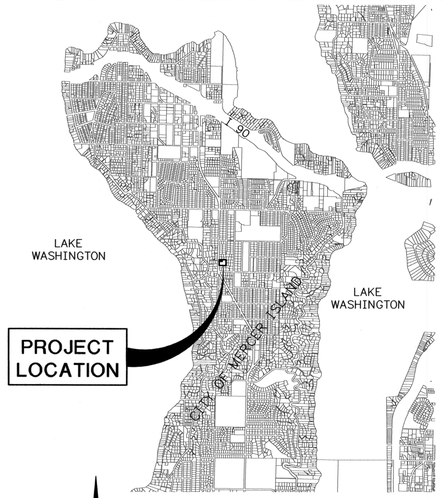
C15–C20	OLDCASTLE PRECAST SHEETS
C21	CONTECH SHEET



AREA MAP

NO SCALE



VICINITY MAP

NO SCALE

PROPERTY INFORMATION

PARCEL #: 1824069031

PARCEL AREA: 72,900 ± SF (1.67 ACRES)

SURVEY INFORMATION

HORIZONTAL DATUM: NAD 83/2011, WASHINGTON COORDINATE SYSTEM, NORTH ZONE, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.

VERTICAL DATUM: NAVD 88, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.

BASIS OF BEARING: NORTH 01°02'57" EAST, BETWEEN THE NORTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN.

64.3 FEET FROM PROPERTY LINE TO FIRE HYDRANT.

LEGAL DESCRIPTION

THE NORTH 250 FEET OF THE SOUTH 500 FEET OF THE WEST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, IN KING COUNTY, WASHINGTON, EXCEPT FOR THE WEST 40 FEET.

GENERAL NOTES

1. THE LOCATION OF THE EXISTING UTILITIES SHOWN ON THE DRAWING ARE APPROXIMATE. LOCATION AND PROTECTION OF UNDERGROUND UTILITIES SHALL BE IN ACCORDANCE WITH CHAPTER 19.122 RCW. CALL 1–800–424–5555 AT LEAST TWO BUSINESS DAYS BEFORE ANY EXCAVATION.
2. CAUTION – EXTREME HAZARD – THE CONTRACTOR IS CAUTIONED THAT OVERHEAD ELECTRICAL SERVICE LINES ARE GENERALLY NOT SHOWN ON THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXTENT OF ANY HAZARD CREATED BY OVERHEAD ELECTRICAL POWER AND SHALL FOLLOW ANY APPLICABLE PROCEDURES AS REQUIRED BY LAW.
3. ALL SOILS, ORGANIC MATERIAL AND ASPHALT PAVING THAT IS EXCAVATED IS TO BE DISPOSED OF OFFSITE.
4. THE CONTRACTOR SHALL ARRANGE AND ATTEND A PRECONSTRUCTION CONFERENCE PRIOR TO THE START OF CONSTRUCTION AND SHALL SUBMIT TESC PLAN AT PRE–CONSTRUCTION CONFERENCE.
5. THESE PLANS REFER ONLY TO WORK OUTSIDE THE WETLAND OR WETLAND BUFFER. FOR INFORMATION REGARDING WORK PERFORMED INSIDE THE WETLAND OR WETLAND BUFFER, SEE THE WATERSHED COMPANY MITIGATION AND RESTORATION PLANS.
6. REFER TO ATTACHED DRAINAGE REPORT FOR STORMWATER DESIGN INFORMATION.
7. SEE CITY PLAT FILE NO. SUB17–015.
8. THE CITY ENGINEER, CODE OFFICIAL, OR THEIR AUTHORIZED DESIGNEE SHALL MONITOR CONSTRUCTION AS DEEMED APPROPRIATE AND WHEN PERMIT INSPECTIONS ARE REQUIRED. AT ANY TIME, ADDITIONAL DESIGN DRAWINGS AND/OR EVALUATION AND MONITORING BY A SOILS ENGINEER MAY BE REQUIRED TO DETAIL OR PROVIDE FOR CORRECTIONS TO THE WORK. EVALUATION AND/OR MONITORING BY THE CIVIL ENGINEER IS REQUIRED FOR THIS PROJECT WITH COPIES OF WRITTEN REPORTS PROVIDED TO THE CITY. ALL COSTS ASSOCIATED WITH THE INSTALLATION OF IMPROVEMENTS, (INCLUDING THE MONITORING AND EVALUATION OF CONSTRUCTION ACTIVITY BY THE CITY EMPLOYEES AND CONSULTANTS, AND THE COMPLETION OF ANY REQUIRED ADDITIONS OR CORRECTION TO THE DESIGN OR INSTALLATION OF THE IMPROVEMENTS) SHALL BE BORNE BY THE DEVELOPER, PROPERTY OWNER OR HIS ASSIGNEE.
9. ALL DAMAGE TO ADJACENT PROPERTIES OR PUBLIC RIGHTS–OF–WAY RESULTING FROM CONSTRUCTION (E.G., SILTATION, MUD, WATER, RUNOFF, ROADWAY DAMAGE CAUSED BY CONSTRUCTION EQUIPMENT OR HAULING) SHALL BE EXPEDITIOUSLY MITIGATED AND REPAIRED BY THE CONTRACTOR, AT NO EXPENSE TO THE CITY. FAILURE TO MITIGATE AND REPAIR SAID DAMAGE, OR TO COMPLY WITH THE APPROVED CONSTRUCTION PLANS, THE PERMITS ISSUED BY CITY, OR THE CITY REQUIREMENT FOR CORRECTIVE ACTION SHALL BE CAUSE FOR THE ISSUANCE OF A "STOP WORK" ORDER, FORECLOSURE ON THE PLAT BOND/SECURITY, AND/OR OTHER MEASURES DEEMED APPROPRIATE BY THE CITY ENGINEER OR CODE OFFICIAL TO ENSURE QUALITY CONSTRUCTION AND PROTECT THE PUBLIC SAFETY.
10. ALL UTILITIES SERVING THE PLAT SHALL BE UNDERGROUND AND SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF MERCER ISLAND ORDINANCES AND CONSTRUCTION STANDARDS.
11. CONSTRUCTION OF ALL IMPROVEMENTS FOR ACCESS, UTILITIES, STORM DRAINAGE, AND SITE WORK SHALL COMPLY WITH CURRENT CITY ORDINANCES AND THE REQUIREMENTS OF THE CITY ENGINEER.
12. A COPY OF THE CURRENT CITY OF MERCER ISLAND CONSTRUCTION STANDARDS SHALL BE MAINTAINED ON SITE AT ALL TIMES.
13. WORK IN PUBLIC RIGHT–OF–WAY REQUIRES A RIGHT–OF–WAY USE PERMIT.

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

811 Know what's below. Call before you dig.

DATUM

OWNER, SITE, CONSULTANT & PURVEYOR INFORMATION

OWNER AND APPLICANT
MERCERTECH INTERNATIONAL, LLC
CHIU, ALAN S
6955 SE 33RD ST
MERCER ISLAND, WA 98040

TOPOGRAPHIC AND BOUNDARY SURVEY
PROFESSIONAL LAND SURVEYORS INC.
1595 NW GILMAN BLVD., #15
ISSAQUAH, WA 98027
425–313–9378

SUPPLEMENTAL AND TREE SURVEY
JOHN CHRISTENSEN, PLS
CHS ENGINEERS, LLC
12507 BEL–RED ROAD, SUITE 101
BELLEVUE, WA 98005
425–637–3693

ENGINEER
ELI ZEHNER, PE
CHS ENGINEERS, LLC
12507 BEL–RED ROAD, SUITE 101
BELLEVUE, WA 98005
425–637–3693

ARBORIST AND WETLAND
THE WATERSHED COMPANY
750 SIXTH STREET SOUTH
KIRKLAND, WA 98033
425–822–5242\

WATER AND SEWER
MERCER ISLAND PUBLIC WORKS
9601 SE 36TH STREET
MERCER ISLAND, WA 98040
206–275–7608

ELECTRICITY AND GAS
PUGET SOUND ENERGY
BOT–01H
P.O. BOX 91269
BELLEVUE, WA 98009
1–888–225–5773

TELECOMMUNICATION
–
–
–
–

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ELI ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

GENERAL NOTES, LEGEND, AREA MAP, VICINITY MAP & SHEET INDEX

Sheet C1 Of -

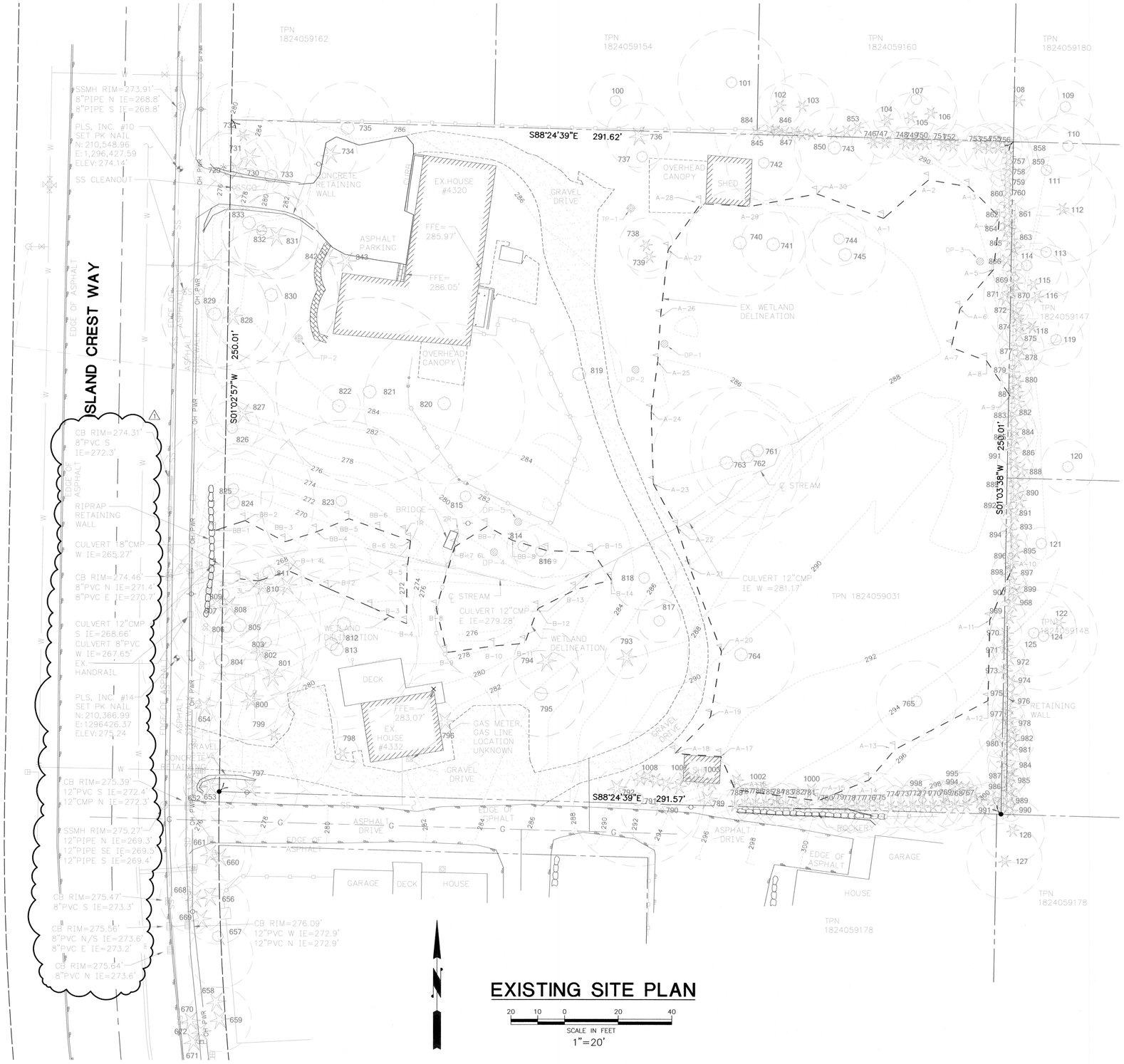
Job No. 691715

-

USER: Scott Stcherininе PLOTTING DATE: 4/23/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 (CW\CAD\691715 - BASE.dwg

Exhibit 2

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



EXISTING SITE PLAN

SCALE IN FEET
1"=20'

EXISTING SITE PLAN NOTES

1. CHICAGO TITLE SUBDIVISION GUARANTEE #0103029-06, DATED AUGUST 17, 2017, DOCUMENTS RECORDING NUMBER 5321386, WHICH ALLOWS THE CITY OF MERCER ISLAND TO MAKE CUTS & FILLS AT ISLAND CREST WAY VIA QUICK CLAIM DEED AND RECORDING NUMBER 2017011790004, WHICH IS A RECORD OF SURVEY. NO OTHER PROPERTY ENCUMBRANCES ARE DOCUMENTED.
2. TOPOGRAPHIC SURVEY PROVIDED BY PLS, INC., DATED DECEMBER 15, 2016, SUPPLEMENTAL TOPOGRAPHIC AND TREE SURVEY PROVIDED BY CHS ENGINEERS, LLC.
3. REFER TO THE ARBORIST PERIMETER AND CONSTRUCTION RECOMMENDATIONS REPORT AND ACCOMPANYING TREE INVENTORY, PREPARED BY THE WATERSHED COMPANY.
4. REFER TO THE WETLAND AND WATERCOURSES DELINEATION REPORT, PREPARED BY THE WATERSHED COMPANY, FOR DEFINITION OF EX. WETLAND AND BUFFER.
5. GEOTECHNICAL ENGINEERING STUDY PROVIDED BY EARTH SOLUTIONS NW. LLC,.

SURVEY INFORMATION

HORIZONTAL DATUM: NAD 83/2011, WASHINGTON COORDINATE SYSTEM, NORTH ZONE, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.

VERTICAL DATUM: NAVD 88, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.

BASIS OF BEARING: NORTH 01°02'57" EAST, BETWEEN THE NORTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN.

DATUM: NAVD 88

811 Know what's below. Call before you dig.

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

EXISTING SITE PLAN

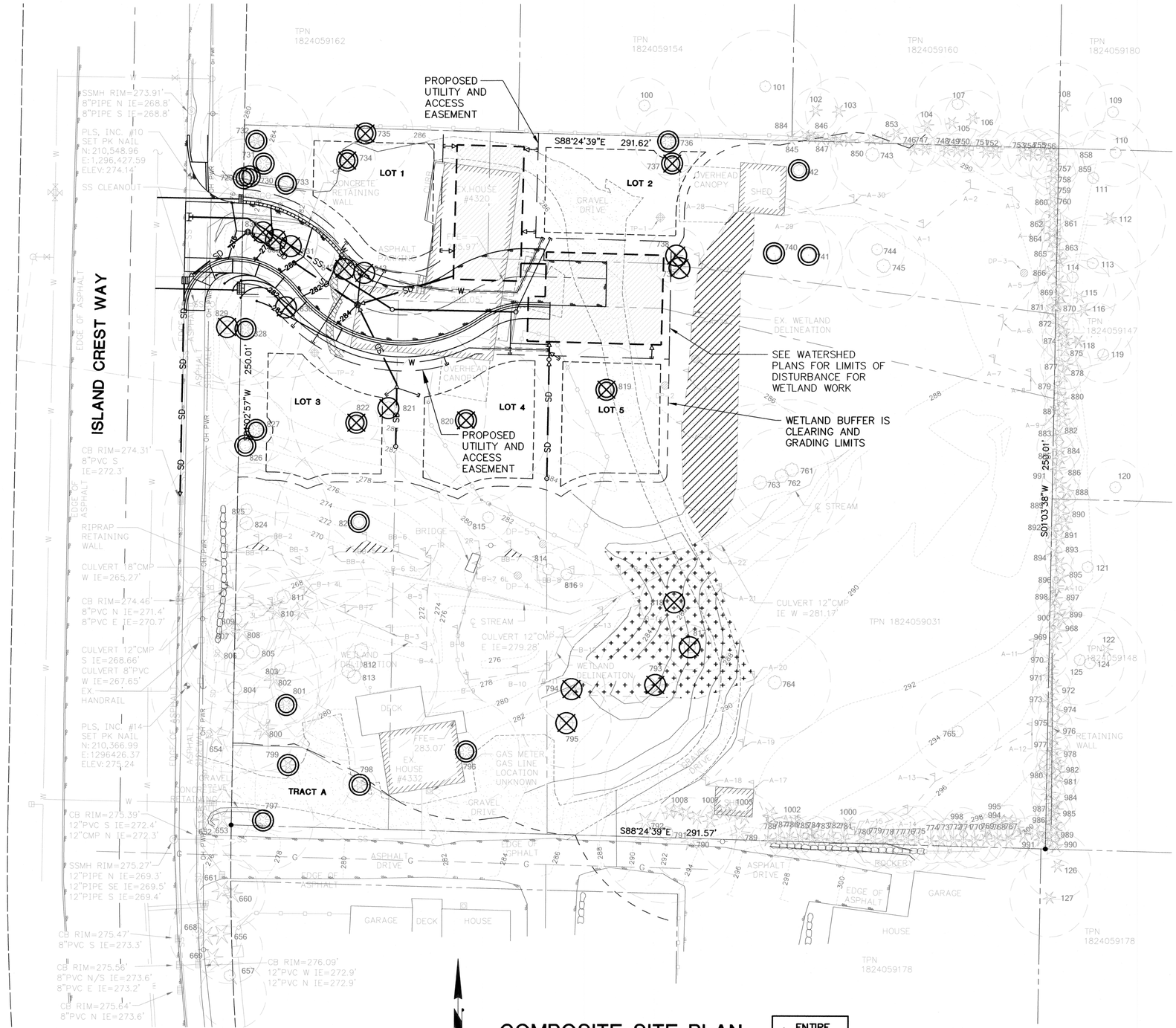
Sheet C2 Of -

Job No. 691715

Exhibit 2

USER: Scott Stcherbinine PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



SURVEY INFORMATION

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TREE LEGEND

PROPOSED	EXISTING	DESCRIPTION
	✳	EXISTING TREES
⊗		EXISTING TREE TO BE REMOVED UPON INITIAL PLAT IMPROVEMENTS
⊗		EXISTING TREE TO BE REMOVED UPON SUBSEQUENT PLAT IMPROVEMENTS
◎		EXISTING TREE TO REMAIN, TREE PROTECTION FENCING SHOWN

NOTE:

1. REFERENCE WATERSHED PLANS FOR CLEARING, GRADING AND DEMO WITHIN WETLAND BUFFER.

COMPOSITE SITE PLAN

20 10 0 20 40
SCALE IN FEET
1"=20'

⚠ ENTIRE SHEET

DATUM: NAVD 88

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No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER STATE OF WASHINGTON 40088 REGISTERED PROFESSIONAL ENGINEER

Drawn: SS Designed: BG Checked: EZ Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

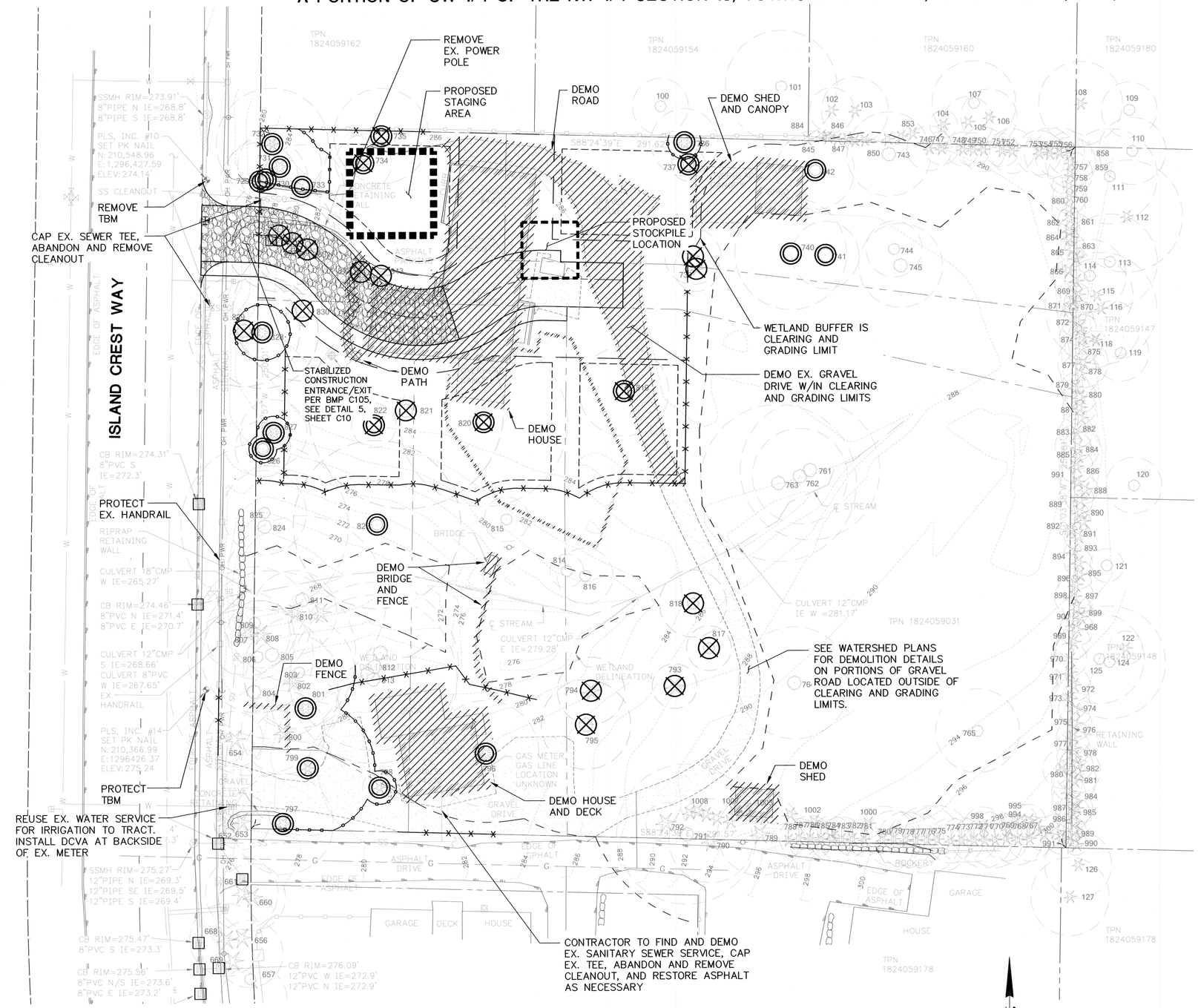
COMPOSITE SITE PLAN

Sheet C3 Of -
Job No. 691715 -

USER: Scott Stcherbinin@PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



NOTES:

1. REFER TO SHEET C9 FOR DETAILED GRADING PLAN.
2. CUBIC YARDS OF EARTHWORK TO BE REMOVED 966±. THIS QUANTITY IS LIMITED TO STORM AND ACCESS DRIVE IMPROVEMENTS.
3. SOIL DISPOSAL LOCATION TBD BY CONTRACTOR.
4. SEE PLAN SET PREPARED BY THE WATERSHED COMPANY FOR TREE PRESERVATION AND WETLAND MITIGATION PLAN. NOTE REQUIREMENTS FOR DEMOLITION OF EXISTING SOUTHERLY HOUSE.
5. REFERENCE WATERSHED PLANS FOR CLEARING, GRADING AND DEMO WITHIN WETLAND BUFFER.
6. DEMOLITION WITHIN THE WETLAND TO BE PERFORMED WITHOUT HEAVY MACHINERY IN ORDER TO MINIMIZE WETLAND IMPACT.

TESC, DEMOLITION, TREE REMOVAL, CLEARING & GRADING

SCALE IN FEET
20 10 0 20 40
1"=20'

DATUM: NAVD 88

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No.	Date	By	Ckd	Revision
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CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER ELIZABETH STATE OF WASHINGTON 22666 REGISTERED PROFESSIONAL ENGINEER

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4320 ISLAND CREST WAY - LONG PLAT

TESC, DEMOLITION AND TREE REMOVAL

Sheet C4 Of -
Job No. 691715

Exhibit 2

USER: Scott Stoneberner PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON

TESC SEQUENCE

1. CONDUCT PRE-CONSTRUCTION MEETING.
2. FLAG OR FENCE CLEARING LIMITS.
3. POST SIGN WITH NAME AND PHONE NUMBER OF TESC SUPERVISOR.
4. INSTALL CATCH BASIN PROTECTION.
5. INSTALL PERIMETER SILT FENCE PROTECTION.
6. INSTALL TREE PROTECTION.
7. CONSTRUCT SEDIMENT TRAPS.
8. UTILIZE EXISTING DRIVEWAY FOR INTERIM DEMOLITION ACTIVITY CONSTRUCTION ENTRANCE.
9. DEMO EXISTING BUILDINGS.
10. ADJUST TREE PROTECTION FENCING AS NECESSARY AFTER DEMOLITION.
11. GRADE AND INSTALL NEW CONSTRUCTION ENTRANCE.
12. GRADE AND STABILIZE ACCESS ROAD ALIGNMENT..
13. CONSTRUCT PERMANENT STORMWATER FACILITY.
14. CONSTRUCT TEMPORARY SURFACE WATER CONTROLS AND UTILIZE PERMANENT STORM WATER FACILITIES.
15. CONSTRUCT WATER, SEWER AND DRY UTILITIES.
16. CONSTRUCT PERMANENT ACCESS ROAD & RELATED IMPROVEMENTS.
17. UPON COMPLETION OF THE PLAT IMPROVEMENTS, ALL DISTURBED AREAS MUST BE STABILIZED AND BEST MANAGEMENT PRACTICES REMOVED IF APPROPRIATE
18. MAINTAIN EROSION CONTROL MEASURE IN ACCORDANCE WITH CITY OF MERCER ISLAND STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
19. 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.
20. COVER ALL AREAS WITHIN THE SPECIFIED TIME FRAME WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, CRUSHED ROCK OR EQUIVALENT.
21. SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.

TESC NOTES

1. STOCKPILE AT EXISTING GRAVEL AREAS.
2. CATCH BASIN FILTERS SHOULD BE PROVIDED FOR ALL STORM DRAIN CATCH BASINS/INLETS DOWNSLOPE AND WITHIN 500 FEET OF THE CONSTRUCTION AREA. CATCH BASIN FILTERS SHOULD BE DESIGNED BY THE MANUFACTURER FOR THE USE AT CONSTRUCTION SITES AND APPROVED BY THE CITY INSPECTOR. CATCH BASIN FILTERS SHOULD BE INSPECTED FREQUENTLY, ESPECIALLY AFTER STRONG STORM EVENTS. IF THE FILTER BECOMES CLOGGED IT SHOULD BE REPLACED.
3. ALL "LAND DISTURBING ACTIVITY" IS SUBJECT TO PROVISIONS OF MERCER ISLAND ORDINANCE 95C-118 "STORM WATER MANAGEMENT." SPECIFIC ITEMS TO BE FOLLOWED AT YOUR SITE:
4. PROTECT ADJACENT PROPERTIES FROM ANY INCREASED RUNOFF OR SEDIMENTATION DUE TO THE CONSTRUCTION PROJECT THROUGH THE USE OF APPROPRIATE "BEST MANAGEMENT PRACTICES" (BMP). EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, SEDIMENT TRAPS, SEDIMENT PONDS, FILTER FABRIC FENCES, VEGETATIVE BUFFER STRIPS OR BIO-ENGINEERED SWALES.
5. CONSTRUCTION ACCESS SHOULD BE LIMITED TO ONE ROUTE. STABILIZE ENTRANCE WITH QUARRY SPALLS TO PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING THE STORM DRAINS.
6. PREVENT SEDIMENT, CONSTRUCTION DEBRIS, PAINTS, SOLVENTS, ETC., OR ANY OTHER TYPES OF POLLUTION FROM ENTERING PUBLIC STORM DRAINS. KEEP ALL POLLUTION ON YOUR SITE.
7. ALL EXPOSED SOILS SHALL REMAIN DENUDED FOR NO LONGER THAN SEVEN (7) DAYS AND SHALL BE STABILIZED WITH MULCH, HAY, OR THE APPROPRIATE GROUND COVER. ALL EXPOSED SOILS SHALL BE COVERED IMMEDIATELY DURING ANY RAIN EVENT.
8. INSTALLATION OF CONCRETE DRIVEWAYS, TREES, SHRUBS, IRRIGATION, BOULDERS, BERMS, WALLS, GATES, AND OTHER IMPROVEMENTS ARE NOT ALLOWED IN THE PUBLIC RIGHT-OF-WAY WITHOUT PRIOR APPROVAL, AND AN ENCROACHMENT AGREEMENT AND RIGHT-OF-WAY PERMIT FROM THE SENIOR DEVELOPMENT ENGINEER.
9. OWNER SHALL CONTROL DISCHARGE OF SURFACE DRAINAGE RUNOFF FROM EXISTING AND NEW IMPERVIOUS AREAS IN A RESPONSIBLE MANNER. CONSTRUCTION OF MINIMUM DRAINAGE IMPROVEMENTS SHOWN OR CALLED OUT ON THIS PLAN DOES NOT IMPLY RELIEF FROM CIVIL LIABILITY FOR DOWNSTREAM DRAINAGE.
10. POT HOLING THE PUBLIC UTILITIES IS REQUIRED PRIOR TO ANY GRADING ACTIVITIES LESS THAN 6" OVER THE PUBLIC MAINS (WATER, STORM, AND SEWER SYSTEMS). IF THERE IS A CONFLICT, THE APPLICANT IS REQUIRED TO SUBMIT A REVISION FOR APPROVAL PRIOR TO ANY GRADING ACTIVITIES OVER THE PUBLIC MAINS.
11. ROOF DRAINS MUST BE CONNECTED TO THE STORM DRAIN SYSTEM AND INSPECTED BY THE PUBLIC WORKS DEPARTMENT PRIOR TO ANY BACKFILLING OF PIPE.
12. SILT FENCE: CLEAN AND PROVIDE REGULAR MAINTENANCE OF THE SILT FENCE. THE FENCE IS TO REMAIN VERTICAL AND IS TO FUNCTION PROPERLY THROUGHOUT THE TERM OF THE PROJECT.
13. MACHINERY ACCESS FOR DEMOLITION OF EX. SOUTHERLY HOUSE SHALL UTILIZE 5" WOOD CHIP MULCH OVERLAID WITH STEEL PLATE OR ¾ PLYWOOD TO PREVENT DISTURBANCE OF EX. TREE ROOTS.

DEMOLITION NOTES

1. REFER TO PSCAA REGARDING BUILDING DEMOLITION AND ASBESTOS AND LEAD HAZARDS.
2. UTILIZE EX. DRIVEWAYS TO ACCESS SITE FOR BUILDING AND OTHER DEMOLITION ACTIVITIES.
3. COORDINATE WITH PSE TO SHUT DOWN AND DEMO EXISTING GAS AND POWER SERVICE.

TREE REMOVAL NOTES

1. ALL TREES **NOT** TAGGED FOR REMOVAL ARE TO REMAIN. TREES ADJACENT TO CONSTRUCTION ACTIVITIES SHALL BE PROTECTED VIA TREE PROTECTION FENCING. REFER TO WATERSHED PLANS FOR FENCING AND TRUNK PROTECTION DETAILS.
2. SEE ARBORIST'S REPORT FOR TREE SIZES AND SPECIES.

CLEARING & GRADING NOTES

1. CLEARING AND GRADING ACTIVITIES WILL AFFECT AN AREA GREATER THAN 1 ACRE. A D.O.E. GENERAL STORM WATER PERMIT IS REQUIRED. DEFINITION OF PROPOSED WETLAND BOUNDARY AND BUFFER AS WELL AS TREE REMOVAL, GRADING AND TESC WITHIN THE BUFFER AND WETLAND ARE PRESENTED IN THE WATERSHED CO.'S PLAN SET.

GENERAL NOTES

1. MITIGATED WETLAND & STREAM BOUNDARY & BUFFERS SHOWN. REFER TO THE WATERSHED CO. MITIGATION PLAN.

CONSTRUCTION NOTES

1. ANY CHANGES TO APPROVED PLANS REQUIRES CITY APPROVAL THROUGH A REVISION.
2. APPLICANT IS RESPONSIBLE FOR ANY DAMAGES TO UNDERGROUND UTILITIES CAUSED FROM THIS CONSTRUCTION.
3. DO NOT BACKFILL WITH NATIVE MATERIAL ON PUBLIC RIGHT-OF-WAY. ALL MATERIAL MUST BE IMPORTED.

DATUM: NAVD 88

Know what's below. Call before you dig.

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Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

TESC, DEMOLITION, TREE REMOVAL, CLEARING & GRADING - NOTES

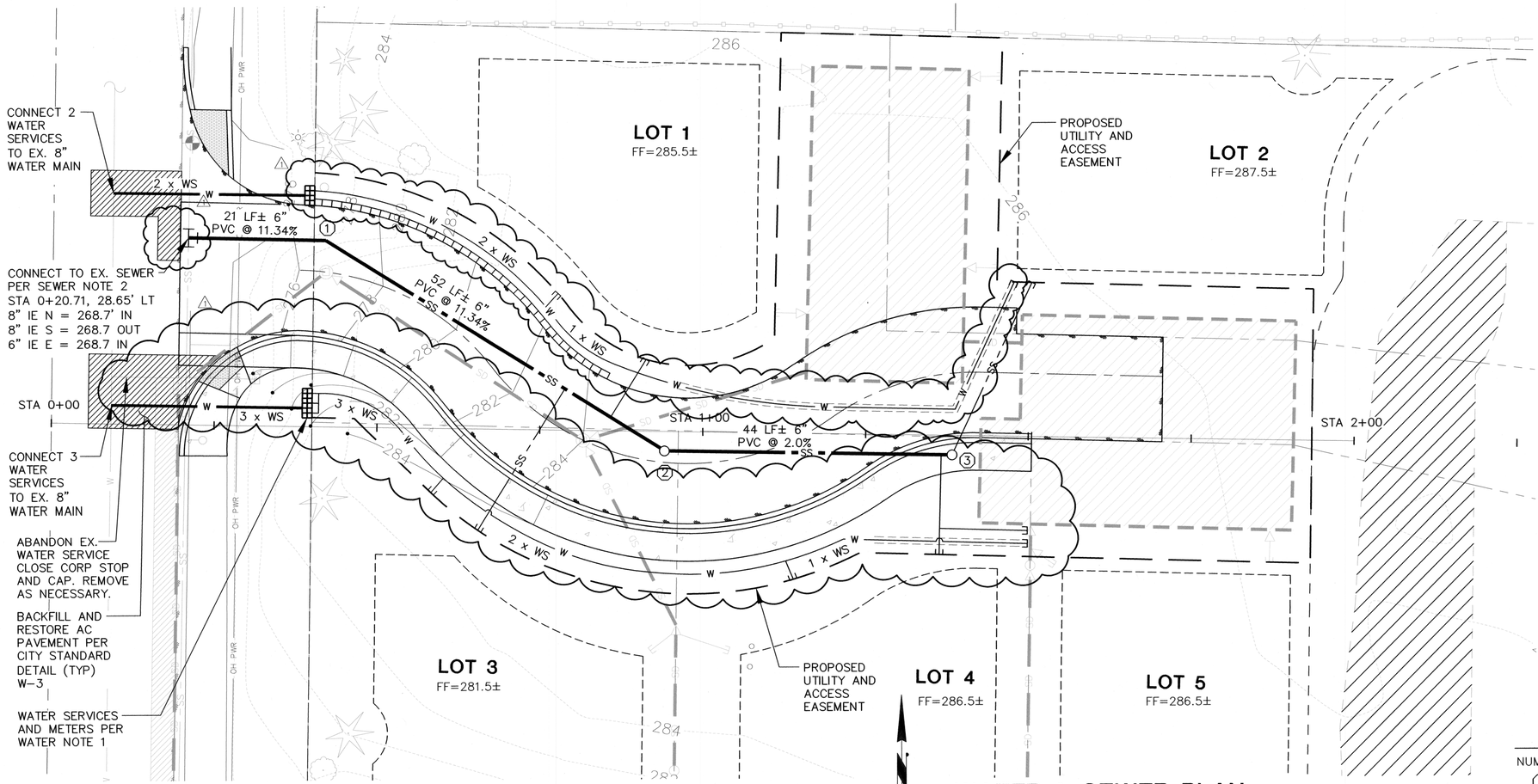
Sheet C5 Of -

Job No. 691715

USER: Scott Stoneburner@CHS PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\60-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

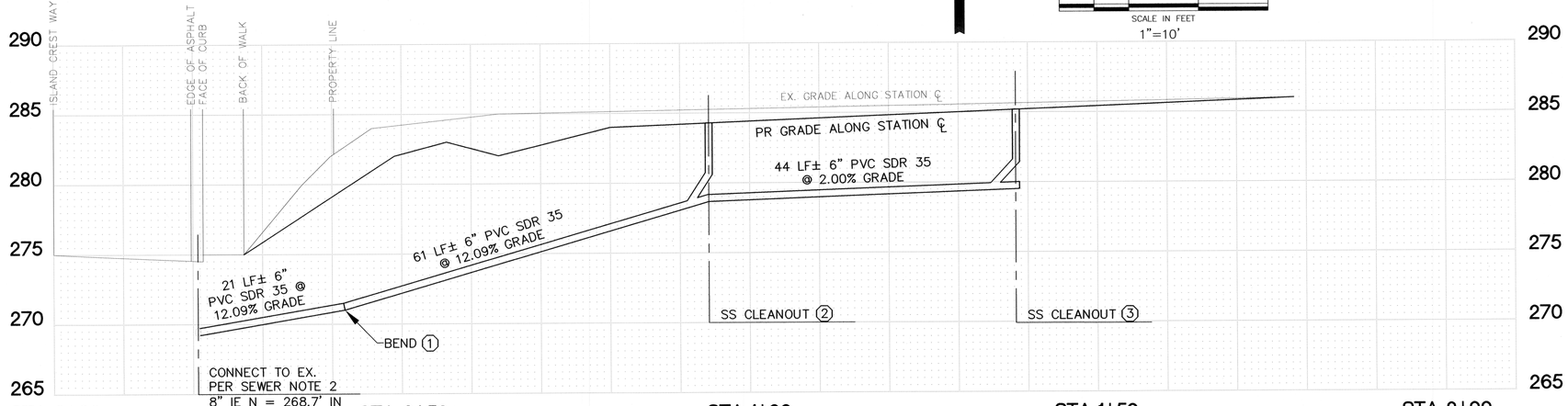
Exhibit 2

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



WATER & SEWER PLAN

SCALE IN FEET
10 5 0 10 20
1"=10'



SEWER PROFILE

WATER NOTES

1. INSTALL ALL WATER METERS PER DETAIL W-13. ALL WATER METERS SHALL BE 1" AND SERVED BY INDIVIDUAL SERVICE LINES. INSTALL 1" TYPE K SOFT COPPER TUBING BETWEEN EX. WATER MAIN AND EACH METER. PRIVATE WATER SERVICE LINES SHALL BE 1.5" DR 9 OR 11 HDPE. SLEEVES WHERE SHOWN SHALL BE 4" SDR 35 PVC OR APPROVED EQUAL.
2. CONSTRUCTION OF ALL WATER FACILITIES SHALL CONFORM TO THE CITY OF MERCER ISLAND REQUIREMENTS AND STANDARD DETAILS.
3. REFER TO WATER SERVICE PERMIT FOR ACTUAL LOCATION OF NEW WATER METER AND SERVICE LINE DETERMINED BY MERCER ISLAND WATER DEPARTMENT.
4. LOCATE WATER SERVICE STUB, AT EDGE OF EASEMENT OR WHERE OTHERWISE SHOWN.
5. WATER SERVICE INSTALLATION FOR LOTS 1 AND 2 SHALL BE PERFORMED TO ENSURE RETENTION OF THE ADJACENT TREES. AIR TRENCHING, HAND EXCAVATION, AND/OR TRENCHLESS METHODS MAY BE REQUIRED. COORDINATE METER LOCATION AND INSTALLATION WITH THE CITY AND PROJECT ARBORIST.

SEWER NOTES

1. CONSTRUCTION OF ALL SEWER FACILITIES SHALL CONFORM TO THE CITY OF MERCER ISLAND REQUIREMENTS AND STANDARD DETAILS DATED JUNE 5, 2009, INCORPORATED BY REFERENCE.
2. 6" SIDE SEWER CONNECTION AND STUB PER CITY OF MERCER ISLAND STANDARD DETAIL S-17.
3. SEWER PIPE BEDDING PER CITY STANDARD DETAIL S-4, BACKFILL PER S-3.
4. CLEANOUTS PER DETAIL S-19.
5. LOCATE SEWER STUB AT EDGE OF EASEMENT.
6. ALL INDIVIDUAL SIDE SEWERS SHALL HAVE 2% SLOPE.

GENERAL NOTES

1. MITIGATED WETLAND & STREAM BOUNDARY & BUFFERS SHOWN. REFER TO THE WATERSHED CO. MITIGATION PLAN.

SANITARY SEWER CLEANOUT TABLE

NUMBER	RIM	IE	SIZE	LOCATION
(1) BEND	–	271.01	6"	STA 0+41.80, 28.53 LT
(2) CO	284.43	278.64	6"	STA 0+94.14, 3.00 RT
(3) CO	285.50	279.50	6"	STA 1+38.33, 3.00 RT

SANITARY SEWER STUB TABLE

LOT #	LOCATION
1	STA 0+91.17, 10.98 LT
2	STA 1+50.28, 23.61 LT
3	STA 0+65.67, 15.52 RT
4	STA 1+36.52, 18.27 RT
5	STA 1+50.28, 14.39 RT

VERTICAL
7.5 5 2.5 0
HORIZONTAL
0 5 10 20
SCALE IN FEET

DATUM

DATUM: NAVD 88

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CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ELI ZEHNER · STATE OF WASHINGTON · 22800 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

WATER PLAN & SEWER PLAN & SEWER PROFILE

Sheet C6 Of -
Job No. 691715
–

USER: Scott Stcherbinin PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 (CW CAD)\691715 - BASE.dwg

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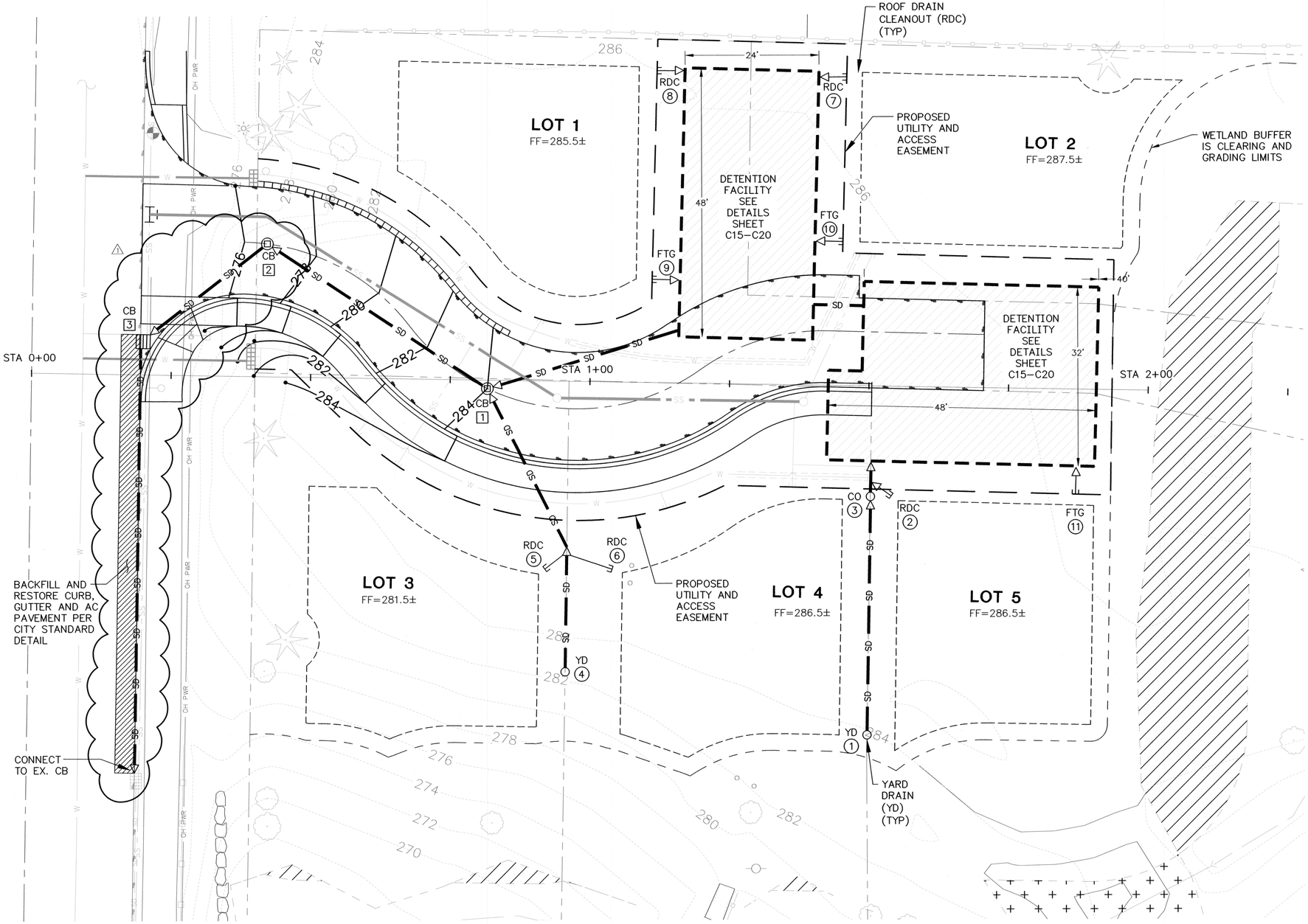
A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



STORMWATER NOTES

1. ALL STORMWATER MAINS TO BE 8" SDR 35 PVC PIPE OR APPROVED EQUAL.
2. ROOF DOWNSPOUT STUBS SHALL BE 6" MIN SDR 35 PVC OR APPROVED EQUAL.
3. ROUTE FUTURE FOUNDATION DRAINS TO DAYLIGHT.
4. RAISE ALL STORM DRAINS, VALVE BOXES, MANHOLE COVERS AND MONUMENT COVERS TO MATCH ASPHALT FINISH GRADE. MONUMENT COVERS MUST BE RAISED WITHOUT DISTURBING MONUMENT. RISER EXTENSION CASTINGS ARE ACCEPTABLE.
5. DRIVEWAYS SHALL DRAIN TOWARDS ACCESS DRIVE OR OTHERWISE CONNECT TO ROOF DRAIN OR YARD DRAIN STUBS.
6. REFER TO DRAINAGE REPORT FOR SIZING INFORMATION.
7. BOTTOM OF BUILDING FOUNDATION FOR LOTS 1, 2 AND 5 MAX. ELEVATION 283.0.

GENERAL NOTES

1. MITIGATED WETLAND & STREAM BOUNDARY & BUFFERS SHOWN. REFER TO THE WATERSHED CO. MITIGATION PLAN.
2. TO MEET REQUIRED COVER THE MINIMUM GRADE ELEVATION OVER THE STORMWATER VAULT IS 284'1"

FOOTING DRAIN AND CLEANOUT TABLE

NUMBER	RIM	IE	SIZE	LOCATION
1	284.00	283.00	6"	STA 1+50.52, 62.74 RT
2	285.00	283.00	6" STUB	STA 1+54.25, 19.56 RT
3	285.00	282.10	6"	STA 1+50.52, 19.73 RT
4	283.00	282.50	6"	STA 0+92.26, 51.88 RT
5	284.50	283.00	6" STUB	STA 0+92.37, 33.59 RT
6	284.50	283.00	6" STUB	STA 1+4.41, 33.43 RT
7	286.50	283.00	6" STUB	STA 1+45.22, 55.08 LT
8	286.00	283.00	6" STUB	STA 1+10.70, 55.65 LT
9	286.00	282.50	6" STUB	STA 1+10.70, 18.41 LT
10	286.00	282.50	6" STUB	STA 1+44.94, 25.70 LT
11	286.00	282.50	6" STUB	STA 1+87.21, 18.74 RT

STORMWATER PLAN

10 5 0 10 20
SCALE IN FEET
1"=10'

CATCH BASIN TABLE

NUMBER	TYPE	RIM	IE	DIRECTION	SIZE	LOCATION	NOTES
1	2	284.00	275.00	E. IN	12"	STA 0+81.65, 1.53 RT	GRATED, FLOW CONTROL STRUCTURE, SEE DETAIL 3, SHEET C10
			275.50	W. OUT	8"		
			282.20	S. IN	6"		
2	2	277.00	274.75	E. IN	8"	STA 0+41.90, 23.71 LT	GRATED, STORMWATER TREATMENT, SEE SHEET C21
			272.80	W. OUT	8"		
3	1	274.50	272.70	W. IN	8"	STA 0+19.90, 5.93 LT	
			272.70	S. OUT	8"		

DATUM: NAVD 88

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04/23/18

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CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

STORM WATER PLAN

Sheet C7 Of -
Job No. 691715 -

USER: Scott Schreiber\inPLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

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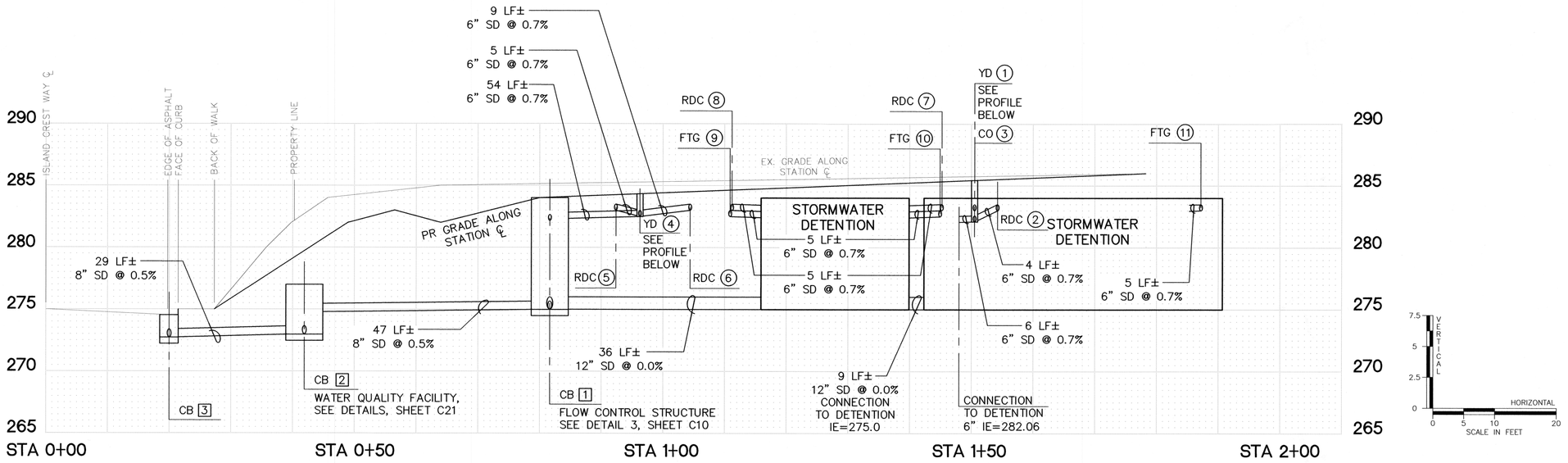
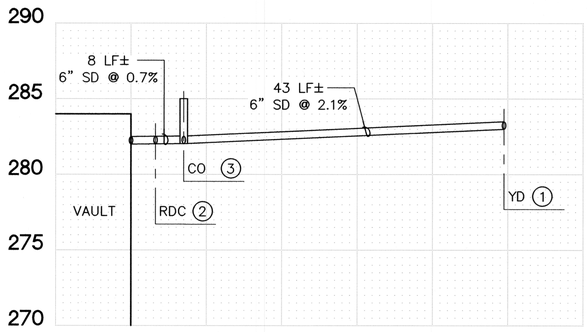
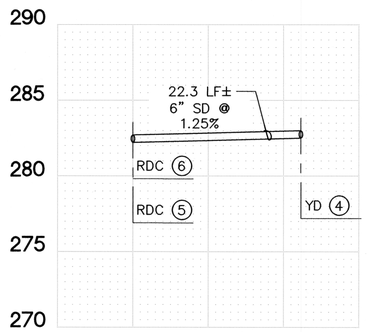


STORM PROFILE



YD 1 - PROFILE



YD 4 - PROFILE

GENERAL NOTES

1. FOR CATCH BASIN AND DRAIN/CLEANOUT STATIONING, SEE FOOTING DRAIN AND CLEANOUT TABLE, SHEET C7.

DATUM: NAVD 88

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CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEINER · STATE OF WASHINGTON · 20088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

STORMWATER & ROAD PROFILE

Sheet C8 Of -
Job No. 691715

USER: Scott Stcherbinin PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 (CW\CAD\691715 - BASE.dwg

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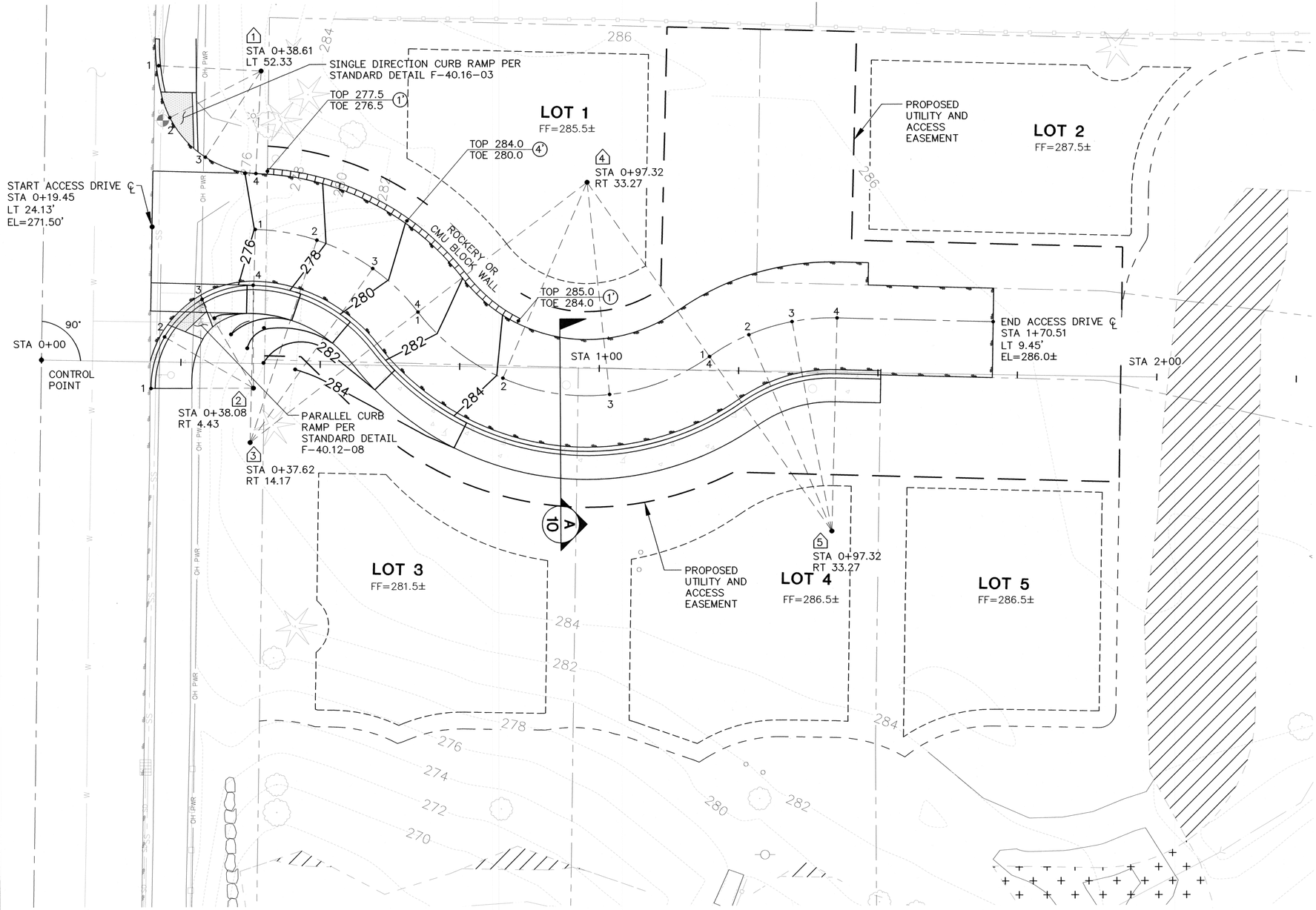


CURVE TABLE

CURVE	POINT	LOCATION	ELEVATION
1	1	STA 0+21.2, 53.0 LT	274.25'
	2	STA 0+23.2, 43.7 LT	274.15'
	3	STA 0+29.5, 36.8 LT	274.72'
	4	STA 0+38.6, 34.0 LT	276.01'
2	1	STA 0+19.6, 4.8 RT	274.57'
	2	STA 0+22.1, 4.5 LT	274.25'
	3	STA 0+22.8, 11.3 LT	275.75
	4	STA 0+38.0, 14.0 LT	276.10
3	1	STA 0+38.0, 24.0 LT	276.00'
	2	STA 0+49.8, 22.2 LT	277.35'
	3	STA 0+59.2, 17.3 LT	278.70'
	4	STA 0+67.4, 9.7 LT	280.05
4	1	STA 0+67.4, 9.7 LT	280.05
	2	STA 0+82.8, 2.0 RT	284.00'
	3	STA 1+02.0, 4.6 RT	284.43'
	4	STA 1+19.7, 2.4 LT	284.86'
5	1	STA 1+19.7, 2.4 LT	284.86'
	2	STA 1+26.8, 6.5 LT	285.04'
	3	STA 1+34.5, 8.9 LT	285.22'
	4	STA 1+42.5, 9.7 LT	285.40'

ROAD RESTORATION NOTE

1. THE LIMITS AND EXTENTS OF THE PAVEMENT IN THE PUBLIC RIGHT-OF-WAY SHALL BE DETERMINED BY THE CITY ENGINEER PRIOR TO FINALIZING THE PROJECT.

ROAD PLAN

10 5 0 10 20
SCALE IN FEET
1"=10'

DATUM: NAVD 88

Know what's below. Call before you dig.

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER · STATE OF WASHINGTON · 40086 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

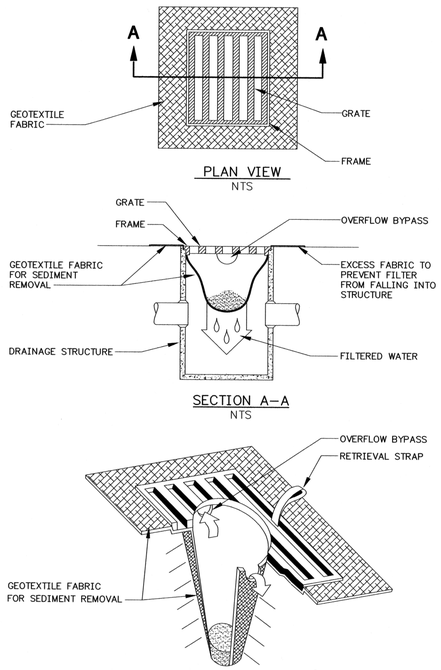
4320 ISLAND CREST WAY - LONG PLAT

ROAD PLAN

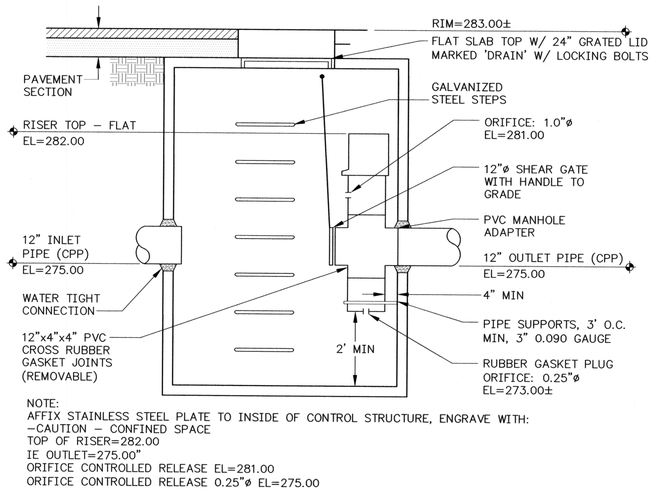
Sheet C9 Of -
Job No. 691715 –

Exhibit 2

USER: Scott Stortenbrink PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

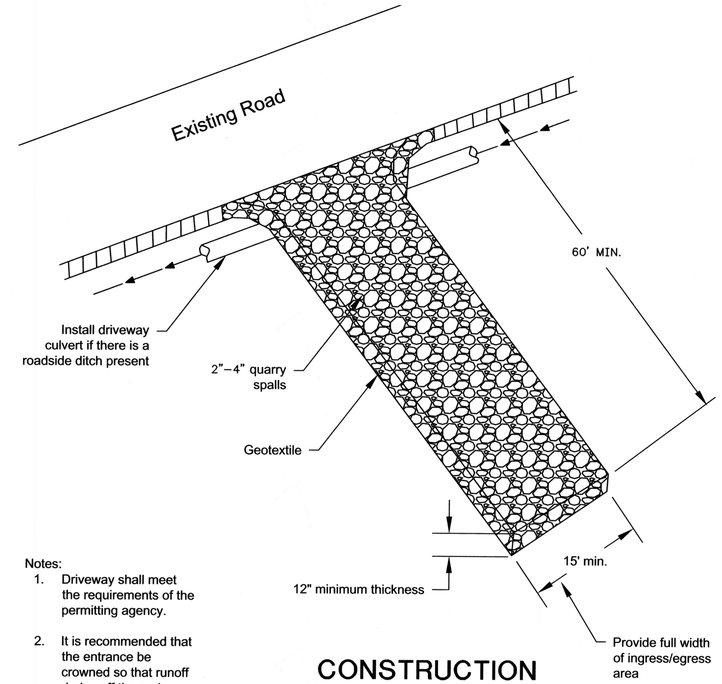


2/C4 DETAIL - CB PROTECTION INSERT
NTS



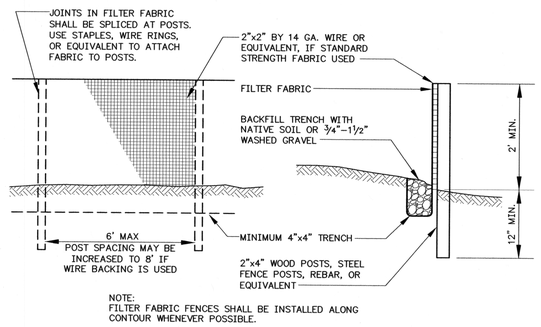
NOTE:
AFFIX STAINLESS STEEL PLATE TO INSIDE OF CONTROL STRUCTURE, ENGRAVE WITH:
-CAUTION - CONFINED SPACE
TOP OF RISER=282.00
IE OUTLET=275.00"
ORIFICE CONTROLLED RELEASE EL=281.00
ORIFICE CONTROLLED RELEASE 0.25"ø EL=275.00

3/C7 FLOW CONTROL STRUCTURE
NTS



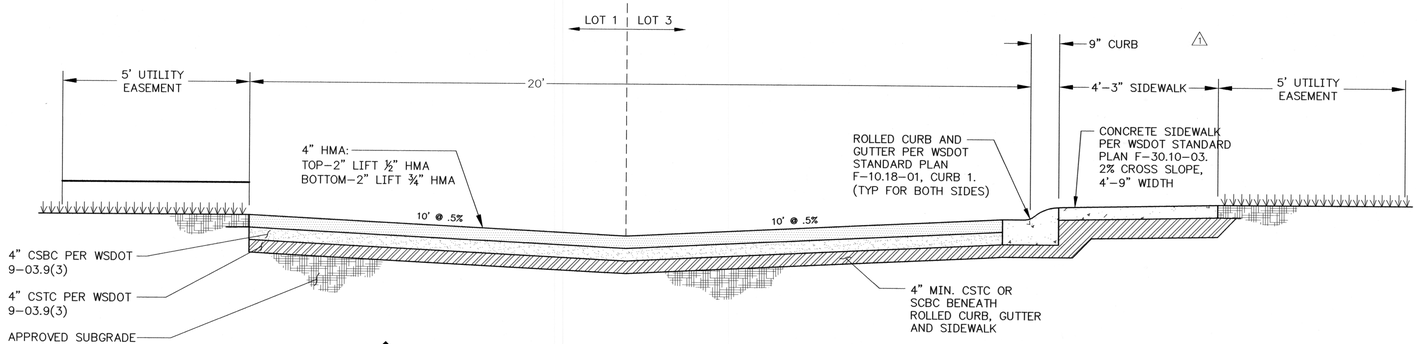
Notes:
1. Driveway shall meet the requirements of the permitting agency.
2. It is recommended that the entrance be crowned so that runoff drains off the pad.

5/C4 CONSTRUCTION ENTRANCE
NTS



NOTE:
FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.

1/C4 DETAIL - SILT FENCE
NTS



A/C9 TYPICAL PAVEMENT SECTION
NTS

DATUM: NAVD 88

811 Know what's below. Call before you dig.

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER · 40088 · REGISTERED PROFESSIONAL ENGINEER · STATE OF WASHINGTON

Drawn:	Designed:	Checked:	Approved:
SS	BG	EZ	EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

DETAILS

Sheet C10 Of -
Job No. 691715 -

USER: Scott Stoherbrine@PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

PLAT NO. SUB17-015

MERCER ISLAND, WASHINGTON

DEDICATION

KNOW ALL PEOPLE BY THESE PRESENTS THAT WE, THE UNDERSIGNED OWNER(S) OF INTEREST IN THE LAND HEREBY SUBDIVIDED, HEREBY DECLARE THIS PLAT TO BE THE GRAPHIC REPRESENTATION OF THE SUBDIVISION MADE HEREBY, AND DO HEREBY DEDICATE TO THE USE OF THE PUBLIC FOREVER, ALL STREETS AND AVENUES NOT SHOWN AS PRIVATE HEREON AND DEDICTATE THE USE THEREOF FOR ALL PUBLIC PURPOSES NOT INCONSISTENT WITH THE USE THEREOF FOR PUBLIC HIGHWAY PURPOSES, AND ALSO THE RIGHT TO MAKE ALL NECESSARY SLOPES FOR CUTS AND FILLS UPON THE LOTS SHOWN THEREON IN THE ORIGINAL REASONABLE GRADING OF SAID STREETS AND AVENUES, AND FURTHER DEDICATE TO THE USE OF THE PUBLIC ALL EASEMENTS AND TRACTS SHOWN ON THIS PLAT FOR ALL PUBLIC PURPOSES AS INDICATED THEREON, INCLUDING BUT NOT LIMITED TO PARKS, OPEN SPACES, UTILITIES AND DRAINAGE UNLESS SUCH EASEMENTS OR TRACTS ARE SPECIFICALLY IDENTIFIED ON THIS PLAT AS BEING DEDICATED OR CONVEYED TO A PERSON OR ENTITY OTHER THAN THE PUBLIC, IN WHICH CASE WE DO HEREBY DEDICATE SUCH STREETS, EASEMENTS, OR TRACTS TO THE PERSON OR ENTITY IDENTIFIED AND FOR THE PURPOSE STATED.

FURTHER, THE UNDERSIGNED OWNERS OF THE LAND HEREBY SUBDIVIDED WAIVE FOR THEMSELVES, THEIR HEIRS AND ASSIGNS AND ANY PERSON OR ENTITY DERIVING TITLE FROM THE UNDERSIGNED, ANY AND ALL CLAIMS FOR DAMAGES AGAINST MERCER ISLAND, ITS SUCCESSORS AND ASSIGNS WHICH MAY BE OCCASIONED BY THE ESTABLISHMENT, CONSTRUCTION, OR MAINTENANCE OF ROADS AND/OR DRAINAGE SYSTEMS WITHIN THIS SUBDIVISION.

FURTHER, THE UNDERSIGNED OWNERS OF THE LAND HEREBY SUBDIVIDED AGREE FOR THEMSELVES, THEIR HEIRS AND ASSIGNS TO INDEMNIFY AND HOLD MERCER ISLAND, ITS SUCCESSORS AND ASSIGNS, HARMLESS FROM ANY DAMAGE, INCLUDING ANY COSTS OF DEFENSE, CLAIMED BY PERSONS WITHIN OR WITHOUT THIS SUBDIVISION TO HAVE BEEN CAUSED BY ALTERATIONS OF THE GROUND SURFACE, VEGETATION, DRAINAGE OR SURFACE OR SUB-SURFACE WATER FLOWS WITHIN THIS SUBDIVISION OR BY ESTABLISHMENT, CONSTRUCTION OR MAINTENANCE OF THE ROADS WITHIN THIS SUBDIVISION.

THIS SUBDIVISION, DEDICATION, WAIVER OF CLAIMS AND AGREEMENT TO HOLD HARMLESS IS MADE WITH THE FREE CONSENT AND IN ACCORDANCE WITH THE DESIRES OF SAID OWNERS.

IN WITNESS WHEREOF WE SET OUR HANDS AND SEALS.

NAME _____ DATE _____

NAME _____ DATE _____

STATE OF _____)
) SS
COUNTY OF _____)

I CERTIFY THAT I KNOW OR HAVE SATISFACTORY EVIDENCE THAT ALAN S. CHIU AND JANNIFER W. CHIU, SIGNED THIS DEDICATION AND ON OATH STATED THAT HE AND SHE ARE AUTHORIZED TO EXECUTE THE INSTRUMENT AND ACKNOWLEDGED IT AS THE GOVERNING PERSONS OF REAL ESTATE OF MERCERTECH INTERNATIONAL, LLC TO BE THE FREE AND VOLUNTARY ACT OF SUCH PARTY FOR THE USES AND PURPOSES MENTIONED IN THE INSTRUMENT.

NOTARY SEAL

DATED _____
SIGNATURE OF NOTARY PUBLIC _____
PRINTED NAME OF NOTARY PUBLIC _____
TITLE _____
MY APPOINTMENT EXPIRES _____

APPROVALS:

CITY OF MERCER ISLAND

EXAMINED AND APPROVED THIS _____ DAY OF _____, 2018

_____
CITY ENGINEER

EXAMINED AND APPROVED THIS _____ DAY OF _____, 2018

_____
CODE OFFICIAL

DEPARTMENT OF ASSESSMENTS

EXAMINED AND APPROVED THIS _____ DAY OF _____, 2018

_____
ASSESSOR

_____
DEPUTY ASSESSOR

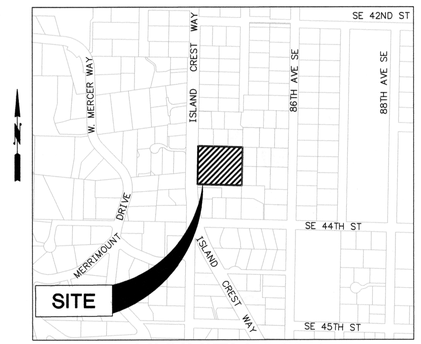
ACCOUNT NUMBER _____

RECORDING NO.	VOL./PAGE

PORTION OF
SW 1/4, NW 1/4, SECTION 18, T 24 N, R 05 E, W.M.

EXISTING LEGAL DESCRIPTION

(PER CHICAGO TITLE COMPANY OF WASHINGTON SUBDIVISION GUARANTEE NUMBER 0103029-06)
THE NORTH 250 FEET OF THE SOUTH 500 FEET OF THE WEST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, IN KING COUNTY, WASHINGTON.
EXCEPT THE WEST 40 FEET.



VICINITY MAP

NO SCALE

CONDITIONS OF APPROVAL

1. MAINTENANCE AND REPAIR OF JOINT USE SIDE SEWERS (SEWER LINES FROM THE BUILDING TO THE CITY SEWER MAIN), SHARED ROADS, ACCESS EASEMENTS, AND STORM DRAINAGE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNERS OF EACH LOT SERVED (WITH THE EXCEPTION THAT OWNERS OF ANY LOT WHICH IS LOWER IN ELEVATION SHALL NOT BE RESPONSIBLE FOR THAT PORTION OF A PRIVATE SIDE SEWER ABOVE THEIR CONNECTION.) IN THE EVENT THAT MAINTENANCE AND REPAIR OF ANY FACILITIES ENUMERATED ABOVE ARE NOT PERFORMED TO THE SATISFACTION OF THE CITY ENGINEER, AFTER A TIMELY DEMAND HAS BEEN MADE FOR SUCH ACTION, THE CITY OR ITS AGENT SHALL HAVE THE RIGHT TO ENTER UPON THE PREMISES AND PERFORM THE NECESSARY MAINTENANCE AND REPAIR TO PROTECT THE SAFETY AND GENERAL WELFARE OF THE PUBLIC AND SHALL HAVE THEIR RIGHT TO CHARGE THE OWNER OF EACH LOT AN EQUAL SHARE OF THE TOTAL MAINTENANCE AND REPAIR COSTS. THE CITY OR THE OWNER OF ANY LOT WITHIN THIS SHORT PLAT SHALL HAVE THE RIGHT TO BRING ACTION IN SUPERIOR COURT TO REQUIRE ANY MAINTENANCE OR REPAIR AND TO RECOVER THE COSTS INCURRED IN MAKING OR EFFECTING REPAIRS TO IMPROVEMENTS.

2. THE MONITORING, CLEANING, MAINTENANCE AND REPAIR OF STORM DRAINAGE SYSTEMS IN ACCORDANCE WITH CITY ORDINANCE NO. 95C-118 IS REQUIRED FOR ALL LOT OWNERS WITHIN THIS PLAT TO CONTROL STORMWATER RUNOFF AND CONTROL EROSION AND FLOODING DOWNSTREAM. ALL COSTS RELATED TO STORMWATER RUNOFF CONTROL SHALL BE BORNE BY THE OWNERS OF EACH LOT IN EQUAL SHARE. THIS OBLIGATION SHALL BE RECORDED SEPARATELY WITH EACH INDIVIDUAL LOT SALE AND SHALL TRAVEL WITH THE LAND.

3. ALL STAGING FOR CONSTRUCTION SHALL OCCUR ON SITE AND SHALL NOT BE LOCATED IN THE PUBLIC RIGHT-OF-WAY.

4. PRIOR TO THE ISSUANCE OF A BUILDING PERMIT, EACH APPLICATION SHALL BE ACCOMPANIED WITH A TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN, CLEARING AND GRADING PLAN, ACCESS AND UTILITY SERVICE PLAN, A LANDSCAPE PLAN (WHICH SHALL IDENTIFY EXISTING VEGETATION TO BE RETAINED, LIMITS OF ALL CLEARING AND GRADING), AND A SCHEDULE FOR THE CONSTRUCTION. THE APPLICANT'S CIVIL ENGINEER, EXPERIENCED IN SOIL GEOLOGY AND MECHANICS, SHALL REVIEW THE PROPOSED SITE AND BUILDING CONSTRUCTION AND PROVIDE, RECOMMENDATIONS THAT WILL LIMIT SITE DISTURBANCE, MINIMIZE RISK OF SOILS MOVEMENT, EVALUATE SITE SLOPE STABILITY AND DEFINE MATERIALS AND CONSTRUCTION PRACTICES FOR THE WORK. THE BUILDING OFFICIAL MAY REQUIRE THAT THE ENGINEER BE PRESENT DURING CONSTRUCTION, MONITOR THE WORK, AND RECOMMEND SPECIAL TECHNIQUES OR MITIGATING MEASURES. THE COSTS ASSOCIATED WITH THE ENGINEER'S MONITORING AND MITIGATION MEASURES SHALL BE BORNE BY THE APPLICANT.

5. NO PERMANENT LANDSCAPING STRUCTURES OR FENCES SHALL BE PLACED ON OR WITHIN PUBLIC UTILITY OR STORM DRAINAGE EASEMENTS WITHOUT THE WRITTEN APPROVAL OF THE CITY ENGINEER. IF IN THE OPINION OF CITY ENGINEER, UTILITIES OR STORM DRAINAGE FACILITIES REQUIRE MAINTENANCE, REPAIR OR REPLACEMENT, THE CITY OR ITS AGENT SHALL HAVE THE RIGHT TO ENTER THOSE LOTS ADJOINING THE FACILITY FOR THE PURPOSE OF MAINTAINING, REPAIRING, RELOCATING OR REPLACING SAID FACILITIES. LOT OWNERS SHALL BE RESPONSIBLE FOR THE RESTORATION OF ANY PRIVATE IMPROVEMENTS OR LANDSCAPING WITHIN SAID EASEMENT.

6. INSTALLATION OF LANDSCAPING AND/OR STRUCTURES INCLUDING TREES, SHRUBS, ROCKS, BERMS, WALLS, GATES, AND OTHER IMPROVEMENTS ARE NOT ALLOWED WITHIN THE PUBLIC RIGHT-OF-WAY WITHOUT AN APPROVED ENCROACHMENT AGREEMENT FROM THE CITY PRIOR TO THE WORK OCCURRING.

7. UNLESS OTHERWISE APPROVED BY THE CITY ARBORIST, CLEARING AND GRADING WITHIN 50% OF THE DRIP LINE OF TREES TO BE RETAINED IS NOT ALLOWED.

8. DRIVEWAYS SERVING INDIVIDUAL LOTS SHALL NOT EXCEED 500 SQUARE FEET IN AREA.

NATIVE GROWTH PROTECTION

A NATIVE GROWTH PROTECTION EASEMENT AREA (NGPA) IS HEREBY ESTABLISHED AS SHOWN HEREIN.

THE NATIVE GROWTH PROTECTION EASEMENT IS AN EASEMENT FOR THE CRITICAL AREA IN CONFORMANCE WITH MIMC 19.07. OWNERSHIP OF LOTS 1-5, INCLUSIVE, INCLUDEDS AN EQUAL AND UNDIVIDED 1/5 RESPONSIBILITY FOR THE MAINTENANCE OF THE CRITIAL AREA.

NO TREE TRIMMING, TREE TOPPING, TREE CUTTING, TREE REMOVAL, SHRUB OR BRUSH-CUTTING OR REMOVAL OF NATIVE VEGETATION, APPLICATION OF PESTICIDES, HERBICIDES, OR FERTILIZERS; CONSTRUCTION; CLEARING; OR ALTERATION ACTIVITIES SHALL OCCUR WITHIN THE EASEMENT AREA WITHOUT PRIOR WRITTEN APPROVAL FROM THE CITY OF MERCER ISLAND. APPLICATION FOR SUCH WRITTEN APPROVAL SHALL BE MADE TO THE MERCER ISLAND DEVELOPMENT SERVICES GROUP OR ITS SUCCESSOR AGENCY WHO MAY REQUIRE INSPECTION OF THE PREMISES BEFORE ISSUANCE OF THE WRITTEN APPROVAL AND FOLLOWING COMPLETION OF THE ACTIVITIES. ANY PERSON CONDUCTING OR AUTHORIZING SUCH ACTIVITY IN VIOLATION OF THIS PARAGRAPH OR THE TERMS OF ANY WRITTEN APPROVAL ISSUED PURSUANT HERETO, SHALL BE SUBJECT TO THE ENFORCEMENT PROVISIONS OF THE CITY'S CODE. IN SUCH EVENT, THE MERCER ISLAND DEPARTMENT OF DEVELOPMENT SERVICES MAY ALSO REQUIRE WITHIN THE AFFECTED AREA BY PLANTING REPLACEMENT TREES AND OTHER VEGETATION AS REQUIRED IN APPLICABLE SECTIONS OF THE CITY CODE. THE DEPARTMENT ALSO MAY REQUIRE THAT THE DAMAGED OR FALLEN VEGETATION BE REMOVED.

IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO MAINTAIN CRITICAL AREAS AND THEIR BUFFERS BY REMOVING NON-NATIVE, INVASIVE, AND NOXIOUS PLANTS IN A MANNER THAT WILL NOT HARM CRITICAL AREAS OR THEIR BUFFERS AND IN ACCORDANCE WITH MERCER ISLAND CODE REQUIREMENTS FOR TREES AND OTHER VEGETATION WITHIN CRITICAL AREAS AND CRITICAL AREA BUFFERS.

THE CITY SHALL HAVE A LICENSE TO ENTER THE EASEMENT AREA (AND THE PROPERTY IF NECESSARY FOR ACCESS TO THE EASEMENT AREA) FOR THE PURPOSE OF MONITORING COMPLIANCE WITH THE TERMS OF THIS EASEMENT.

DEVELOPMENT OUTSIDE OF THIS NGPA MAY BE LIMITED BY CODIFIED STANDARDS, PERMIT CONDITIONS OR MOVEMENT OF THE CRITICAL AREA. EACH OF THE UNDERSIGNED OWNERS AGREE TO DEFEND, PAY AND SAVE HARMLESS THE CITY OF MERCER ISLAND, ITS OFFICERS, AGENTS, AND EMPLOYEES FROM ANY AND ALL CLAIMS OF EVERY NATURE WHATSOEVER, REAL OR IMAGINARY, WHICH MAY BE MADE AGAINST THE CITY, ITS OFFICERS, AGENTS OR EMPLOYEES FOR ANY DAMAGE TO PROPERTY OR INJURY TO ANY PERSON ARISING OUT OF THE EXISTENCE OF SAID NGPA OVER SAID OWNER'S PROPERTY OR THE ACTIONS OF THE UNDERSIGNED OWNERS IN CARRYING OUT THE RESPONSIBILITIES UNDER THIS AGREEMENT INCLUDING ALL COSTS AND EXPENSES, AND RECOVER ATTORNEY'S FEES AS MAY BE INCURRED BY THE CITY OF MERCER ISLAND IN DEFENSE THEREOF; EXCEPTING THEREFROM ONLY SUCH CLAIMS AS MAY ARISE SOLELY OUT OF THE NEGLIGENCE OF THE CITY OF MERCER ISLAND, ITS OFFICERS, AGENTS, OR EMPLOYEES.

RECORDER'S CERTIFICATE

FILED FOR RECORD THIS ..... DAY OF ....., 2018

AT ..... M IN BOOK ..... OF .....AT PAGE.....AT

THE REQUEST OF .....
SURVEYOR'S NAME

..... MANAGER

..... SUPT. OF RECORDS

LAND SURVEYOR'S CERTIFICATE

THIS PLAT CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPROPRIATE STATE AND CITY STATUTE AND ORDINANCE IN APRIL 2018

John P. Christensen
L.S. No. 42428

CHS ENGINEERS
12507 BEL-RED RD. STE. 101
BELLEVUE, WA 98005-2500
TEL 425-637-3693
www.chsengineers.com

JOHN P. CHRISTENSEN STATE OF WASHINGTON 42428 REGISTERED PROFESSIONAL LAND SURVEYOR

ISLAND CREST WAY PLAT

DWN. BY	DATE	JOB NO.
JPC	4/18/18	691715
CHKD. BY	SCALE	SHEET
EZ		1 OF 4

Exhibit 2

PLAT NO. SUB17-015

MERCER ISLAND, WASHINGTON

RECORDING NO.	VOL./PAGE
PORTION OF SW 1/4, NW 1/4, SECTION 18, T 24 N, R 05 E, W.M.	

PROPOSED LEGAL DESCRIPTIONS

LOT 1:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY AND THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 88.00 FEET;
THENCE S 01°02'57" W 45.25 FEET;
THENCE S 88°24'39" E 62.50 FEET;
THENCE S 82°46'25" E 141.92 FEET;
THENCE S 01°03'38" W 30.00 FEET;
THENCE N 77°13'50" W 144.10 FEET;
THENCE N 88°24'39" W 150.50 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE N 01°02'57" E 61.25 FEET TO THE POINT OF BEGINNING.

LOT 2:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 88°24'39" E 88.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 203.62 FEET;
THENCE S 01°03'38" W 59.19 FEET;
THENCE N 82°46'25" W 141.92 FEET;
THENCE N 88°24'39" W 62.50 FEET;
THENCE N 01°02'57" E 45.25 FEET TO THE POINT OF BEGINNING.

LOT 3:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 01°02'57" W 61.25 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 56.25 FEET;
THENCE S 01°02'57" W 176.76 FEET;
THENCE N 60°48'39" W 35.61 FEET;
THENCE N 88°24'39" W 24.85 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE N 01°02'57" E 160.26 FEET TO THE POINT OF BEGINNING.

LOT 4:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 01°02'57" W 61.25 FEET;
THENCE S 88°24'39" E 56.25 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 54.25 FEET;
THENCE S 01°02'57" W 65.97 FEET;
THENCE S 01°10'06" E 122.84 FEET;
THENCE N 88°24'39" W 56.86 FEET;
THENCE N 01°02'57" E 188.76 FEET TO THE POINT OF BEGINNING.

LOT 5:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 250.01 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 88°24'39" E 113.12 FEET TO THE TRUE POINT OF BEGINNING;
THENCE N 01°10'06" W 122.84 FEET;
THENCE N 01°02'57" E 65.97 FEET;
THENCE S 88°24'39" E 40.00 FEET;
THENCE S 77°13'50" E 144.10 FEET;
THENCE S 01°03'38" W 160.82 FEET;
THENCE N 88°24'39" W 178.46 FEET TO THE POINT OF BEGINNING.

TRACT A:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 250.01 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY AND THE TRUE POINT OF BEGINNING;
THENCE N 01°02'57" E 28.50 FEET;
THENCE S 88°24'39" E 24.85 FEET;
THENCE S 60°48'39" E 35.61 FEET;
THENCE S 01°02'57" W 12.00 FEET;
THENCE N 88°24'39" W 56.26 FEET TO THE POINT OF BEGINNING.

EASEMENT NOTES

1. DECLARANT HEREBY DECLARES, DEDICATES, AND ESTABLISHES TO AND FOR THE BENEFIT OF THE OWNERS OF LOTS 1-5 A PERPETUAL NON-EXCLUSIVE EASEMENT ON, OVER, AND ACROSS THE AREA MARKED ON THE PLAT AS THE "SHARED ACCESS EASEMENT" FOR THE PURPOSE OF VEHICULAR AND PEDESTRIAN ACCESS, SUBJECT TO THE TERMS AND CONDITIONS HEREIN. THE SHARED ACCESS EASEMENT IS SUBJECT TO USE IN COMMON WITH LOTS 1-5 AND MAY BE USED BY EACH PARTY'S RESPECTIVE FAMILY MEMBERS, CONTRACTORS, AGENTS, OCCUPANTS, AND GUESTS FOR THE FOREGOING PURPOSES. NEITHER OWNER SHALL USE THE EASEMENT FOR PARKING NOR SHALL THEY BLOCK, OBSTRUCT, OR OTHERWISE UNREASONABLY INTERFERE WITH THE OTHER'S USE OF SUCH EASEMENT. ALL USE OF THE SHARED ACCESS EASEMENT SHALL BE IN ACCORDANCE WITH ALL LAWS. THE OWNERS OF LOTS 1-5 MAY ESTABLISH MUTUALLY ACCEPTABLE RULES AND REGULATIONS REGARDING THEIR SHARED USE OF THIS EASEMENT. AS OF THE DATE HEREOF, THE SHARED ACCESS EASEMENT IS IMPROVED WITH A PAVED DRIVEWAY AND SIDEWALK. THE OWNERS OF LOTS 1-5 SHALL EQUALLY SHARE IN THE COST OF ALL NECESSARY MAINTENANCE, REPAIR, AND REPLACEMENT WORK FOR SUCH DRIVEWAY AND SIDEWALK; PROVIDED, HOWEVER, THAT IF EITHER OWNER EVER CONSTRUCTS SEPARATE ACCESS TO THEIR LOT AND/OR NO LONGER USES THIS EASEMENT, THE OTHER OWNER SHALL BE SOLELY RESPONSIBLE FOR ALL WORK RELATED TO THE DRIVEWAY; AND PROVIDED FURTHER THAT EACH OWNER SHALL BE SOLELY RESPONSIBLE FOR ALL DAMAGE TO THE DRIVEWAY IN EXCESS OF NORMAL WEAR AND TEAR AND ALL DAMAGE TO THE OTHER'S PROPERTY THAT SUCH OWNER CAUSES OR ALLOWS. THE OWNERS OF LOTS 1-5 MAY HEREAFTER MUTUALLY AGREE TO AMEND, MODIFY, OR TERMINATE THE SHARED ACCESS EASEMENT WITH APPROVAL OF THE CITY. THE SHARED ACCESS EASEMENT IS A PRIVATE EASEMENT AND NO RIGHTS TO THE PUBLIC ARE GRANTED HEREBY.

2. DECLARANT HEREBY DECLARES, DEDICATES, AND ESTABLISHES TO AND FOR THE BENEFIT OF THE OWNERS OF ALL LOTS WITHIN THIS PLAT A PERPETUAL NON-EXCLUSIVE EASEMENT ON, OVER, AND ACROSS THE AREA MARKED AS THE "SHARED UTILITY EASEMENT" FOR THE PURPOSE OF INSTALLING, MAINTAINING, REPAIRING, REPLACING AND REMOVING UTILITIES, SUBJECT TO THE TERMS AND CONDITIONS HEREIN. ALL CURRENTLY EXISTING UTILITIES SERVING ANY OF THE LOTS THAT ARE LOCATED WITHIN THIS EASEMENT MAY REMAIN IN THEIR CURRENT LOCATIONS. IF ANY OWNER WISHES TO INSTALL NEW UTILITIES OR NEW UTILITY LINES WITHIN THIS EASEMENT OR TO PERFORM ANY REPAIRS OR OTHER WORK TO ANY UTILITY, SUCH OWNER SHALL PROVIDE REASONABLE ADVANCE NOTICE TO ALL OTHER AFFECTED OWNERS AND SUCH OWNER SHALL BE SOLELY RESPONSIBLE FOR ALL COSTS OF SUCH WORK (UNLESS INSTALLED OR PERFORMED FOR MORE THAN ONE PARTY, IN WHICH CASE THE BENEFITED PARTIES SHALL REASONABLY SHARE SUCH COSTS). IN PERFORMING ANY WORK UNDER THIS EASEMENT, THE RESPONSIBLE OWNER SHALL NOT UNREASONABLY INTERFERE WITH ANY EXISTING UTILITIES OR THE USE AND ENJOYMENT OF THE OTHER LOTS AND THE RESPONSIBLE OWNER SHALL REASONABLY RESTORE THE PROPERTY DISTURBED BY SUCH WORK UPON COMPLETION OF THE SAME. EACH OWNER SHALL BE SOLELY RESPONSIBLE FOR ALL DAMAGE TO ANY UTILITIES OR PROPERTY OF ANY OTHER OWNER THAT SUCH OWNER CAUSES OR ALLOWS. ALL USE OF THIS EASEMENT AND UTILITIES THEREIN MUST BE MADE IN ACCORDANCE WITH ALL LAWS. THE SHARED UTILITY EASEMENT IS A PRIVATE EASEMENT AND NO RIGHTS TO THE PUBLIC ARE GRANTED HEREBY.

NOTES

TRACT A IS A RECREATION TRACT FOR THE BENEFIT OF LOTS 1-5, INCLUSIVE. OWNERSHIP OF LOTS 1-5, INCLUSIVE, INCLUDES AN EQUAL AND UNDIVIDED 1/5 OWNERSHIP IN THE TRACT. MAINTENANCE OF THE TRACT WILL BE SHARED EQUALLY.

CHS ENGINEERS
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JOHN P. CHRISTENSEN STATE OF WASHINGTON 21422 REGISTERED PROFESSIONAL LAND SURVEYOR 4/23/18

ISLAND CREST WAY PLAT

DWN. BY	DATE	JOB NO.
JPC	4/18/18	691715
CHKD. BY	SCALE	SHEET
EZ		2 OF 4

Exhibit 2

PLAT NO. SUB17-015

MERCER ISLAND, WASHINGTON

RECORDING NO.	VOL./PAGE

PORTION OF
SW 1/4, NW 1/4, SECTION 18, T 24 N, R 05 E, W.M.

NEW EASEMENTS

1. PRIVATE STORM, SEWER, WATER AND INGRESS / EGRESS EASEMENT FOR LOTS 1-5 LEGAL DESCRIPTION;

THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W. M., IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST OF SECTION 18
THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 01°02'57" W 23.05 FEET TO A POINT OF CURVATURE AND THE TRUE POINT OF BEGINNING;
THENCE ALONG A NON-TANGENT CURVE TO THE RIGHT, A DISTANCE OF 45.38 FEET, THROUGH A CENTRAL ANGLE OF 48°57'10", HAVING A RADIUS OF 53.13 FEET WHICH BEARS S 03°53'25" W, TO A POINT OF REVERSE CURVATURE;
THENCE ALONG A CURVE TO THE LEFT, A DISTANCE OF 35.32 FEET, THROUGH A CENTRAL ANGLE OF 87°30'08", HAVING A RADIUS OF 23.13 FEET;
THENCE N 01°02'57" E 46.77 FEET;
THENCE S 88°24'39" E 34.09 FEET;
THENCE S 01°02'57" W 37.29 FEET;
THENCE S 88°24'39" E 48.56 FEET;
THENCE S 01°02'57" W 42.00 FEET;
THENCE N 88°24'39" W 69.06 FEET TO A POINT OF CURVATURE;
THENCE ALONG A NON-TANGENT CURVE TO THE RIGHT, A DISTANCE OF 80.46 FEET, THROUGH CENTRAL ANGLE OF 79°18'55", HAVING A RADIUS OF 58.13 FEET WHICH BEARS N 26°44'24" W TO A POINT OF REVERSE CURVATURE;
THENCE ALONG A CURVE TO THE LEFT, A DISTANCE OF 13.91 FEET, THROUGH A CENTRAL ANGLE OF 43°57'48", HAVING A RADIUS OF 18.13 FEET, TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE N 01°02'57" E 35.10 FEET TO THE POINT OF BEGINNING.

EASEMENT 1) IS IS AN EASEMENT FOR ACCESS AND UTILITIES FOR THE BENEFIT OF LOTS 1-5, INCLUSIVE. OWNERSHIP OF LOTS 1-5, INCLUSIVE, INCLUDES AN EQUAL AND UNDIVIDED 1/5 RESPONSIBILITY IN SAID EASEMENT. MAINTENANCE OF THE ACCESS ROAD AND ALL STORMWATER FACILITIES LOCATED IN THE EASEMENT WILL BE SHARED EQUALLY.

NEW EASEMENTS

2. CONSERVANCY EASEMENT LEGAL DESCRIPTION; (FINAL LEGAL DESCRIPTIONS DEPEND ON FINAL WETLAND BUFFER BOUNDARY)

LOT 1:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 88°24'39" E 88.00 FEET;
THENCE S 01°02'57" E 45.25 FEET;
THENCE S 88°24'39" E 62.50 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 82°46'25" E 141.92 FEET
THENCE S 01°03'38" W 30.00 FEET;
THENCE N 77°13'50" W 144.10 FEET;
THENCE N 01°02'57" E 20.00 FEET TO THE POINT OF BEGINNING.

LOT 2:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 88°24'39" E 120.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 130.00 FEET;
THENCE S 01°03'38" W 59.19 FEET;
THENCE N 85°17'07" W 130.00 FEET;
THENCE N 01°02'57" E 46.25 FEET TO THE POINT OF BEGINNING.

LOT 3:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 01°02'57" W 120.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'29" E 56.25 FEET;
THENCE S 01°02'57" W 110.00 FEET
THENCE N 60°48'39" W 35.61 FEET;
THENCE N 88°24'39" W 24.85 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE N 01°02'57" E 90.00 FEET TO THE POINT OF BEGINNING.

LOT 4:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 500.02 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 01°02'57" W 61.25 FEET;
THENCE S 88°24'39" E 56.25 FEET;
THENCE S 01°02'57" W 65.97 FEET TO THE TRUE POINT OF BEGINNING;
THENCE S 88°24'39" E 56.25 FEET;
THENCE S 01°02'57" W 122.84 FEET;
THENCE N 88°24'39" W 56.86 FEET;
THENCE N 01°02'57" E 122.84 FEET TO THE POINT OF BEGINNING.

LOT 5:
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M.;

THENCE NORTH ALONG THE WEST SECTION LINE N 01°02'57" E 250.01 FEET.
THENCE S 88°24'39" E 40.00 FEET TO THE EASTERLY RIGHT OF WAY OF ISLAND CREST WAY;
THENCE S 88°24'39" E 113.12 FEET TO THE TRUE POINT OF BEGINNING;
THENCE N 01°10'06" E 122.84 FEET;
THENCE S 88°24'39" E 40.00 FEET;
THENCE N 01°02'57" E 65.97 FEET
THENCE S 77°13'50" E 144.10 FEET;
THENCE S 01°03'38" W 160.82 FEET;
THENCE N 88°24'39" W 178.46 FEET TO THE POINT OF BEGINNING.

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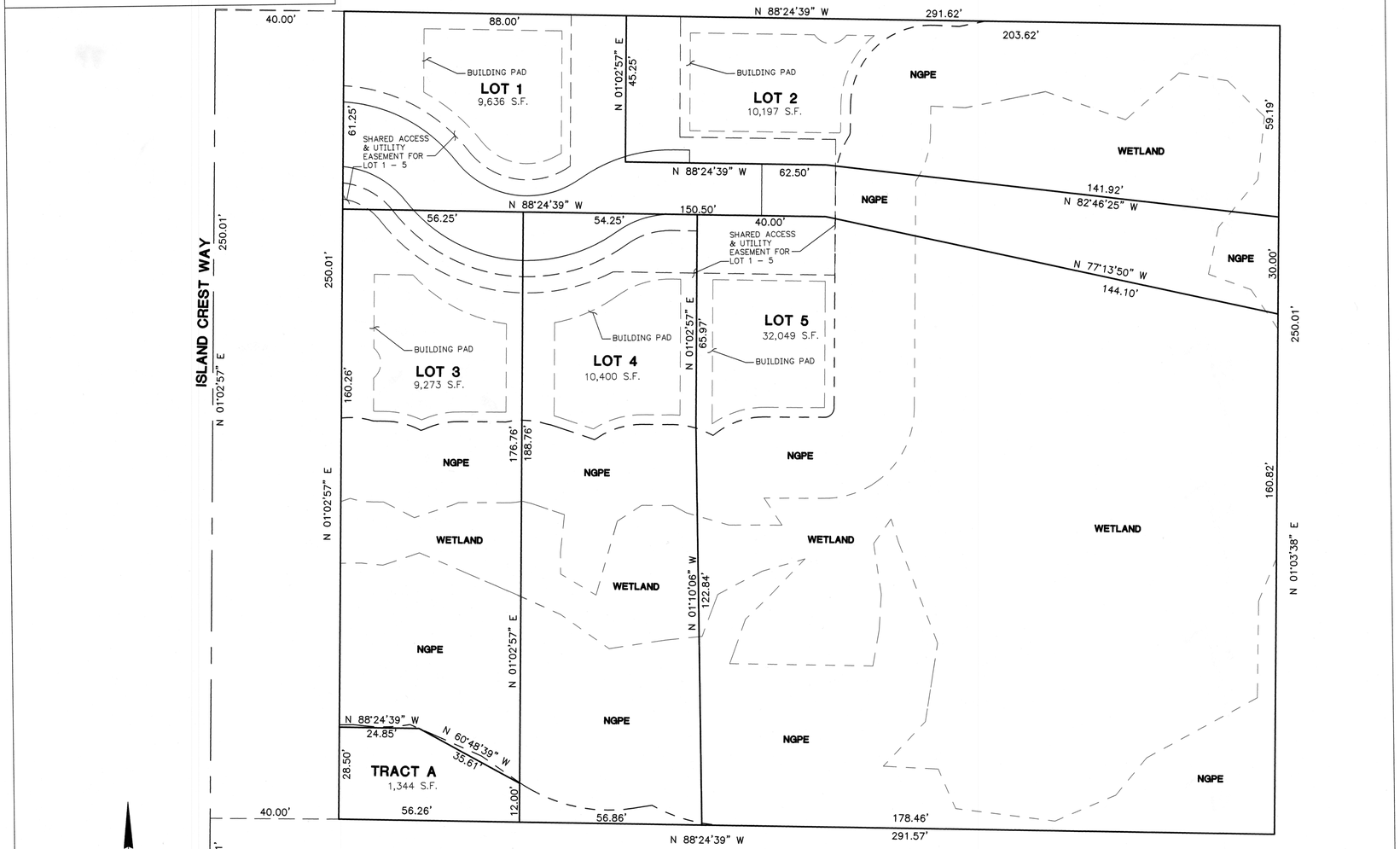
JOHN P. CHRISTENSEN STATE OF WASHINGTON 42426 REGISTERED PROFESSIONAL LAND SURVEYOR

ISLAND CREST WAY PLAT

DWN. BY	DATE	JOB NO.
JPC	4/18/18	691715
CHKD. BY	SCALE	SHEET
EZ		3 OF 4

Exhibit 2

PLAT NO. SUB17-015 MERCER ISLAND, WASHINGTON	PORTION OF SW 1/4, NW 1/4, SECTION 18, T 24 N, R 05 E, W.M.	RECORDING NO.	VOL./PAGE



BASIS OF BEARINGS

BASED ON RECORD OF SURVEY BY PLS, INC. UNDER RECORDING NUMBER 20170117900004 RECORDS OF KING COUNTY WASHINGTON. PER FOUND SECTION MONUMENTS.

SURVEY INSTRUMENTATION:

THIS SURVEY WAS PERFORMED BY FIELD TRAVERSE WITH THE FINAL RESULTS MEETING OR EXCEEDING THE CURRENT TRAVERSE STANDARDS CONTAINED IN W.A.C. 332-130-090.

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STATE OF WASHINGTON
42426
REGISTERED PROFESSIONAL LAND SURVEYOR

ISLAND CREST WAY PLAT

DWN. BY	DATE	JOB NO.
JPC	4/18/18	691715
CHKD. BY	SCALE	SHEET
EZ	1" = 30'	4 OF 4

Exhibit 2

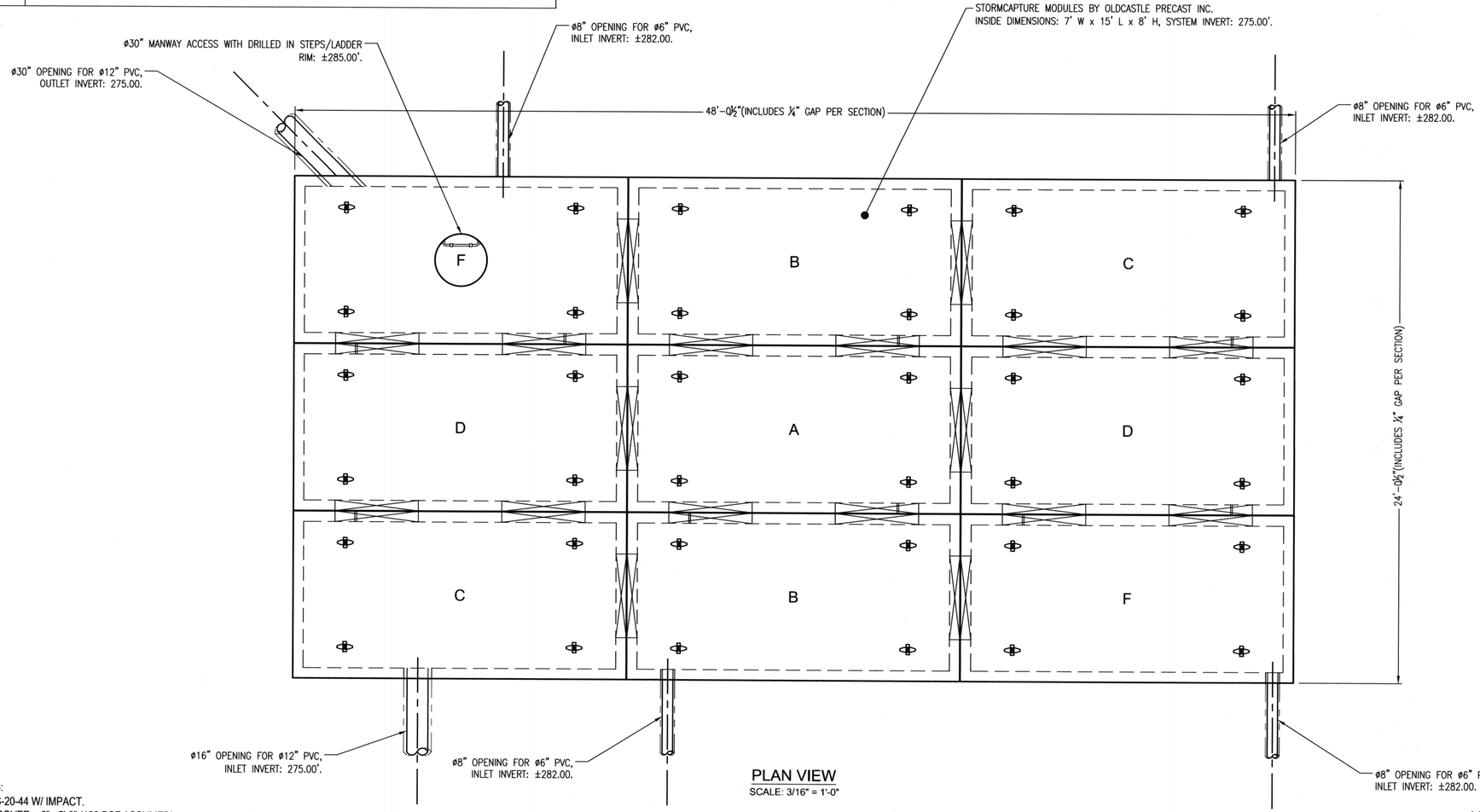
A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON

REVISIONS

REVISION	DATE	REV BY	DESCRIPTION OF REVISION
1	4/19/18	MJT	UPDATED PIPING INFORMATION.

MODULE NOTES

TYPE	QUANTITY	HEIGHT
A	1	8'
B	2	8'
C	2	8'
D	2	8'
F	2	8'
TOTAL	9	
VOLUME =	7,980	CUBIC FEET



PLAN VIEW
SCALE: 3/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

- PRELIMINARY -
NOT FOR CONSTRUCTION

DESIGN NOTES:

1. DESIGN LOADINGS:
   - A. AASHTO HS-20-44 W/ IMPACT.
   - B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   - C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   - D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   - E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   - F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = DETENTION.
7. REQUIRED BASE LAYER DEPTH = 2" SAND BEDDING LAYER.
8. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
9. REFERENCE STANDARDS:
   - A. ASTM C 890
   - B. ASTM C 891
   - C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

NOTES TO REVIEWING ENGINEER:

1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
2. REVIEWING ENGINEER TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.
3. REVIEWING ENGINEER TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. REVIEWING ENGINEER TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITH A CONTAINMENT MEMBRANE LINER. IF A LINER IS NOT NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

Detention/
Infiltration

Stormwater

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Ph: 800.579.8819 | oldcastlestormwater.com

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STORMCAPTURE ®
SC2 Detention System

Customer: CHS Engineers

Job Name: Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER: SCDD-0877-1-SC2_DT
REVISION: 1 REV DATE 4/19/18
SHEET: 1 OF 3

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 1

Sheet C15 Of -

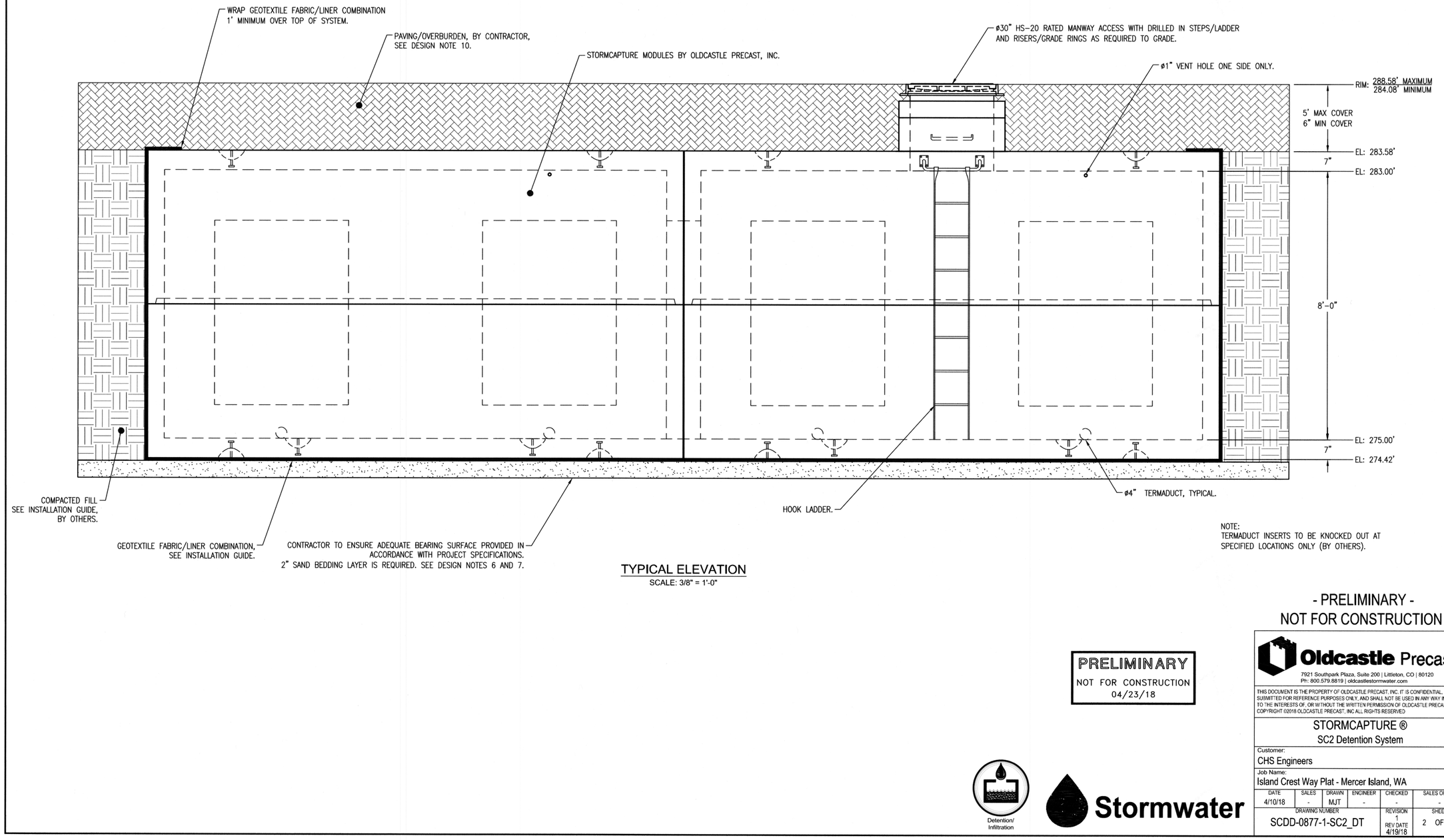
Job No. 691715

-

USER: Scott Stcherbinin@PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



NOTE:
TERMADUCT INSERTS TO BE KNOCKED OUT AT
SPECIFIED LOCATIONS ONLY (BY OTHERS).

TYPICAL ELEVATION

SCALE: 3/8" = 1'-0"

- PRELIMINARY -
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

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STORMCAPTURE ®
SC2 Detention System

Customer: CHS Engineers

Job Name: Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER	REVISION	SHEET
SCDD-0877-1-SC2_DT	1 REV DATE 4/19/18	2 OF 3

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 2

Sheet C16 Of -

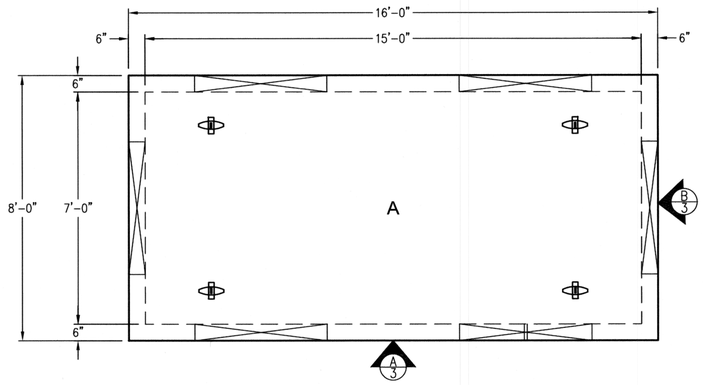
Job No. 691715

-

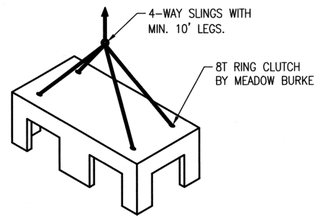
USER: Scott Stenerbrink PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

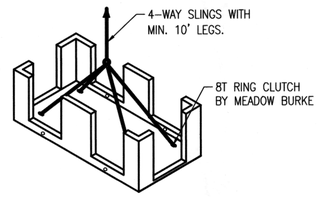
A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



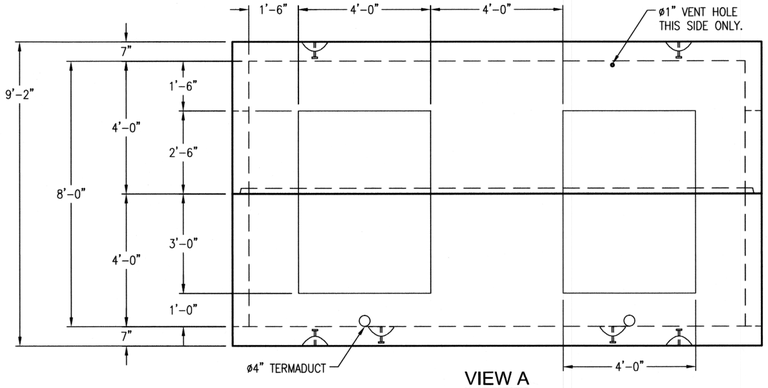
PLAN VIEW
SCALE: 1/4" = 1'-0"



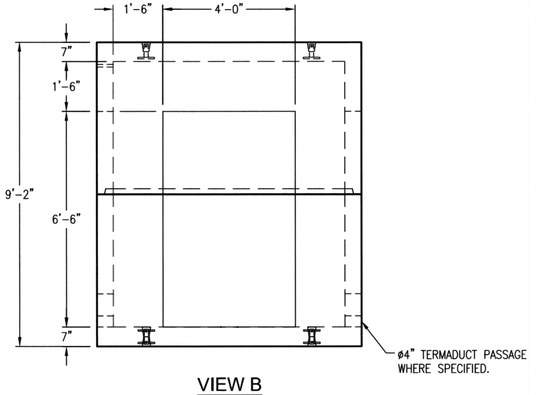
LIFTING DETAIL
N.T.S.



BOTTOM MODULE LIFTING DETAIL
N.T.S.



VIEW A
SCALE: 1/4" = 1'-0"



VIEW B
SCALE: 1/4" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

- PRELIMINARY -
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STORMCAPTURE ®
SC2 Detention System

Customer: CHS Engineers

Job Name: Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER	REVISION	SHEET
SCDD-0877-1-SC2_DT	1 REV DATE 4/19/18	3 OF 3

No.	Date	By	Ck'd	Revision
1	04/18	S	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

BENJAMIN ELI ZEHNER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

CHS ENGINEERS
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www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 3

Sheet C17 Of -

Job No. 691715 -

USER: Scott Stcherbinin PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

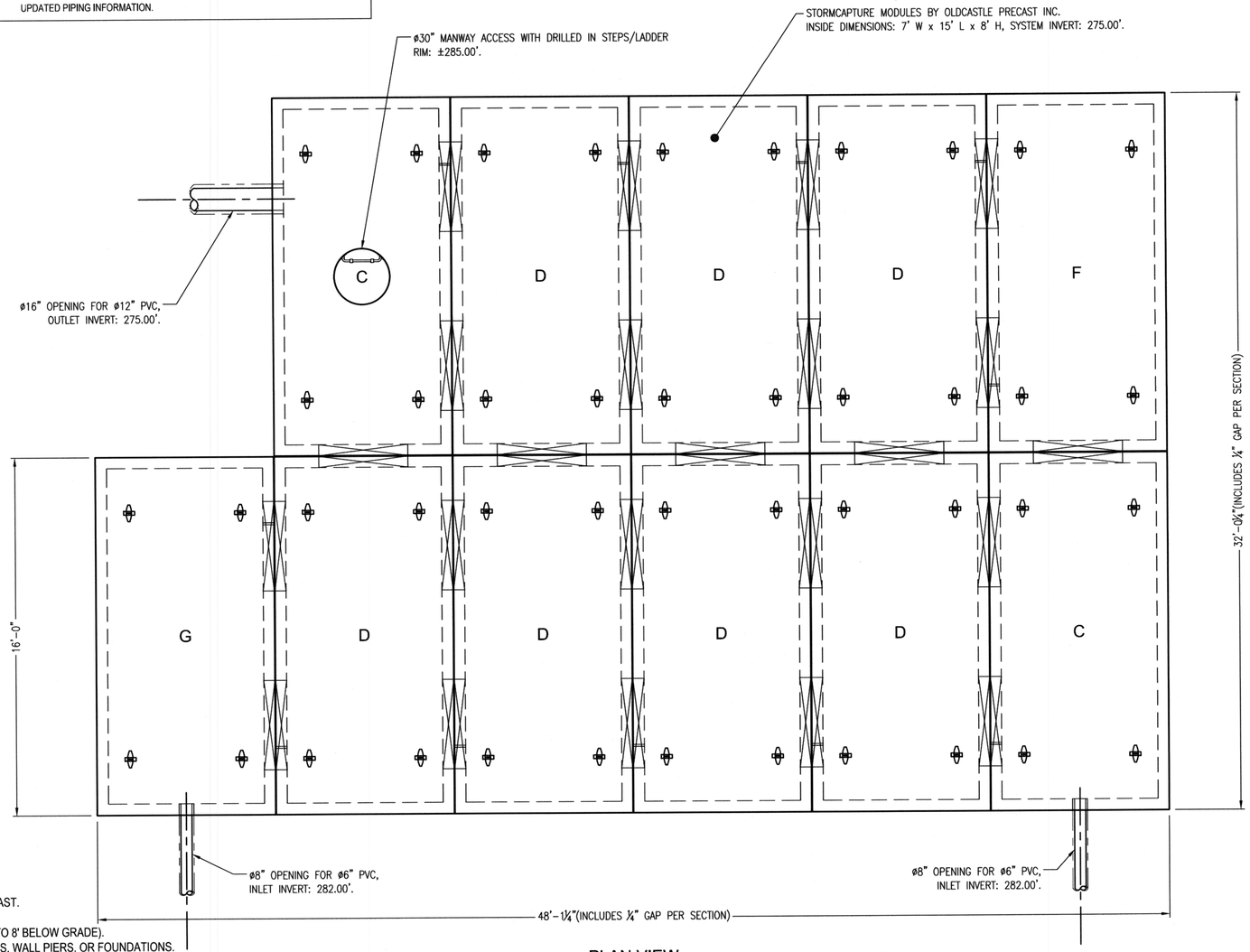
A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON

REVISIONS

REVISION	DATE	REV BY	DESCRIPTION OF REVISION
1	4/19/18	MJT	UPDATED PIPING INFORMATION.

MODULE NOTES

TYPE	QUANTITY	HEIGHT
C	2	8'
D	7	8'
F	1	8'
G	1	8'
TOTAL	11	
VOLUME =	9,766	CUBIC FEET



PLAN VIEW
SCALE: 3/16" = 1'-0"

DESIGN NOTES:

1. DESIGN LOADINGS:
   - A. AASHTO HS-20-44 W/ IMPACT.
   - B. DEPTH OF COVER = 6" - 5'-0" (120 PCF ASSUMED).
   - C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   - D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   - E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   - F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. MESH REINFORCEMENT: ASTM A-1064, S1.2, GRADE 80.
5. CEMENT: ASTM C-150 SPECIFICATION.
6. STORMCAPTURE MODULE TYPE = DETENTION.
7. REQUIRED BASE LAYER DEPTH = 2" SAND BEDDING LAYER.
8. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
9. REFERENCE STANDARDS:
   - A. ASTM C 890
   - B. ASTM C 891
   - C. ASTM C 913
10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.

NOTES TO REVIEWING ENGINEER:

1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.
2. REVIEWING ENGINEER TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.
3. REVIEWING ENGINEER TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.
4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.
5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. REVIEWING ENGINEER TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.
6. THIS SYSTEM IS DESIGNED WITH A CONTAINMENT MEMBRANE LINER. IF A LINER IS NOT NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

Detention/ Infiltration

Stormwater

PRELIMINARY
NOT FOR CONSTRUCTION
04/23/18

- PRELIMINARY -
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7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120
Ph: 800.579.8819 | oldcastlestormwater.com

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STORMCAPTURE ®
SC2 Detention System

Customer: CHS Engineers

Job Name: Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER	REVISION	SHEET
SCDD-0878-1-SC2_DT	1 REV DATE 4/19/18	1 OF 3

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON ·

BENJAMIN ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS | Designed: BG | Checked: EZ | Approved: EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 4

Sheet C18 Of -

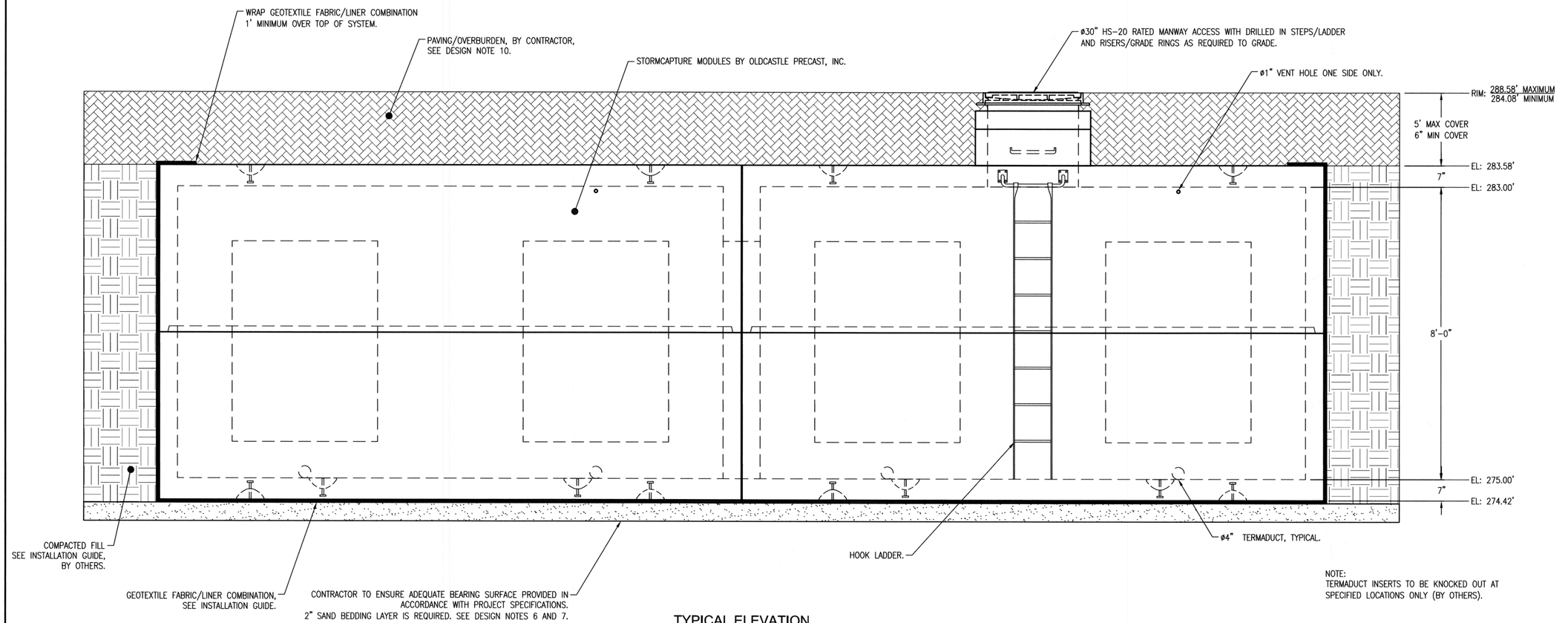
Job No. 691715

-

USER: Scott Stoneburner@UTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

Exhibit 2

A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



NOTE:
TERMADUCT INSERTS TO BE KNOCKED OUT AT SPECIFIED LOCATIONS ONLY (BY OTHERS).

TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"

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STORMCAPTURE ®
SC2 Detention System

Customer:
CHS Engineers

Job Name:
Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER	REVISION	SHEET
SCDD-0878-1-SC2_DT	1 REV DATE 4/19/18	2 OF 3

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

ELI BENJAMIN ZEHNER · STATE OF WASHINGTON · 40386 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 5

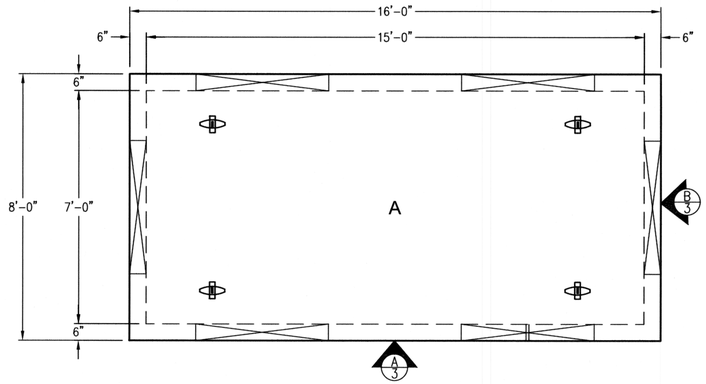
Sheet C19 Of -

Job No. 691715 -

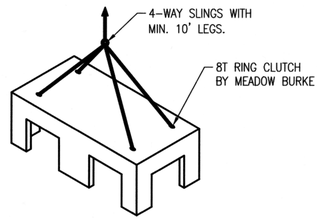
Exhibit 2

USER: Scott StcherbininePLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

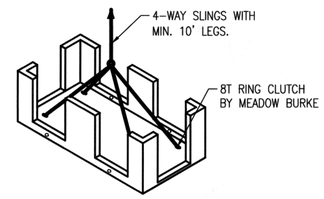
A PORTION OF SW 1/4 OF THE NW 1/4 SECTION 18, TOWNSHIP 24 NORTH, RANGE 5 EAST, W.M., KING COUNTY, WASHINGTON



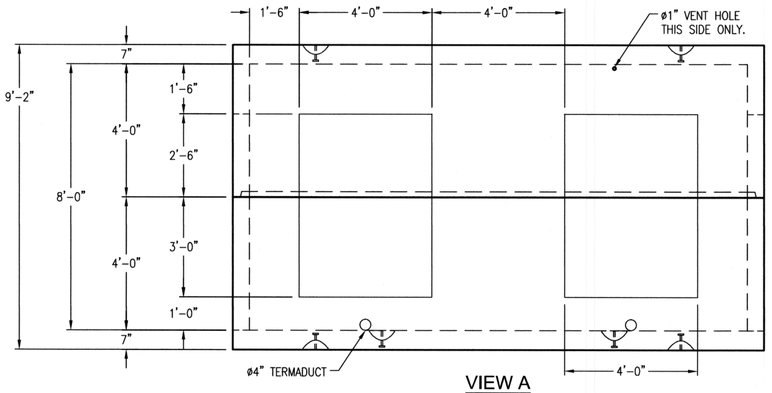
PLAN VIEW
SCALE: 1/4" = 1'-0"



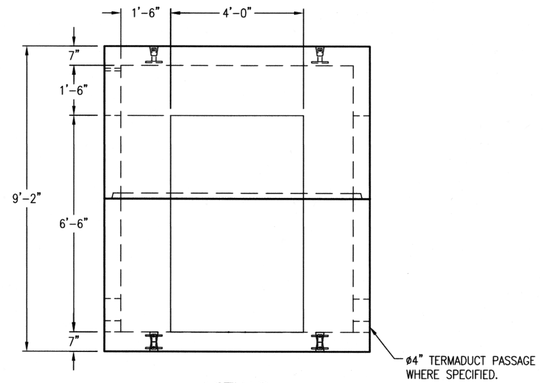
LIFTING DETAIL
N.T.S.



BOTTOM MODULE LIFTING DETAIL
N.T.S.



VIEW A
SCALE: 1/4" = 1'-0"



VIEW B
SCALE: 1/4" = 1'-0"

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04/23/18

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STORMCAPTURE ®
SC2 Detention System

Customer:
CHS Engineers

Job Name:
Island Crest Way Plat - Mercer Island, WA

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
4/10/18	-	MJT	-	-	-

DRAWING NUMBER	REVISION	SHEET
SCDD-0878-1-SC2_DT	1 REV DATE 4/19/18	3 OF 3

No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

CITY OF MERCER ISLAND · WASHINGTON

ELI BENJAMIN ZEHNER · STATE OF WASHINGTON · 40088 · REGISTERED PROFESSIONAL ENGINEER

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

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4320 ISLAND CREST WAY - LONG PLAT

OLD CASTLE - SHEET 6

Sheet C20 Of -

Job No. 691715 -

Exhibit 2

USER: Scott StcherbininePLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg

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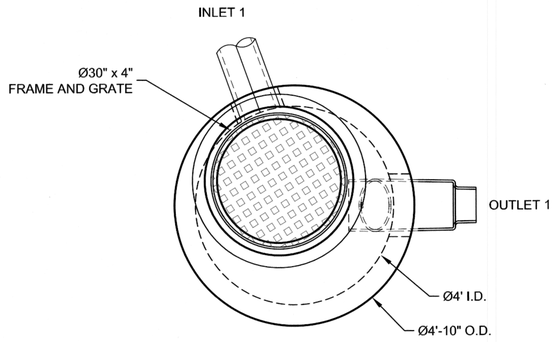
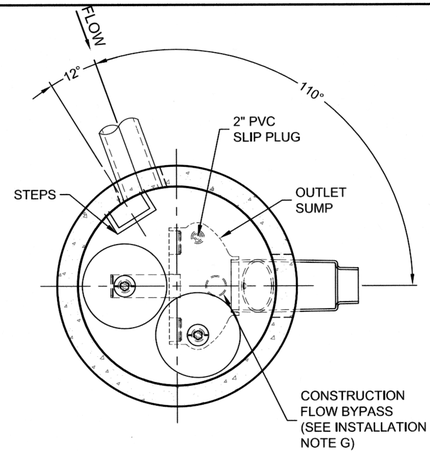
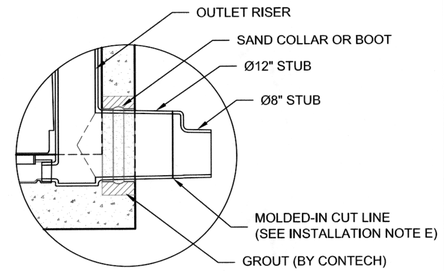


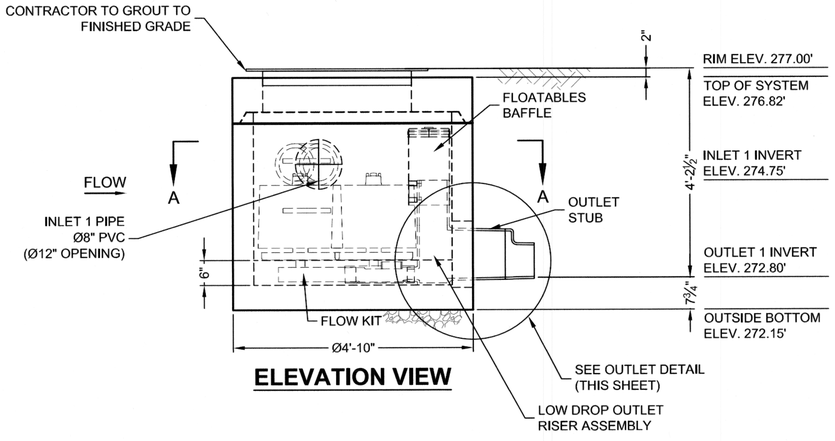
PLAN VIEW
CARTRIDGES AND FLOW KIT NOT SHOWN



SECTION A-A



OUTLET DETAIL
(ILLUSTRATION ONLY)



ELEVATION VIEW

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0.014 CFS
PEAK FLOW RATE	0.281 CFS
RETURN PERIOD OF PEAK FLOW	100 YRS
FILTER MEDIA TYPE	ZPG

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
2	LOW DROP ZPG CARTRIDGE	CONTECH
3	5 GPM RESTRICTOR DISK (BLU)	CONTECH
1	2" PVC SLIP PLUG	CONTECH
1	40A FLOWKIT	CONTECH
1	LOW DROP OUTLET RISER ASSEMBLY	CONTECH
2	STEPS, P10CTS, LANE LADDER, OR EQUIV.	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø30" x 4" FRAME & GRATE, EJ#43600430A01, OR EQUIV.	CONTRACTOR

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES.** FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **38 SECONDS**.
SPECIFIC FLOW RATE SHALL BE **1 GPM/SF (MAXIMUM).** SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM)**.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S). ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
G. CONTRACTOR TO INSTALL SUPPLIED PLUG IN CONSTRUCTION FLOW BYPASS WHEN SYSTEM IS BROUGHT ON LINE (PRESSURE FIT ONLY, DO NOT GLUE).

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 5500 LBS. OF 2 PIECES
BASE SECTION SHIPPED WITH CARTRIDGES INSTALLED
MAX FOOTPRINT = Ø4'-10"

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04/23/18

CONTECH
PROPOSAL
DRAWING

CUZ001
LAYOUT 1A
5784 / CUZ

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No.	Date	By	Ckd	Revision
1	04/18	SS	EZ	CITY COMMENTS RESPONSE 1

MARK	DATE	REVISION DESCRIPTION	BY

STORMFILTER SFMH48 - 569225-20
4320 ISLAND CREST WAY
MERCER ISLAND, WA
for SYSTEM: SFMH

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
The Stormwater Management StormFilter®

DATE: 04/20/18	SCALE: 3/8" = 1'-0"
DESIGNED: MSG	DRAWN: SKJ
CHECKED:	APPROVED:
PROJECT No.: 569225	SEQUENCE No.: 20
SHEET: 1 OF 1	

Drawn: SS
Designed: BG
Checked: EZ
Approved: EZ

CHS ENGINEERS
12507 Bel-Red RD., Suite 101, Bellevue, WA 98005
www.chsengineers.com Ph: 425-637-3693

4320 ISLAND CREST WAY - LONG PLAT

CONTECH - SHEET 1

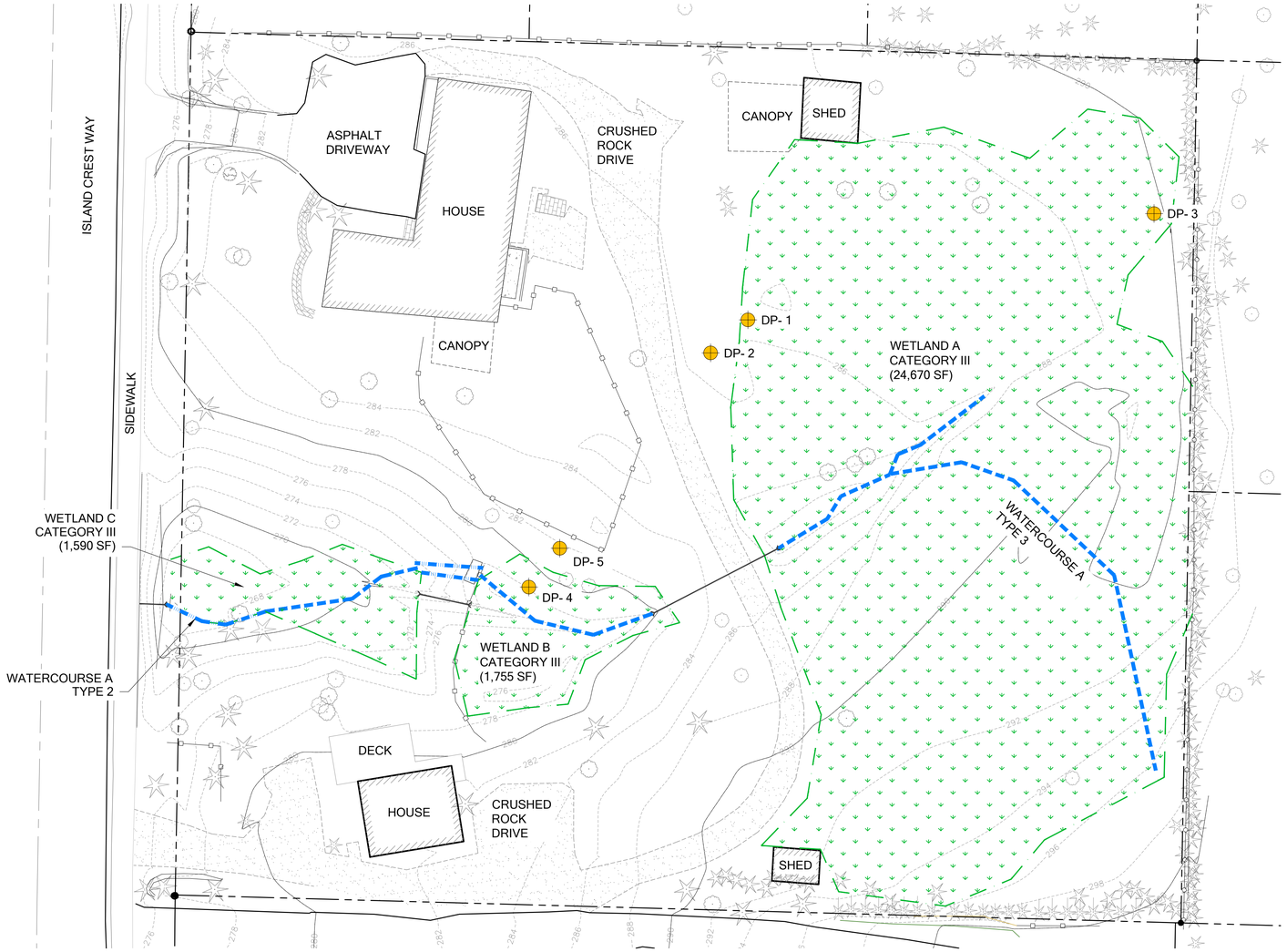
Sheet C21 Of -

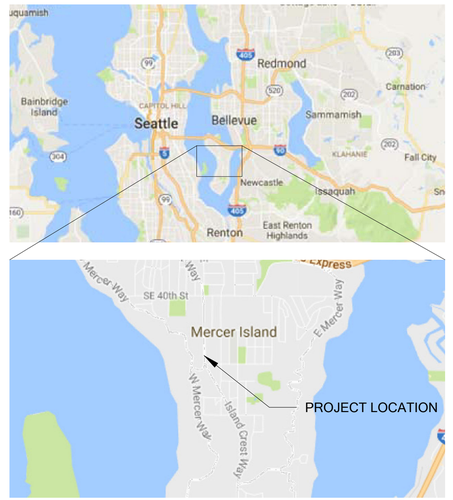
Job No. 691715 -

USER: Scott Scherschinski PLOTTING DATE: 4/24/2018 FILE LOCATION: K:\69-Development\2017\691715 - Mercer Island SP 4320 ICW\CAD\691715 - BASE.dwg
I:\MERLIN\PROJECTACTIVE\569200\569225\569225-20-STORMFILTER\DRAWINGS\PRE-569225-20-SFMH48 PRO-B.DWG 4/20/2018 10:23 AM

Exhibit 2

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN





VICINITY MAPS

LEGEND

- PARCEL BOUNDARY
- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- DATA POINT
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE
- CULVERT (QTY. 3)

SHEET INDEX

W1.0	EXISTING CONDITIONS
W2.0	IMPACTS PLAN
W3.0	RESTORATION AND MITIGATION PLAN
W4.0	TREE PRESERVATION PLAN
W4.1	TREE INVENTORY TABLES 1-3
W4.2	TREE INVENTORY TABLES 4-6
W4.3	TREE INVENTORY TABLE 7 AND TREE PRESERVATION DETAILS
W5.0	TESC AND SITE PREPARATION PLAN
W5.1	TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES
W6.0	WETLAND CREATION AREA GRADING PLAN
W7.0	PLANTING PLAN
W7.1	TYPICAL PLANTING SCHEDULES
W7.2	PLANT INSTALLATION DETAILS AND NOTES
W8.0	MITIGATION AND RESTORATION NOTES

NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY ON SEPTEMBER 21, 2016.
2. ONLY LEFT BANK OF WATERCOURSE A DELINEATED WITHIN WETLAND C.
3. SURVEY RECEIVED FROM PLS, INC. 1595 NW GILMAN BOULEVARD, #15 ISSAQUAH, WA 98027. (425) 313-9378.

NFC

NOT FOR CONSTRUCTION

EXISTING CONDITIONS

0 10' 20' 40' 80'

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THE WATERSHED COMPANY

750 Sixth Street South
Kirkland WA 98033

p 425.822.5242
www.watershedco.com
Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

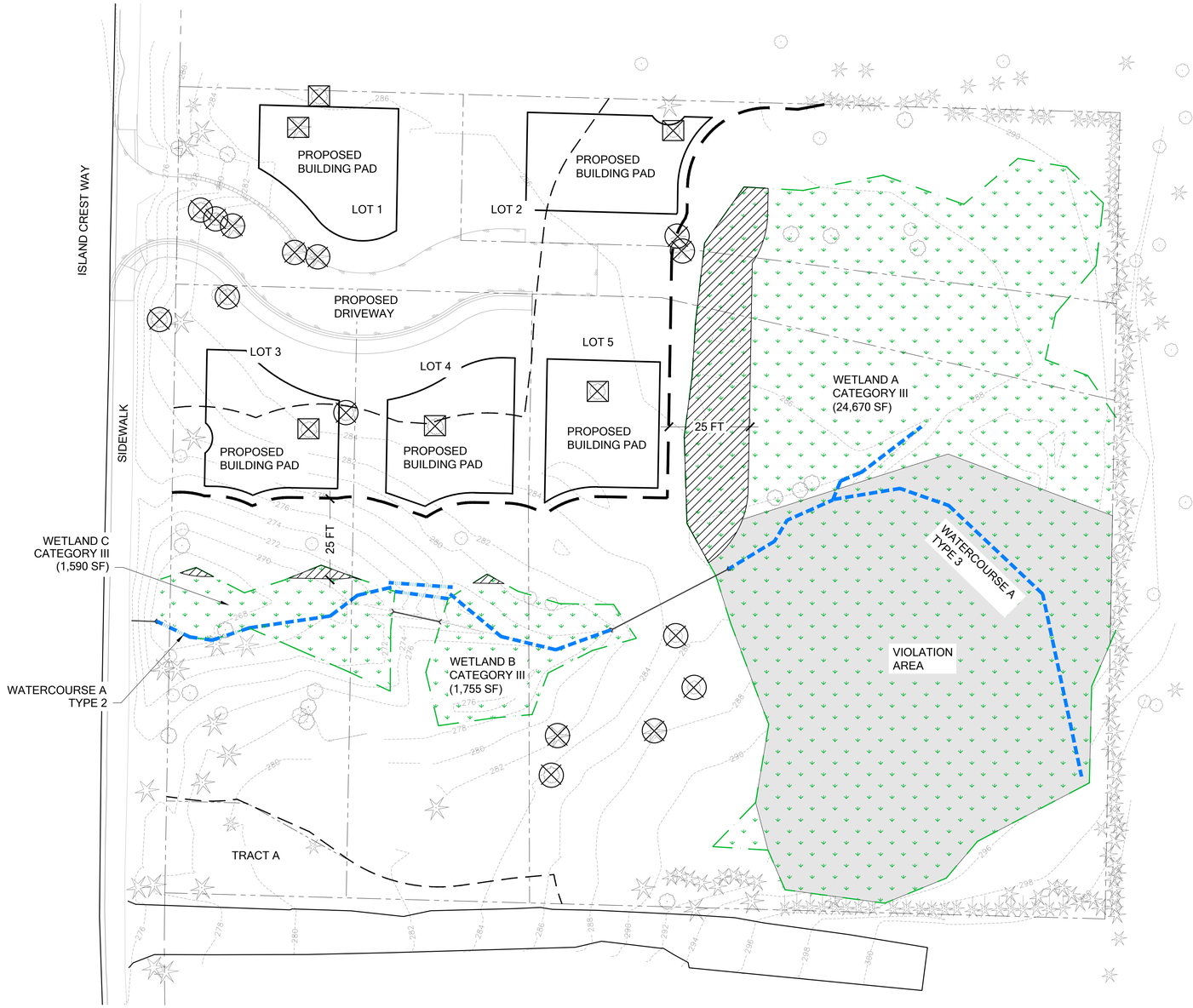
NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W1.0 OF 14

FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG
PRINTED BY ROEN HOHLFELD
DATE 10/27/17

Exhibit 3



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- VIOLATION AREA (12,748 SF)
- EXISTING TREE

PROPOSED FEATURES

- PROPOSED PROPERTY BOUNDARY
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- WETLAND AS BUFFER (1,988 SF)

IMPACT CALCULATIONS

IMPACT	AREA (SF)
WETLAND VIOLATION	12,748
WETLAND AS BUFFER	1,988
TOTAL IMPACTS	**14,736**

NOTES

1. SEE SHEETS 34.0-W4.3 FOR TREE PRESERVATION INFORMATION.
2. WETLAND VIOLATION AREA PER NOTICE OF CORRECTION FROM CITY OF MERCER ISLAND, DATED AUGUST 10, 2016.
3. EXISTING WETLAND VIOLATION AREA EXTRAPOLATED FROM 2012 AND 2015 KING COUNTY IMAP AERIAL PHOTOGRAPHY. ADDITIONALLY, SEE INVOICE IN REQUEST FOR INFORMATION #1 LETTER FROM THE WATERSHED COMPANY, DATED APRIL 13, 2013.
4. SEE CIVIL PLANS FOR PROPOSED GRADING OUTSIDE MITIGATION AREA.

IMPACTS PLAN

0 10' 20' 40' 80'

NFC

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www.watershedco.com
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MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
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MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

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3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

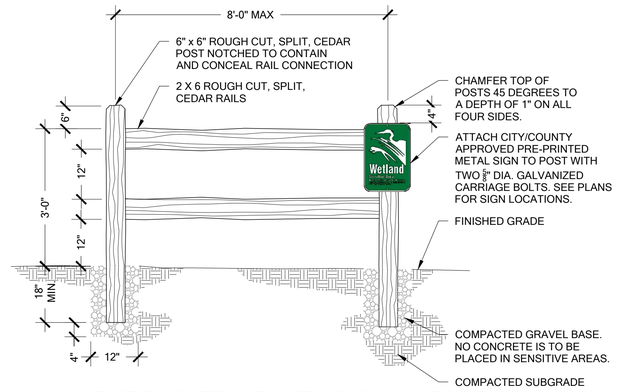
SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W2.0 OF 14

PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3





A SPLIT RAIL FENCE WITH SIGN ON POST

Scale: NTS

LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- PROPOSED PROPERTY BOUNDARY
- WETLAND/WATERCOURSE AREA BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- EXISTING STRUCTURES AND DRIVEWAY TO BE REMOVED WITHIN BUFFER (5,703 SF)
- CULVERT TO BE REMOVED (QTY. 2)
- WETLAND CREATION AREA (2,305 SF)
- WETLAND RESTORATION AREA (24,670 SF)
- BUFFER MITIGATION AREA (21,080 SF)
- SPLIT RAIL FENCE WITH SIGN ON POST (A / W3.0)

MITIGATION CALCULATIONS

MIITGATION	AREA (SF)
BUFFER RESTORATION	21,080
WETLAND RESTORATION	24,670
WETLAND CREATION	2,305
TOTAL MITIGATION	**48,054**

RESTORATION AND MITIGATION PLAN

0 10' 20' 40' 80'

NFC

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MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W3.0 OF 14

PRINTED BY: ROEN HOHLFELD
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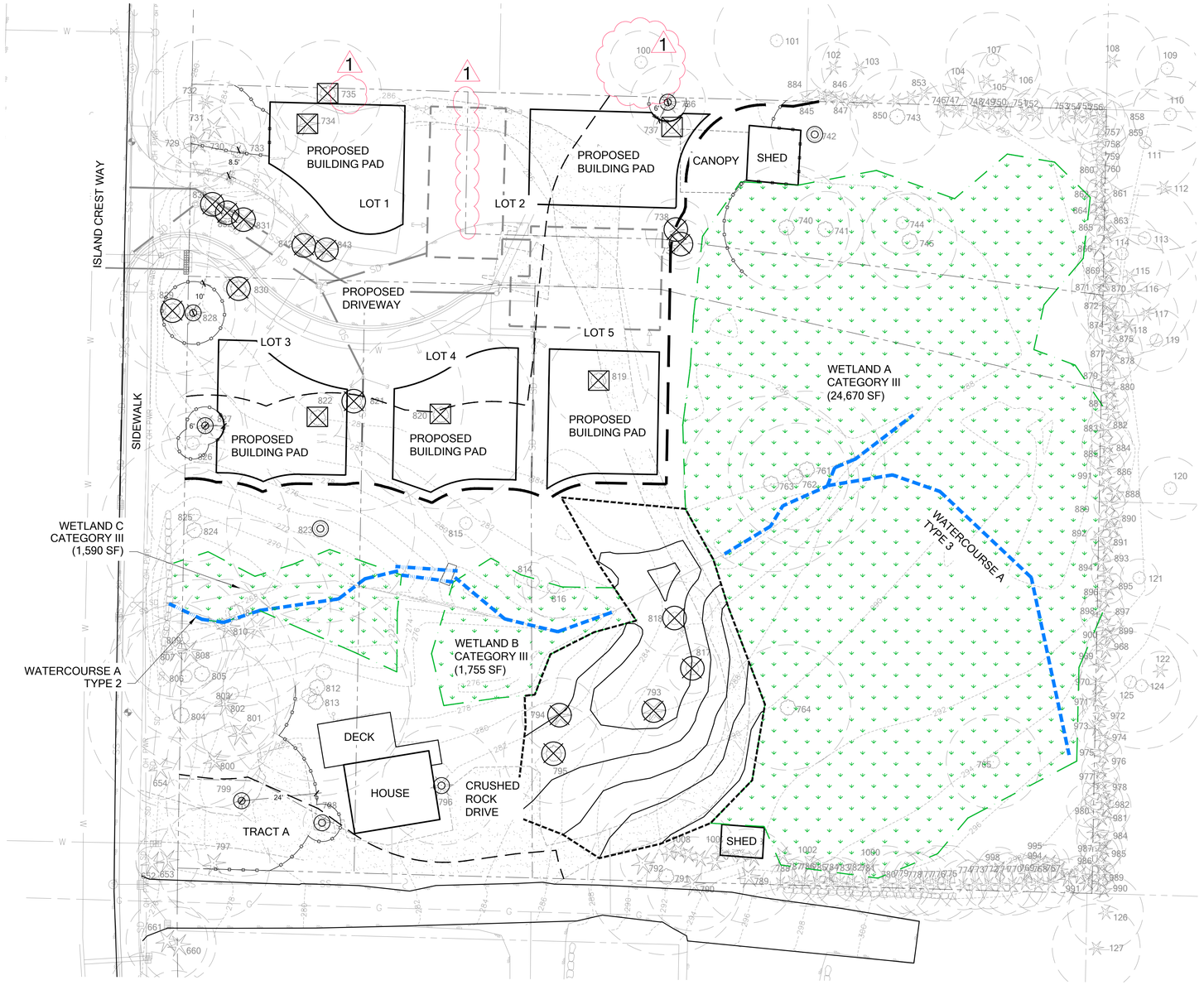
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN DWG

Exhibit 3



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR (WETLAND CREATION AREA)
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- TREE TRUNK WRAP (B W4.3)
- 1 TREE PROTECTION FENCING (C W4.3)
- 1 APPROX. LIMITS OF GRADING (WETLAND CREATION AREA)

NOTES

1. QUANTITIES OF TREES TO BE REMOVED IN THE TREE RETENTION LEGEND REFLECT TOTAL TREES THAT WILL REQUIRE REMOVAL AS PART OF THE SITE DEVELOPMENT.
2. PER MICC 19.16.010, A SIGNIFICANT TREE IS ANY CONIFER THAT IS MORE THAN SIX FEET TALL OR ANY DECIDUOUS TREE WITH A DIAMETER OF SIX INCHES OR MORE.
3. TREES DESIGNATED FOR REMOVAL WITHIN TREE PROTECTION FENCE SHOULD BE SNAGGED OR FLUSH CUT TO MINIMIZE ROOT DAMAGE TO REMAINING TREES. DO NOT REMOVE TREES DESIGNATED FOR REMOVAL WITHIN TREE PROTECTION FENCING AREA BY PUSHING OVER WITH MACHINERY.
4. CONSTRUCTION WITHIN TREE PROTECTION FENCING SHALL BE COMPLETED BY HAND, MAINTAINING EXISTING GRADE UNLESS OTHERWISE INDICATED ON THE CIVIL PLANS.
5. EXISTING TREES TO REMAIN SHALL NOT BE DISTURBED DURING DEMOLITION OF EXISTING STRUCTURES OR CONSTRUCTION OF PROPOSED FEATURES. THIS INCLUDES DAMAGES TO TREE TRUNK, ROOTS, AND LIMBS. IF TREE LIMBS RESTRICT VERTICAL LIMITS OF DEMOLITION MACHINERY, A CERTIFIED ARBORIST MAY LIFT CANOPY BY PRUNING LIMBS UP TRUNK.
6. MACHINERY ACCESS FOR DEMOLITION OF EXISTING SOUTHERLY HOUSE SHALL UTILIZE 5" OF WOOD CHIP MULCH OVERLAID WITH STEEL PLATE OR $\frac{3}{4}$ INCH PLYWOOD TO PREVENT DISTURBANCE OF EXISTING TREE ROOTS.

TREE PRESERVATION PLAN

0 10' 20' 40' 80'

NFC

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SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
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DATE 10/27/17 | PRINTED BY ROEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
100	Malus domestica (Apple)	D	1	**10**	25	10	3	N	
101	Prunus emarginata (Bitter cherry)	D	1	**14**	55	20	4	N	broken main leader at 50'
102	Pinus monticola (Western white pine)	E	1	**6**	30	8	2	N	
103	Pinus monticola (Western white pine)	E	1	**5**	30	12	2	N	
104	Picea sitchensis (Sitka spruce)	E	1	**2**	20	5	2	N	
105	Tsuga canadensis (Canadian hemlock)	E	1	**7**	40	9	2	N	
106	Tsuga canadensis (Canadian hemlock)	E	1	**5**	30	10	2	N	
107	Sorbus aucuparia (European mountain ash)	D	1	**12**	50	15	3	N	
108	Cedrus deodara (Deodar cedar)	E	1	**13**	55	15	3	N	
109	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**14**	30	10	4	N	sig. ivy on trunk
110	Crataegus monogyna (Common hawthorn)	D	3	**8**	20	12	3	N	
111	Fraxinus latifolia (Oregon ash)	D	1	**13**	50	17	3	N	
112	Pseudotsuga menziesii (Douglas-fir)	E	1	**27**	85	20	3	N	
113	Fraxinus latifolia (Oregon ash)	D	1	**12**	45	17	3	N	
114	Gleditsia triacanthos (Honeylocust)	D	1	**10**	40	13	3	N	
115	Thuja plicata (Western red cedar)	E	1	**14**	40	13	4	N	chlorotic foliage
116	Thuja plicata (Western red cedar)	E	2	**15**	50	20	3	N	flagging
117	Thuja plicata (Western red cedar)	E	1	**10**	50	10	3	N	
118	Thuja plicata (Western red cedar)	E	1	**10**	35	10	3	N	
119	Acer macrophyllum (Bigleaf maple)	D	1	**28**	75	29	3	N	
120	Thuja plicata (Western red cedar)	E	1	**10**	40	10	4	N	chlorotic foliage, stressed cone crop
121	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
122	Thuja plicata (Western red cedar)	E	1	**6**	15	6	3	N	
123	Betula pendula (European white birch)	D	1	**15**	40	15	3	N	
124	Betula pendula (European white birch)	D	1	**14**	60	20	3	N	
125	Betula pendula (European white birch)	D	1	**9**	50	16	3	N	leader failure
126	Thuja plicata (Western red cedar)	E	1	**18**	50	12	3	N	
127	Thuja plicata (Western red cedar)	E	1	**18**	50	14	3	N	
128	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**7**	25	15	3	N	
129	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**7**	17	12	4	N	decay in trunk; necrotic foliage; deadwood
130	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**8**	17	15	4	N	deadwood; chlorotic foliage
131	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**14**	18	12	4	N	significant ivy on trunk
132	Pseudotsuga menziesii (Douglas-fir)	E	1	**15**	26	16	4	N	topped for utility lines; significant ivy on trunk
652	Pseudotsuga menziesii (Douglas-fir)	E	1	**6**	15	5	3	N	topped for power line
653	Tsuga heterophylla (Western hemlock)	E	1	**8**	15	10	4	N	
654	Pseudotsuga menziesii (Douglas-fir)	E	1	**4**	20	10	3	N	growing into power lines
655	Pinus sylvestris (Scots pine)	E	1	**14**	50	15	3	N	
656	Prunus cerasifera 'thunderdoud' (Cherry plum)	D	2	**16**	30	20	4	N	poor branch form
657	Quercus palustris (Pin oak)	D	1	**28**	70	26	2	N	ivy on trunk
658	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	49	12	2	N	
659	Pinus sylvestris (Scots pine)	E	1	**15**	50	10	4	N	necrotic foliage

A TREE INVENTORY TABLE (1 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	1 NOTES
660	Pseudotsuga menziesii (Douglas-fir)	E	1	**15**	65	12	3	N	
661	Pseudotsuga menziesii (Douglas-fir)	E	1	**18**	75	13	3	N	self corected lean
668	Pinus sylvestris (Scots pine)	E	1	**11**	30	13	4	N	topped for utility line
669	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	20	12	4	N	topped for utility line
670	Pseudotsuga menziesii (Douglas-fir)	E	1	**12**	20	20	4	N	topped for utility line; poor root flare
671	Pseudotsuga menziesii (Douglas-fir)	E	1	**5**	25	8	3	N	
672	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	20	15	4	N	topped for utility line
729	Arbutus menziesii (Pacific madrone)	E	1	**10**	50	14	3	N	50% of dripline impervius
730	Thuja plicata (Western red cedar)	E	1	**15**	40	15	3	N	retaining wall 1-ft from trunk
731	Thuja plicata (Western red cedar)	E	4	**16**	45	15	3	N	included bark
732	Arbutus menziesii (Pacific madrone)	E	1	**6**	15	20	4	N	not on survey
733	Arbutus menziesii (Pacific madrone)	E	1	**12**	55	15	3	N	3-ft from retaining wall; ivy on trunk; self-corrected lean
734	Picea abies (Norway spruce)	E	1	**13**	45	10	4	Y	low lcr
735	Betula pendula (European white birch)	D	3	**26**	60	17	3	Y	ivy on trunk; co-dominant from base
736	Pinus sylvestris (Scots pine)	E	1	**14**	17	12	3	N	phototropically oriented
737	Ginkgo biloba (Maidenhair tree)	D	1	**5**	20	6	2	Y	not on survey
738	×Hesperotropsis leylandii (Leyland cypress)	E	1	**8**	25	10	2	Y	
739	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	8	2	Y	
740	Prunus domestica (Plum)	D	1	**16**	40	20	4	N	low lcr
741	Prunus domestica (Plum)	D	1	**10**	35	12	4	N	low lcr
742	Prunus domestica (Plum)	D	1	**8**	20	14	3	Y	low lcr; not on survey
743	Prunus domestica (Plum)	D	1	**17**	60	15	3	Y	
744	Prunus domestica (Plum)	D	2	**10**	35	10	4	N	low lcr; not on survey
745	Prunus domestica (Plum)	D	1	**12**	40	15	4	N	virginia creeper on trunk
746	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	13	8	3	N	base at 2'=5.4"; not on survey
747	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	6	3	N	base at 2'=7.5"; not on survey
748	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	base at 2'=4.5"; not on survey
749	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	6	3	N	base at 2'=5.2"; not on survey
750	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	8	3	N	base at 2'=5.8"; not on survey
751	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	base at 2'=4"; not on survey
752	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	15	8	3	N	base at 2'=5.3"; not on survey
753	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	8	3	N	base at 2'=5"; not on survey
754	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	9	3	N	base at 2'=6"; not on survey
755	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	15	9	3	N	base at 2'=5.8"; not on survey
756	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	8	3	N	base at 2'=5"; not on survey
757	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	9	3	N	base at 2'=4.7"; not on survey
758	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	8	3	N	base at 2'=4.4"; not on survey
759	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	6	3	N	base at 2'=5.4"; not on survey
760	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	12	6	3	N	base at 2'=4"; not on survey
761	Alnus rubra (Red alder)	D	2	**26**	60	25	3	N	
762	Alnus rubra (Red alder)	D	1	**9**	60	17	3	N	

B TREE INVENTORY TABLE (2 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
763	Alnus rubra (Red alder)	D	4	**32**	65	28	3	N	
764	Prunus armeniaca (Apricot)	D	1	**14**	55	20	4	N	low lcr
765	Prunus armeniaca (Apricot)	D	1	**9**	50	15	4	N	low lcr; ivy on trunk; not on survey
766	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	12	6	3	N	base at 2'=4.3"; not on survey
767	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	25	8	3	N	base at 2'=5"; not on survey
768	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	9	3	N	base at 2'=6.5"; not on survey
769	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	8	3	N	base at 2'=6.2"; not on survey
770	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	10	3	N	base at 2'=5.3"; not on survey
771	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	10	3	N	base at 2'=6.7"; not on survey
772	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	30	8	3	N	base at 2'=5"; not on survey
773	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	8	3	N	base at 2'=6.5"; not on survey
774	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	8	3	N	base at 2'=5.5"; not on survey
775	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	12	3	N	base at 2'=4.8"; not on survey
776	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	12	3	N	base at 2'=4.8"; not on survey
777	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	20	10	3	N	base at 2'=6.5"; not on survey
778	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	10	3	N	base at 2'=4.6"; not on survey
779	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	10	3	N	base at 2'=6.4"; not on survey
780	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	12	3	N	base at 2'=5.8"; not on survey
781	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	6	3	N	base at 2'=5.5"; not on survey
782	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	6	3	N	base at 2'=5.5"; not on survey
783	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	8	3	N	base at 2'=5"; not on survey
784	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	base at 2'=5.2"; not on survey
785	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	5	3	N	
786	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	17	8	3	N	base at 2'=4.3"; not on survey
787	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	base at 2'=5"; not on survey
788	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	base at 2'=4.8"; not on survey
789	Pseudotsuga menziesii (Douglas-fir)	E	1	**18**	50	15	3	N	30% impervious within dripline
790	Pseudotsuga menziesii (Douglas-fir)	E	1	**14**	20	15	4	N	topped at 20-ft for powerlines, 50% impervious in dripline
791	Betula pendula (European white birch)	D	2	**18**	35	25	4	N	included bark
792	Thuja plicata (Western red cedar)	E	1	**19**	55	7	3	N	codominate at 30'
793	Cunninghamia lanceolata (China fir)	E	1	**13**	30	8	2	Y	
794	Thuja plicata (Western red cedar)	E	1	**20**	45	12	2	Y	ivy on trunk
795	Prunus domestica (Plum)	D	1	**11**	45	16	3	Y	trunk wound at base with good response growth
796	Pinus monticola (Western white pine)	E	1	**26**	65	19	2	N	50% of dripline is a house
797	Pseudotsuga menziesii (Douglas-fir)	E	1	**22**	20	18	4	N	limited root zone; topped at 20'; fungi on trunk
798	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	6	3	N	base at 2'=4.1"; not on survey
799	Cedrus deodara (Deodar cedar)	E	1	**25**	65	24	2	N	not on survey
800	Pseudotsuga menziesii (Douglas-fir)	E	1	**16**	60	15	3	N	
801	Cedrus deodara (Deodar cedar)	E	1	**16**	55	12	4	N	suppressed canopy
802	Pseudotsuga menziesii (Douglas-fir)	E	1	**19**	65	17	4	N	self-corrected lean; low lcr
803	Acer macrophyllum (Bigleaf maple)	D	1	**22**	70	20	3	N	not on survey

C TREE INVENTORY TABLE (3 OF 7)
Scale: NTS

NFC
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TREE INVENTORY TABLES 1-3

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MERCER ISLAND CHIU LLC
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MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

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1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W4.1 OF 14

DATE 10/27/17 PRINTED BY ROEN HOHLFELD FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
804	Acer macrophyllum (Bigleaf maple)	D	1	**28**	65	30	3	N	12-in cavity at 10'; potential circling root; 10-degree lean to the south
805	Acer macrophyllum (Bigleaf maple)	D	1	**18**	70	30	3	N	
806	Acer macrophyllum (Bigleaf maple)	D	1	**7**	30	20	4	N	not on survey; phototropic lean
807	Thuja plicata (Western red cedar)	E	1	**18**	70	15	3	N	
808	Thuja plicata (Western red cedar)	E	1	**13**	40	12	3	N	suppressed canopy; pistol butt trunk
809	Acer macrophyllum (Bigleaf maple)	D	2	**11**	20	20	4	N	co-dominant; topped at 12'; not on survey
810	Thuja plicata (Western red cedar)	E	1	**21**	60	15	3	N	rooting branches that look like separate trees growing
811	Acer macrophyllum (Bigleaf maple)	D	1	**21**	70	30	3	N	trunk cavity 6-in in dia.; codominate at 15-ft
812	Acer macrophyllum (Bigleaf maple)	D	1	**22**	60	30	3	N	scaffold branch failure at 25-ft with good response growth
813	Acer macrophyllum (Bigleaf maple)	D	3	**39**	70	30	3	N	co-dominant at base; included bark; significant trunk wound
814	Alnus rubra (Red alder)	D	1	**4**	15	6	3	N	base at 2'=4.3'; not on survey
815	Prunus domestica (Plum)	D	1	**14**	20	8	4	N	poor pruning history; ivy on trunk; not on survey
816	Alnus rubra (Red alder)	D	1	**5**	20	10	3	N	not on survey
817	Pyrus domestica (Common pear)	D	1	**5**	15	8	4	Y	base at 2'=5.8"; not on survey
818	Fraxinus latifolia (Oregon ash)	D	1	**10**	30	12	3	Y	topped at 10-ft; not on survey
819	Styrax japonicus (Japanese snowbell)	D	6	**20**	25	16	4	Y	additional DBH-8", 6"
820	Castanea dentata (American chestnut)	D	2	**44**	70	30	3	Y	
821	Acer macrophyllum (Bigleaf maple)	D	1	**34**	75	35	2	Y	
822	Thuja plicata (Western red cedar)	E	1	**17**	50	8	2	Y	
823	Acer macrophyllum (Bigleaf maple)	D	1	**32**	70	30	3	N	co-dominant at 6'; not on survey
824	Acer macrophyllum (Bigleaf maple)	D	5	**32**	80	30	3	N	additional DBH-7"
825	Crataegus monogyna (Common hawthorn)	D	2	**7**	25	15	3	N	not on survey
826	Prunus emarginata (Bitter cherry)	D	1	**7**	40	10	3	N	not on survey
827	Pinus nigra (Austrian pine)	E	1	**21**	50	12	4	N	co-dominant at 20'; included bark; low LCR
828	Pinus sylvestris (Scots pine)	E	1	**18**	65	20	3	N	
829	Acer macrophyllum (Bigleaf maple)	D	1	**14**	15	20	4	Y	co-dominant at 10'; topped at 15' for power lines
830	Betula pendula (European white birch)	D	2	**25**	65	25	3	Y	
831	Pinus sylvestris (Scots pine)	E	1	**21**	70	16	3	Y	co-dominant at 15'; included bark; circling root
832	Arbutus menziesii (Pacific madrone)	E	2	**8**	25	15	3	Y	
833	Acer macrophyllum (Bigleaf maple)	D	1	**10**	50	20	3	Y	pistol-butt trunk
842	Thuja plicata (Western red cedar)	E	1	**1**	10	2	2	N	
843	Pseudotsuga menziesii (Douglas-fir)	E	1	**1**	8	3	3	N	se lean, self corected
844	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
845	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	5	3	N	
846	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	5	4	N	topped at 10'
847	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
848	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	5	3	N	
849	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
850	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	5	2	N	
851	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	15	4	3	N	
852	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	

A TREE INVENTORY TABLE (4 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
853	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
854	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
855	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	3	N	
856	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
857	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
858	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	
859	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
860	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	15	6	3	N	
861	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	3	N	
862	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	14	4	3	N	
863	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	18	5	3	N	
864	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	3	3	N	
865	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	3	3	N	
866	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	4	3	N	
867	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	5	3	N	suppressed
869	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	8	4	3	N	
870	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	3	3	N	suppressed
871	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	11	4	3	N	
872	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	10	6	3	N	suppressed
873	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	14	5	3	N	
874	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
875	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
876	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	5	3	N	
877	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	9	3	N	
878	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	
879	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	22	5	3	N	
880	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
881	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	6	6	3	N	
882	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
883	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	8	3	N	
884	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	5	4	N	chlorotic foliage
885	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	6	3	N	
886	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	12	6	4	N	chlorotic foliage
887	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	5	3	N	
888	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
889	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	10	3	N	
890	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	3	3	N	
891	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	5	3	N	
892	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	4	3	N	
893	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	3	3	N	
894	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	5	3	N	

B TREE INVENTORY TABLE (5 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
895	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	5	3	N	
896	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	3	N	
897	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
898	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
899	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	18	5	3	N	
900	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
968	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	6	3	N	
969	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
970	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
971	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
972	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	4	N	sig trunk wound on ne side
973	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
974	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
975	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	4	N	trunk wound on ne side
976	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
977	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	14	6	4	N	trunk wounds
978	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
979	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	8	3	N	
980	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	22	7	3	N	
981	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
982	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	8	3	N	
983	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	6	3	N	
984	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	22	8	3	N	
985	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	21	6	3	N	
986	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
987	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
988	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	7	3	N	
989	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	4	N	suppressed
990	×Hesperotropsis leylandii (Leyland cypress)	E	2	**1**	9	4	4	N	
991	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	8	6	4	N	
992	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	7	4	4	N	
993	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
994	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
995	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
996	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	6	3	N	
997	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
998	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
999	×Hesperotropsis leylandii (Leyland cypress)	E	2	**2**	15	6	3	N	
1000	×Hesperotropsis leylandii (Leyland cypress)	E	2	**3**	15	6	3	N	
1001	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1002	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	25	8	3	N	

C TREE INVENTORY TABLE (6 OF 7)
Scale: NTS

NFC
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TREE INVENTORY TABLES 4-6

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750 Sixth Street South
Kirkland WA 98033
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Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W4.2 OF 14

DATE 10/27/17 PRINTED BY ROEN HOHLFELD FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3

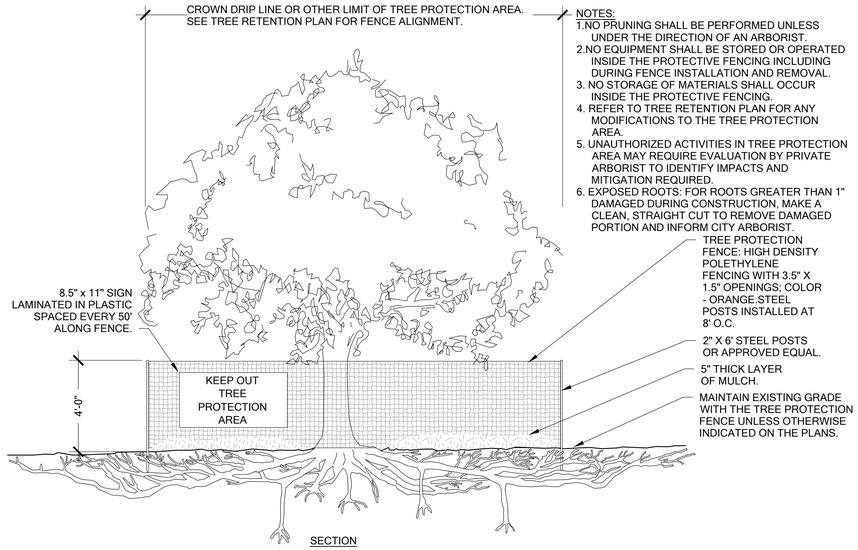
MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	E/V / DEC	# STEMS	CALIPER (IN, ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
1003	×Hesperotropsis leylandii (Leyland cypress)	E	2	**3**	17	6	3	N	
1004	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1005	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1006	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
1007	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	13	5	3	N	
1008	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	5	3	N	
1009	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	4	3	N	
1010	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	7	3	4	N	
1011	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	3	N	
1012	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	6	5	4	N	trunk wound
1013	×Hesperotropsis leylandii (Leyland cypress)		1	**0**	6	3	4	N	trunk wound

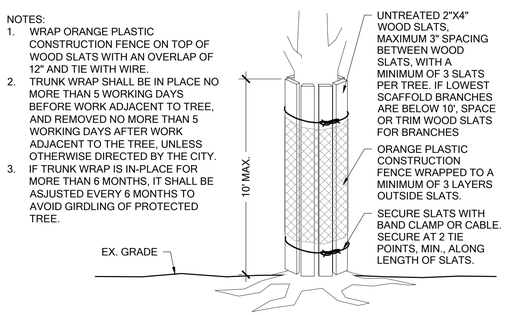
A TREE INVENTORY TABLE (7 OF 7)

Scale: NTS



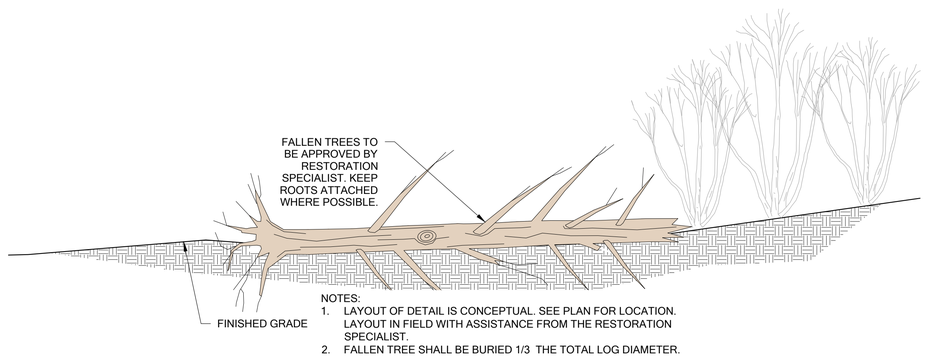
C TREE PROTECTION FENCING

Scale: NTS



B TREE TRUNK WRAP

Scale: NTS



D LARGE WOODY DEBRIS

Scale: NTS

NFC

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TREE INVENTORY TABLE 7 AND TREE PRESERVATION DETAILS

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SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W4.3 OF 14

PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN DWG

Exhibit 3



TESC NOTES - ALL AREAS

1. CONTRACTOR TO VERIFY TEMPORARY HIGH VISIBILITY FENCE IS INSTALLED AROUND THE LIMITS OF WORK PRE-CONSTRUCTION.
2. SEE SHEETS W4.0-4.3 FOR TREE PRESERVATION INFORMAITON.
3. SURVEY AND STAKE THE LIMITS OF WETLAND BUFFER ENHANCEMENT AREA PRE-CONSTRUCTION.
4. INSTALL SILT FENCE AND FIBER ROLL AS SHOWN ON THIS SHEET. MITIGATION CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS AS NEEDED TO ASSURE PROPER TESC MEASURES ARE IN-PLACE.

SOIL PREPARATION NOTES - WETLAND RESTORATION PLANTING AREAS

1. REMOVE ALL WOOD CHIPS PLACED IN WETLAND AND DISPOSE OF OFF-SITE. WOOD CHIP REMOVAL IS TO BE DONE WITHOUT MECHANIZED TOOLS.
2. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED IN INVASIVE SPECIES REMOVAL NOTES ON W5.1.
3. PLANT PER W7.0-W7.2.
4. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

SOIL PREPARATION NOTES - WETLAND BUFFER PLANTING AREAS

1. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED ON W5.1.
2. BACKFILL ANY DIVOTS WITH TOPSOIL TO RETURN TO EXISTING GRADE.
3. PLANT PER W7.0-7.2.
4. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR (WETLAND CREATION AREA)
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED COMBINED WETLAND/WATERCOURSE BUFFER (25 FT)
- WETLAND CREATION AREA (2,305 SF)
- WETLAND RESTORATION AREA (24,670 SF)
- BUFFER MITIGATION AREA (21,080 SF)
- FIBER ROLL (B / W5.1)
- SILT FENCE (A / W5.1)

TESC AND SITE PREPARATION PLAN

0 10' 20' 40' 80'

NFC

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MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W5.0 OF 14

PRINTED BY: RODEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3

INVASIVE SPECIES REMOVAL NOTES:

NOXIOUS WEED REMOVAL & CONTROL PROTOCOLS

NOTE:
1. ALL INVASIVE PLANTS TO BE DISPOSED OF OFF-SITE. NO INVASIVE SPECIES SHALL BE CHIPPED FOR REUSE AS MULCH.
2. THIS PLAN ADDRESSES INVASIVE SPECIES REMOVAL WITHIN CRITICAL AREAS AND BUFFERS. PRIOR TO PROJECT COMPLETION, ALL INVASIVE SPECIES ON THE PARCEL WILL BE REMOVED. 1

REMOVE REED CANARYGRASS:

1. DIG WITH HAND TOOLS ALL REED CANARYGRASS RHIZOMES FROM THE PLANTING AREA.
2. REED CANARYGRASS CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL RHIZOMES SHALL BE GRUBBED OUT. AROUND SIGNIFICANT VEGETATION TO REMAIN, REED CANARYGRASS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
3. AFTER REED CANARYGRASS HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
4. DISPOSE OF REMOVED MATERIAL OFF SITE AT A PROFESSIONAL FACILITY.

REMOVE HIMALAYAN/EVERGREEN BLACKBERRY:

1. CUT ABOVE GROUND PORTION OF BLACKBERRY AND REMOVE OFFSITE. ENSURE THAT NO NATIVE PLANTS ARE REMOVED.
2. CANES SHALL BE REMOVED FROM CANOPY OF TREES TO REMAIN TO THE EXTENT FEASIBLE AS DETERMINED BY THE RESTORATION SPECIALIST.
3. DIG UP OR PULL THE REMAINING ROOT BALL. ENSURE THAT NO NATIVE PLANT ROOTS ARE DAMAGED.
4. REPLACE ANY DIVOTS CREATED WHEN REMOVING THE PLANT WITH APPROVED TOPSOIL.
5. ALL CANES SHALL BE CUT BACK AND REMOVED WITHIN THE TEN (10) FEET ADJACENT TO THE PLANTING AREA, INCLUDING TREE CANOPY. CANES SHALL BE PULLED AND DISPOSED OF OFF-SITE.
6. REVEGETATE PER PLANTING PLAN. COVER WITH WOOD CHIP MULCH FOUR INCHES DEEP.
7. MONITOR SITE THROUGHOUT GROWING SEASON FOR EMERGING CANES AND GRUB OUT AND REMOVE ANY NEW PLANTS. CONTINUE TO CUT BACK CANES TEN (10) FEET FROM THE PLANTING AREA.

REMOVE ENGLISH IVY:

1. PHYSICALLY REMOVE ALL ENGLISH IVY VINES AND ROOTS FROM THE PLANTING AREA.
2. IF GROWING ON TREE TRUNKS, CUT VINES TO HEIGHT OF 4' OFF GROUND AND AROUND THE BASE OF EACH TREE, TO PREVENT THE IVY FROM GIRDLING. DO NOT PULL DOWN FROM TREE CROWNS. REMOVE STANDING VINES FROM THE LOWER 4' OF EVERY TREE TRUNK THAT CONTAINS ANY IVY.
3. IVY CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL ROOTS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
4. AFTER IVY HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
5. DISPOSE OF REMOVED MATERIAL PROPERLY OFF SITE.

REMOVE JAPANESE KNOT WEED:

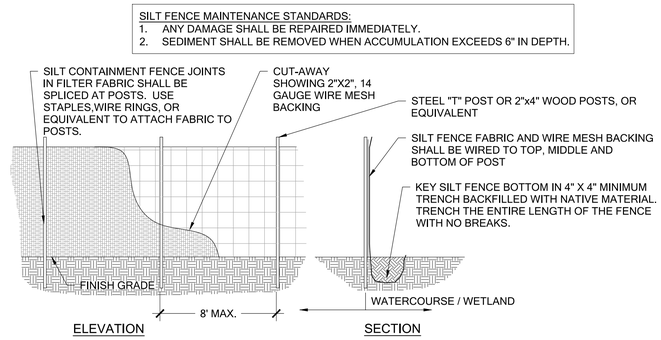
1. STAKE OUT INVASIVE CONTROL AREA AND VERIFY WITH RESTORATION SPECIALIST. INVASIVE PLANTS OTHER THAN KNOTWEED THAT IS NOT IN CONCENTRATED AREA ARE TO BE FLAGGED THROUGHOUT THE SITE AND THEN VERIFIED BY THE RESTORATION SPECIALIST FOR REMOVAL.
2. CUT STEMS CLOSE TO THE GROUND TWICE A MONTH OR MORE BETWEEN AT LEAST APRIL AND AUGUST, AND THEN ONCE A MONTH OR MORE UNTIL THE FIRST FROST, OVER 3-5 CONSECUTIVE YEARS. USE A MACHETE, LOPPERS, OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS.
3. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF OFF-SITE PROPERLY TO PREVENT RE-INFESTATION.
4. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD.
5. TO ERADICATE THE KNOTWEED, EITHER SMOTHER CANES AT START OF PROJECT AND ON A REGULAR BASIS DURING THE GROWING SEASON, OR CUT AND REMOVE VEGETATED GROWTH REGULARLY DURING THE GROWING SEASON TO DEPLETE ENERGY STORES IN THE PLANT.
6. MONITOR KNOTWEED INFESTATION AND REPEAT AS NEW STARTS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST.

REMOVE ENGLISH LAUREL:

1. SMALL PLANTS CAN BE DUG UP WHEN SOIL IS MOIST (USE PROPER PERSONAL PROTECTIVE EQUIPMENT WHEN HANDLING BECAUSE THIS PLANT MAY BE POISONOUS).
2. TO CONTROL LARGER PLANTS, CUT STEMS AND TRUNKS BY HAND OR CHAINSAW, CUTTING AS CLOSE TO THE GROUND AS POSSIBLE, AND REMOVE STEMS TO MAKE IT EASIER TO CONTROL RE-GROWTH. LEAVING STEMS ON MOIST GROUND MIGHT RESULT IN SOME STEM-ROOTING.
3. AFTER CUTTING, PLANTS ARE VERY LIKELY TO RE-GROW. DIG OUT STUMPS INCLUDING AS MUCH ROOT AS POSSIBLE. TO AVOID REGROWTH, STUMPS SHOULD BE TURNED UPSIDE DOWN AND SOIL SHOULD BE BRUSHED OFF ROOTS. IF THE STUMPS ARE DUG UP, BE SURE TO STABILIZE THE AREA TO PREVENT EROSION.

REMOVE OLD MAN'S BEARD

1. CUT VINES ON TREES OR FENCES AT ABOUT WAIST HEIGHT, FOLLOW THE VINE BACK TO THE ROOT AND DIG IT OUT. UPPER VINES CAN BE LEFT ON THE TREES SINCE THEY WILL DIE BACK, OR CAN BE REMOVED IF IT IS SAFE AND FEASIBLE TO DO SO.
2. MAKE SURE REMAINING VINES ARE NOT TOUCHING THE GROUND BECAUSE OLD MAN'S BEARD CAN FORM ROOTS AT STEM NODES
3. VINES GROWING ALONG THE GROUND SHOULD BE DUG UP AND REMOVED.
4. PULL SMALL PLANTS AND SEEDLINGS WHEN THE SOIL IS DAMP DURING WINTER OR SPRING. ALTHOUGH PLANTS CAN BE DUG UP YEAR ROUND, IT IS IDEAL TO DO SO DURING THE WINTER, WHEN MOST PLANTS ARE DORMANT, TO MINIMIZE DISTURBANCE TO THE SURROUNDING VEGETATION.



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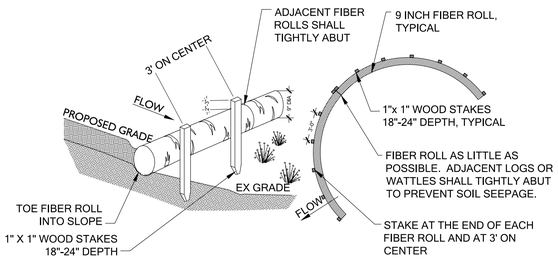
Scale: NTS



NOTES
1. FIBER ROLL SHALL BE INSTALLED PRIOR TO START OF WORK.
2. FIBER ROLL SHALL BE 9 INCH IN DIAMETER.
3. STAKING: WOODEN STAKES ARE RECOMMENDED TO SECURE THE FIBER ROLL. BE SURE TO USE A STAKE THAT IS LONG ENOUGH TO PROTRUDE SEVERAL INCHES ABOVE THE COIR LOG OR STRAW WATTLE: 18" IS A GOOD LENGTH FOR HARD, ROCKY SOIL; FOR SOFT LOAMY SOIL USE A 24" STAKE.
4. WHEN INSTALLING RUNNING LENGTHS OF FIBER ROLL, BUTT THE SECOND LOG TIGHTLY AGAINST THE FIRST; DO NOT OVERLAP THE ENDS.
5. STAKE THE FIBER ROLLS AT EACH END AND THREE (3) FEET ON CENTER. STAKES SHOULD BE DRIVEN OUTSIDE THE FIBER ROLL, BUT CLOSE ENOUGH TO HOLD IT IN PLACE. LEAVE 2 - 3 INCHES OF THE STAKE PROTRUDING ABOVE THE FIBER ROLL. A HEAVY SEDIMENT LOAD WILL TEND TO PICK UP THE FIBER ROLL AND COULD PULL IT OFF THE STAKES IF THEY ARE DRIVEN DOWN TOO LOW.
6. WHEN FIBER ROLL IS USED FOR FLAT GROUND APPLICATIONS, DRIVE THE STAKES STRAIGHT DOWN; WHEN INSTALLING FIBER ROLL ON SLOPES, DRIVE THE STAKES PERPENDICULAR TO THE SLOPE. DRIVE THE FIRST END STAKE OF THE SECOND FIBER ROLL AT AN ANGLE TOWARD THE FIRST FIBER ROLL IN ORDER TO HELP ABUT THEM TIGHTLY TOGETHER.

B FIBER ROLL

Scale: NTS

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TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES

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MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W5.1 OF 14

DATE 10/27/17 PRINTED BY LUCAS VANNICE FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- APPROX. LIMIT OF GRADING

PRELIMINARY GRADING SEQUENCE FOR WETLAND CREATION AREA

1. MECHANIZED EXCAVATION SHALL BE AVOIDED IN WETLAND AND STREAM.
2. REMOVE ROAD BED TO MATCH ADJACENT GRADES.
3. CONDUCT SUBSURFACE EVALUATION BY GEOTECHNICAL ENGINEER TO DETERMINE DEPTH OF ADDITIONAL ROAD BED EXCAVATION.
4. COMPLETE ROAD BED EXCAVATION PER GEOTECHNICAL ENGINEER RECOMMENDATIONS.
5. BACKFILL ROAD BED EXCAVATION AREA WITH APPROVED WETLAND SOILS TO ACHIEVE PROPOSED GRADES.
6. COMPLETE PROPOSED GRADING.

NOTES

1. SEE CIVIL ENGINEER PLANS FOR ALL GRADING PLANS OUTSIDE OF WETLAND CREATION AREA.
2. GRADING SHOWN IS CONCEPTUAL AND SUPERFICIAL IN NATURE. SUBSURFACE EVALUATION IS REQUIRED TO ASSESS DRAINAGE CONDITION.

WETLAND CREATION AREA GRADING PLAN

0 5' 10' 20' 40'

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Exhibit 3



LEGEND

EXISTING FEATURES
- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES
- 284 PROPOSED CONTOUR
- WETLAND/WATERCOURSE AREA BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- WETLAND CREATION PLANTING (2,305SF)
- WETLAND RESTORATION PLANTING (24,670 SF)
- BUFFER MITIGATION PLANTING (21,080 SF)

NOTES
1. SEE SHEET W7.1 FOR PLANTING SCHEDULE.

PLANTING PLAN

0 10' 20' 40' 80'

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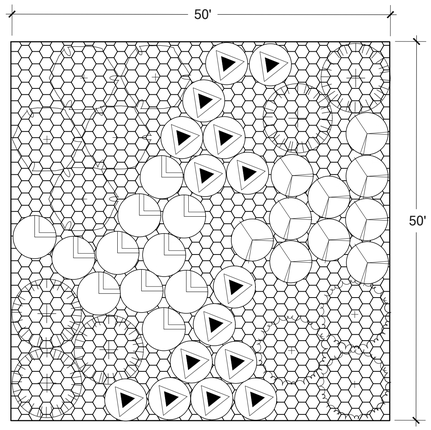
Exhibit 3

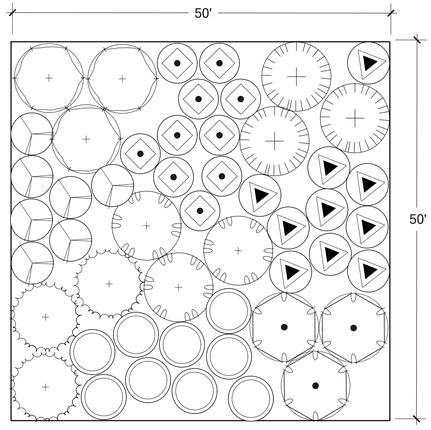
WETLAND CREATION CANDIDATE PLANT SCHEDULE (2,305 SF)

TREES*	QTY	SPACING	SIZE	NOTE
ALNUS RUBRA / RED ALDER	3	9' O.C.	2 GAL.	ALL PLANTS TO BE FULL AND WELL ROOTED
PICEA SITCHENSIS / SITKA SPRUCE	3	9' O.C.	2 GAL.	
THUJA PLICATA / WESTERN REDCEDAR	4	9' O.C.	2 GAL.	
SHRUBS				
CORNUS SERICEA / REDTWIG DOGWOD	10	6' O.C.	1 GAL.	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	10	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY	10	6' O.C.	1 GAL.	
GROUNDCOVER**				
**SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
CAREX OBNUPTA / SLOUGH SEDGE	165	24" O.C.	4" POT	
JUNCUS EFFUSUS/ SOFT RUSH	165	24" O.C.	4" POT	
SCIRPUS MICROCARPUS / SMALL-FRUITED BULRUSH	165	24" O.C.	4" POT	



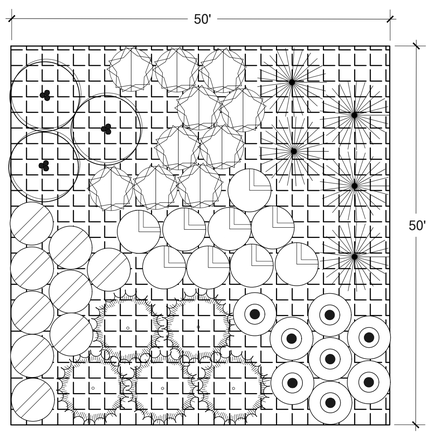
WETLAND RESTORATION CANDIDATE PLANT SCHEDULE (24,670 SF)

TREES*	QTY	SPACING	SIZE	NOTE
SALIX LUCIDA / PACIFIC WILLOW	31	9' O.C.	6' TALL	ALL PLANTS TO BE FULL AND WELL ROOTED
SALIX SITCHENSIS / SITKA WILLOW	30	9' O.C.	2 GAL.	
PICEA SITCHENSIS / SITKA SPRUCE	31	9' O.C.	6' TALL	
PRUNUS EMARGINATA / BITTER CHERRY	31	9' O.C.	6' TALL	
THUJA PLICATA / WESTERN REDCEDAR	31	9' O.C.	6' TALL	
SHRUBS				
CORNUS SERICEA / REDTWIG DOGWOOD	90	6' O.C.	1 GAL.	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	90	6' O.C.	1 GAL.	
ROSA PISOCARPA / CLUSTER ROSE	90	6' O.C.	1 GAL.	
SPIRAEA DOUGLASII / HARDHACK	90	6' O.C.	1 GAL.	



BUFFER MITIGATION CANDIDATE PLANT SCHEDULE (21,080 SF)

TREES*	QTY	SPACING	SIZE	NOTE
ACER MACROPHYLLUM / BIG-LEAF MAPLE	35	9' O.C.	2 GAL.	ALL PLANTS TO BE FULL AND WELL ROOTED
PSEUDOTSUGA MENZIESII / DOUGLAS-FIR	35	9' O.C.	2 GAL.	
TSUGA HETEROPHYLLA / WESTERN HEMLOCK	35	9' O.C.	2 GAL.	
SHRUBS				
OEMLERIA CERASIFORMIS / OSOBERRY	75	6' O.C.	1 GAL.	
SAMBUCUS RACEMOSA / RED ELDERBERRY	75	6' O.C.	1 GAL.	
CORYLUS CORNUTA / BEAKED HAZELNUT	75	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY	75	6' O.C.	1 GAL.	
GROUNDCOVER**				
**SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
FRAGARIA CHILOENSIS / COASTAL STRAWBERRY	600	3' O.C.	4" POT	
POLYSTICHUM MUNITUM / WESTERN SWORDFERN	600	3' O.C.	4" POT	
MAHONIA NERVOSA / LOW OREGON GRAPE	600	3' O.C.	4" POT	



TYPICAL PLANTING SCHEDULES

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SCALE ACCORDINGLY.

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Exhibit 3

PLANT INSTALLATION SPECIFICATIONS

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 SUN SCALD WILL BE REJECTED.
4. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO FLORA OF THE PACIFIC NORTHWEST BY HITCHCOCK AND CRONQUIST, UNIVERSITY OF WASHINGTON PRESS, 1973 AND/OR TO A FIELD GUIDE TO THE COMMON WETLAND PLANTS OF WESTERN WASHINGTON & NORTHWESTERN OREGON, ED. SARAH SPEAR COOKE, SEATTLE AUDUBON SOCIETY, 1997.

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 RESTORATION 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 RESTORATION 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 RESTORATION CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH. AFTER INSPECTION AND ACCEPTANCE, THE RESTORATION 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.

MEASUREMENT 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.

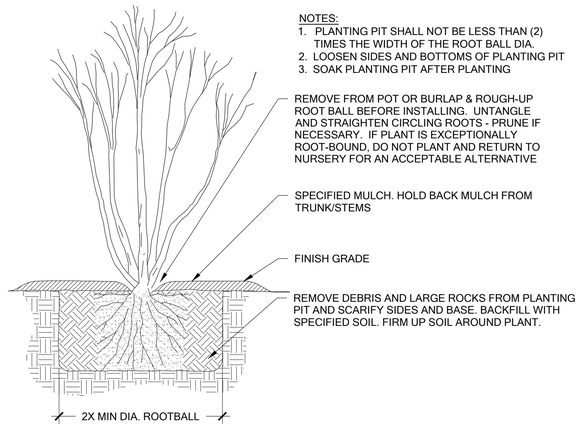
REPLACEMENT
1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

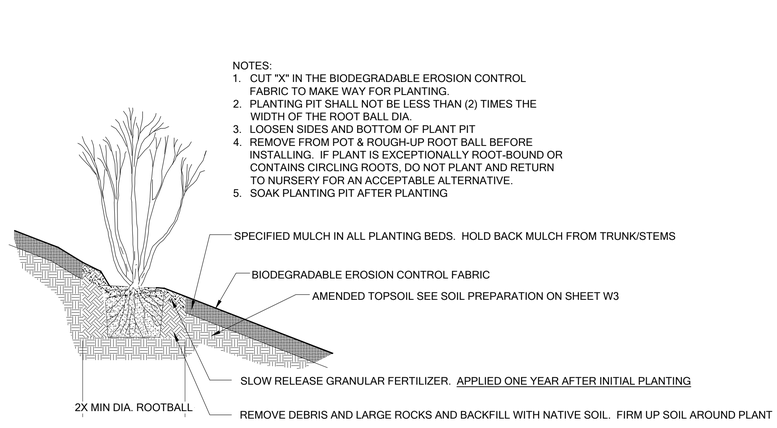
GENERAL
1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS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

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.

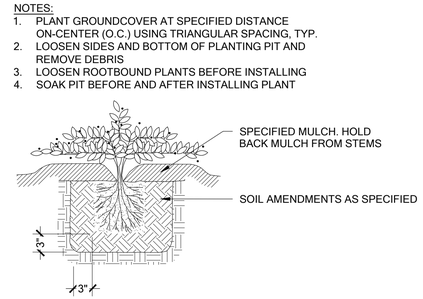
ROOT TREATMENT
1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.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



A TREE AND SHRUB PLANTING
Scale: NTS



B TREE AND SHRUB PLANTING ON A SLOPE
Scale: NTS



C GROUNDCOVER PLANTING
Scale: NTS

PLANT INSTALLATION DETAILS AND NOTES

NFC
NOT FOR CONSTRUCTION

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Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W7.2 OF 14

FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN DWG
PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17

Exhibit 3

MITIGATION / RESTORATION SPECIFICATIONS

PROJECT SUMMARY

THIS PLAN HAS BEEN PREPARED 1) TO RESTORE PREVIOUSLY ALTERED AREAS SUBJECT TO A NOTICE OF CORRECTION AND 2) TO MITIGATE WETLAND AND WATERCOURSE BUFFER IMPACTS ASSOCIATED WITH THE PROPOSED SUBDIVISION.

THE NOTICE OF CORRECTION INDICATED THAT FILL MATERIAL SUCH AS WOOD CHIPS HAD BEEN PLACED ON THE SUBJECT PROPERTY, AND THAT TREES AND SHRUBBY VEGETATION HAVE BEEN CLEARED OVER TIME. THE AREA SUBJECT TO THE NOTICE OF CORRECTION APPEARS TO HAVE BEEN APPLIED TO APPROXIMATELY 12,748 SQUARE FEET OF THE SUBJECT PROPERTY. RESTORATION OF THE AREA SUBJECT TO THE NOTICE OF CORRECTION INCLUDES REMOVAL OF THE WOOD CHIPS AND NON-NATIVE AND INVASIVE PLANT SPECIES, AND THE INSTALLATION OF A NATIVE TREE, SHRUB AND GROUNDCOVER PLANT COMMUNITY.

THE PROJECT PROPOSES BUFFER REDUCTION WITH ENHANCEMENT IN AREAS ADJACENT TO THE PROPOSED RESIDENTIAL DEVELOPMENT. ENHANCEMENT OF THE EXISTING DEGRADED BUFFER AREAS WILL INCLUDE THE REMOVAL OF NON-NATIVE AND INVASIVE SPECIES, AND THE INSTALLATION OF A NATIVE TREE, SHRUB AND GROUNDCOVER PLANT COMMUNITY.

THE PROPOSED BUFFER REDUCTION INCLUDES 1,988 SQUARE FEET OF WETLAND AS BUFFER. TO MITIGATE FOR THE WETLAND AS BUFFER, THE CREATION OF 2,305 SQUARE FEET OF WETLAND IS PROPOSED. THE WETLAND CREATION AREA WILL BE PLANTED WITH A NATIVE TREE, SHRUB AND EMERGENT PLANT COMMUNITY.

WORK SEQUENCE (SEE MATERIALS SECTION FOR MATERIAL INFORMATION)

A RESTORATION SPECIALIST SHALL MAKE SITE VISITS TO VERIFY THE FOLLOWING PROJECT MILESTONES:

1. BEFORE BEGINNING CONSTRUCTION WORK, ESTABLISH AND DEFINE THE WORK AREA. IDENTIFY AND DEMARCATE THE LIMITS OF PROJECT GRADING AND CLEARING WITH HIGH VISIBILITY FENCING OR SIMILAR MEANS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES AS IDENTIFIED ON THE TESC PLANS.
3. CLEAR AND GRUB THE MITIGATION AND RESTORATION AREAS. CLEARING AND GRUBBING IN WETLAND AND WATERCOURSE AREAS TO BE PERFORMED USING HAND TOOLS ONLY. INVASIVE SPECIES AREA TO BE REMOVED FROM ENTIRE SITE.
4. REMOVE PREVIOUSLY PLACED WOOD CHIPS FROM VIOLATION AREA. REMOVAL TO BE PERFORMED USING HAND TOOLS ONLY.
5. SURVEY AND PAINT PROPOSED 1-FOOT CONTOURS AND STAKE CUT/FILL DEPTHS WITHIN THE WETLAND CREATION AREA BASED ON THE APPROVED PLAN SET.
6. EXCAVATE AS NECESSARY TO TIE INTO THE SURROUNDING GRADE AND CREATE WETLAND TOPOGRAPHY. ALL EXCAVATED MATERIAL NOT NEEDED FOR RE-USE IS TO BE DISPOSED OF OFFSITE. OVER-EXCAVATION MAY BE RECOMMENDED TO ACCOMMODATE THE PLACEMENT OF TOPSOIL AND/OR COMPOST AMENDMENTS. EQUIPMENT USED TO CONDUCT EXCAVATION WOULD LIKELY INCLUDE TRACKED EXCAVATORS AND DUMP TRUCKS.
7. UNDER THE DIRECTION OF THE RESTORATION SPECIALIST, PERFORM FINISHING TOUCHES ON THE WETLAND AND RESTORATION AREAS. COMPLETE ANY ADDITIONAL TOUCH-UP WORK AS DIRECTED.
8. PRIOR TO FINISH GRADING, THE RESTORATION SPECIALIST SHALL INSPECT THE SOIL CONDITION AND DETERMINE IF SOIL AMENDMENTS OTHER THAN COMPOST ARE NECESSARY.
9. INCORPORATE 5 INCHES OF COMPOST INTO THE FINISH GRADE OF THE WETLAND CREATION AREA. SEE SHEET W3 FOR SOIL PREPARATION NOTES.
10. INCORPORATE 3 INCHES OF COMPOST INTO THE FINISH GRADE OF THE BUFFER AREAS, INCLUDING THE RESTORED PORTION OF THE CONSTRUCTION ACCESS AREAS. SEE SHEET W3 FOR SOIL PREPARATION NOTES.
11. LAYOUT PLANTS PER SEQ W7
12. INSTALL NATIVE PLANTS PER PLANTING DETAILS ON SHEET W8.
    A. NATIVE PLANT INSTALLATION SHALL OCCUR DURING THE DORMANT SEASON (OCTOBER 15TH THROUGH MARCH 1ST) IN FROST-FREE PERIODS ONLY.
    B. LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE RESTORATION SPECIALIST. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE RESTORATION SPECIALIST.
    C. INSTALL PLANTS PER PLANTING DETAILS
13. WATER EACH PLANT THOROUGHLY TO REMOVE AIR POCKETS.
14. INSTALL A TEMPORARY IRRIGATION SYSTEM CAPABLE OF SUPPLYING AT LEAST 1-INCH OF WATER PER WEEK TO THE ENTIRE PLANTED AREA OUTSIDE WETLAND DURING THE DRY SEASON (JUNE 1ST THROUGH SEPTEMBER 30TH).
15. ONE YEAR AFTER INITIAL PLANTING, APPLY A SLOW-RELEASE, PHOSPHOROUS-FREE, GRANULAR FERTILIZER TO EACH INSTALLED PLANT.
16. PLANT GROUNDCOVERS IN WETLAND RESTORATION AREA IN YEAR 3 AFTER INVASIVE PLANTS HAVE BEEN SUCCESSFULLY MANAGED.

MAINTENANCE

THE SITE SHALL BE MAINTAINED FOR FIVE YEARS FOLLOWING SUCCESSFUL INSTALLATION.

1. REPLACE EACH PLANT FOUND DEAD IN THE SUMMER MONITORING VISITS IN THE FOLLOWING DORMANT SEASON (OCTOBER 15 - MARCH 1). REPLACEMENT SHALL BE OF THE SAME SPECIES AND SIZE PER PLAN UNLESS OTHERWISE APPROVED BY THE RESTORATION SPECIALIST.
2. GENERAL WEEDING FOR ALL PLANTED AREAS
    A. AT LEAST TWICE ANNUALLY, REMOVE COMPETING GRASSES AND WEEDS FROM AROUND THE BASE OF EACH INSTALLED PLANT TO A RADIUS OF 12 INCHES. WEEDING SHOULD OCCUR AT LEAST ONCE IN THE SPRING AND ONCE IN THE SUMMER. THOROUGH WEEDING WILL RESULT IN LOWER PLANT MORTALITY AND ASSOCIATED PLANT REPLACEMENT COSTS.
    B. MORE FREQUENT WEEDING MAY BE NECESSARY DEPENDING ON WEED CONDITIONS THAT DEVELOP AFTER PLANT INSTALLATION.
    C. NOXIOUS WEEDS MUST BE REMOVED FROM THE ENTIRE MITIGATION AREA, AT LEAST TWICE ANNUALLY.
    D. DO NOT USE STRING TRIMMERS IN THE VICINITY OF INSTALLED PLANTS, AS THEY MAY DAMAGE OR KILL THE PLANTS.
3. MAINTAIN A FOUR-INCH-THICK LAYER OF WOODCHIP MULCH ACROSS THE ENTIRE BUFFER MITIGATION PLANTING AREA. MULCH SHOULD BE PULLED BACK TWO INCHES FROM THE PLANT STEMS. 4. INSPECT AND REPAIR THE IRRIGATION SYSTEM AS NECESSARY EACH SPRING. DURING AT LEAST THE FIRST TWO GROWING SEASONS, MAKE SURE THAT THE ENTIRE PLANTING AREA RECEIVES A MINIMUM OF ONE INCH OF WATER PER WEEK FROM JUNE 1ST THROUGH SEPTEMBER 30TH.

GOALS

1. RESTORE 24,670 SQUARE FEET OF DEGRADED WETLAND AREA.
    A. CREATE A DENSE, NATIVE TREE AND SHRUB COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE WETLAND RESTORATION AREA.
2. ENHANCE 21,080 SQUARE FEET OF DEGRADED BUFFER AREA.
    A. CREATE A DENSE, NATIVE TREE AND SHRUB COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE ENTIRE SITE.
3. CREATE 2,303 SQUARE FEET OF ADDITIONAL WETLAND AREA.
    A. CREATE A DENSE, NATIVE SHRUB AND EMERGENT COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE WETLAND CREATION AREA.
4. RE-ESTABLISH HISTORIC STREAM/WETLAND CONDITIONS BY DAYLIGHTING PIPED WATERCOURSE AND REMOVING DRIVEWAY.

PERFORMANCE STANDARDS

THE FOLLOWING PERFORMANCE STANDARDS WILL BE USED TO GAUGE THE SUCCESS OF THE PROJECT OVER TIME. IF ALL PERFORMANCE STANDARDS HAVE BEEN SATISFIED BY THE END OF YEAR FIVE, THE PROJECT SHALL BE CONSIDERED COMPLETE AND THE CITY OF MERCER ISLAND SHALL RELEASE THE PERFORMANCE BOND (IF REQUIRED).

1. SURVIVAL:
    A. ACHIEVE 100% SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1.
    B. ACHIEVE 80% SURVIVAL OF INSTALLED WOODY PLANTS BY THE END OF YEAR 2.

    THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2. COVER:
    A. ACHIEVE 60% COVER OF NATIVE TREES AND SHRUBS BY YEAR 3 WITHIN PLANTED WETLAND AND BUFFER AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
    B. ACHIEVE 10% COVER OF NATIVE EMERGENT PLANTS WITHIN THE CREATED WETLAND AREA BY YEAR 3.
    C. ACHIEVE 80% COVER OF NATIVE TREES AND SHRUBS BY YEAR 5 WITHIN PLANTED WETLAND AND BUFFER AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
    D. ACHIEVE 30% COVER OF NATIVE EMERGENT PLANTS WITHIN WETLAND AREAS BY YEAR 5.
3. DIVERSITY:
    A. ESTABLISH AT LEAST THREE NATIVE TREE SPECIES, FIVE NATIVE SHRUB SPECIES, AND TWO NATIVE GROUNDCOVERS WITHIN THE WETLAND RESTORATION AND BUFFER MITIGATION AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD.
    B. ESTABLISH AT LEAST TWO NATIVE TREE SPECIES, THREE NATIVE SHRUB SPECIES, AND TWO NATIVE GROUNDCOVERS WITHIN THE WETLAND CREATION AREA.

    ESTABLISHMENT IS DEFINED AS FIVE OR MORE INDIVIDUAL PLANTS OF THE SAME SPECIES ALIVE AND HEALTHY.
4. INVASIVE COVER: NO MORE THAN 10% COVER BY INVASIVE WEED SPECIES WITHIN ALL PLANTED AREAS IN ANY MONITORING YEAR.
5. HYDROLOGY STANDARD (WETLAND CREATION AREA ONLY):
    A. EVIDENCE OF WETLAND HYDROLOGY IN THE WETLAND CREATION AREA. SOIL SATURATION WITHIN THE UPPER 12 INCHES OF THE SOIL SURFACE, PRESENT FOR TWO CONSECUTIVE WEEKS DURING THE GROWING SEASON (MARCH 1ST TO OCTOBER 15TH) DURING EACH MONITORING YEAR AS MEASURED PER THE PROTOCOL IN THE MONITORING METHODS SECTION, BELOW.
6. HYDRIC SOIL STANDARD (WETLAND CREATION AREA ONLY):
    A. HYDRIC SOILS WILL BE ASSUMED PRESENT IF THE HYDROLOGY STANDARD IS MET.

MONITORING

PRIOR TO THE COMMENCEMENT OF THE MONITORING PHASE, AN AS-BUILT PLAN DOCUMENTING THE SUCCESSFUL INSTALLATION OF THE PROJECT WILL BE SUBMITTED TO THE CITY OF MERCER ISLAND. IF NECESSARY, THE AS-BUILT REPORT MAY INCLUDE A MARK-UP OF THE ORIGINAL PLAN THAT NOTES ANY SIGNIFICANT CHANGES OR SUBSTITUTIONS THAT OCCURRED. DURING THE AS-BUILT INSPECTION, THE RESTORATION SPECIALIST WILL ESTABLISH AT LEAST FOUR PERMANENT PHOTO-POINTS.

DURING THE AS-BUILT INSPECTION, THE RESTORATION SPECIALIST SHALL INSTALL AT LEAST TWO REPRESENTATIVELY LOCATED SHALLOW GROUNDWATER WELLS IN THE WETLAND CREATION AREA. GROUNDWATER WELLS SHALL BE INSTALLED TO A MINIMUM DEPTH OF 24 INCHES. WELLS TO BE CONSTRUCTED OF 2-INCH DIAMETER PVC PIPE WITH CAPS. BELOW GROUND PORTIONS ARE TO BE PERFORATED WITH ¼" HOLES SPACED NO FARTHER THAN ½" APART. ALTERNATIVELY, AUTOMATED GROUNDWATER MONITORING DATA LOGGING DEVICES MAY BE USED IN-LIEU OF MANUALLY MONITORED WELLS.

THE SITE WILL BE MONITORED TWICE ANNUALLY FOR FIVE YEARS BEGINNING WITH APPROVAL OF THE AS-BUILT REPORT. EACH SPRING THE RESTORATION SPECIALIST WILL CONDUCT A BRIEF MAINTENANCE INSPECTION FOLLOWED BY A MEMO SUMMARIZING MAINTENANCE ITEMS NECESSARY FOR THE UPCOMING GROWING SEASON. THE FORMAL LATE-SEASON MONITORING INSPECTION WILL TAKE PLACE ONCE ANNUALLY DURING LATE SUMMER OR EARLY FALL. DURING EACH LATE-SEASON MONITORING INSPECTION, THE FOLLOWING DATA WILL BE COLLECTED:

1. PERCENT SURVIVAL OF ALL INSTALLED PLANTINGS, INCLUDING SPECIES SPECIFIC COUNTS OF INSTALLED TREE AND SHRUB PLANTINGS (NOTE: GROUNDCOVER PLANTS COUNTED IN YEAR-1 ONLY, FOR WARRANTY PURPOSES).
2. NATIVE WOODY COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
3. NATIVE GROUNDCOVER PLANT COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
4. ESTIMATES OF INVASIVE HERBACEOUS PLANTS OR GROUNDCOVER USING VISUAL COVER ESTIMATES.
5. THE SPECIES COMPOSITION, NOTING WHETHER A SPECIES IS NATIVE OR EXOTIC AND WHETHER PLANTS WERE INSTALLED OR ARE VOLUNTEERS.
6. THE GENERAL HEALTH AND VIGOR OF THE INSTALLED VEGETATION.
7. PHOTOGRAPHS FROM FIXED PHOTO-POINTS ESTABLISHED DURING THE AS-BUILT INSPECTION.
8. ANY EVIDENCE OF WILDLIFE USAGE.
9. DEPTH OF GROUNDWATER BELOW THE SOIL SURFACE SHALL BE RECORDED AT ESTABLISHED WELLS IN THE WETLAND CREATION AREA.

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY TO THE CITY. REPORTS SHALL DOCUMENT THE CONDITIONS OF THE SITE, INCLUDING QUANTITATIVE DATA COLLECTED DURING THE MONITORING INSPECTION, AND SHALL PROVIDE MAINTENANCE RECOMMENDATIONS THAT MAY BE NECESSARY TO HELP THE SITE ACHIEVE THE STATED PERFORMANCE STANDARDS.

CONTINGENCY PLAN

IF ANY MONITORING REPORT REVEALS THAT THE RESTORATION PLAN HAS FAILED IN WHOLE OR IN PART, AND SHOULD THAT FAILURE BE BEYOND THE SCOPE OF ROUTINE MAINTENANCE, THE APPLICANT WILL SUBMIT A CONTINGENCY PLAN TO THE CITY OF MERCER ISLAND FOR APPROVAL. THIS PLAN MAY INCLUDE REPLANTING, SOIL AMENDMENTS OR TOPDRESSING, SUBSTITUTIONS FOR SPECIES SELECTED IN THE ORIGINAL PLAN, AND ADAPTIVE WEED CONTROL METHODS.

MATERIALS

1. WOODCHIP MULCH: "ARBORIST CHIPS" (CHIPPED WOODY MATERIAL) APPROXIMATELY ONE TO THREE INCHES IN MAXIMUM DIMENSION (NOT SAWDUST). THIS MATERIAL IS COMMONLY AVAILABLE IN LARGE QUANTITIES FROM ARBORISTS OR TREE-PRUNING COMPANIES. 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. APPROX. QUANTITY REQUIRED: 60 CUBIC YARDS.
2. COMPOST: CEDAR GROVE COMPOST OR EQUIVALENT "COMPOSTED MATERIAL" PER WASHINGTON ADMIN. CODE 173-350-220. QUANTITY REQUIRED: 35 CUBIC YARDS
3. FERTILIZER: SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. MOST COMMERCIAL NURSERIES CARRY THIS PRODUCT. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.
4. RESTORATION SPECIALIST: QUALIFIED PROFESSIONAL ABLE TO EVALUATE AND MONITOR THE CONSTRUCTION OF ENVIRONMENTAL RESTORATION PROJECTS.
5. FERTILIZER (FOR NEAR AQUATIC ENVIRONMENTS): SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. LABEL MUST INDICATE THAT PRODUCT IS SAFE FOR AQUATIC ENVIRONMENTS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.

NFC

NOT FOR CONSTRUCTION

MITIGATION AND RESTORATION NOTES

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SCALE ACCORDINGLY.

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CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W8.0 OF 14

DATE 10/27/17 | PRINTED BY ROEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 3

PUBLIC NOTICE OF APPLICATION

NOTICE IS HEREBY GIVEN that the City of Mercer Island has received the application described below:

File Nos.:	SUB17-015, CAO17-015, and SEP17-026
Description of Request:	Application to subdivide one existing lot into 5 lots and to alter the wetland on site and reduce the wetland buffer. The proposed lots will take access from one private street connecting to Island Crest Way near the location of the northmost existing driveway.
Applicant:	Jayson Taylor
Owner:	Alan Chiu
Location of Property:	4320 and 4332 Island Crest Way, Mercer Island, WA, 98040; Identified by King County Assessor tax parcel number: 182405-9031
SEPA Compliance:	Following review of the submitted State Environmental Policy Act (SEPA) checklist, an initial evaluation of the proposed project for probable significant adverse environmental impacts has been conducted. The City expects to issue a SEPA Determination of Non-Significance (DNS) for this project. The optional DNS process, as specified in Washington Administrative Code (WAC) 197-11-355, is being used. This may be your only opportunity to comment on the environmental impacts of the proposal. The proposal may include mitigation measures under applicable codes, and the project review process may incorporate or require mitigation measures regardless of whether an Environmental Impact Statement (EIS) is prepared. A copy of the subsequent threshold determination for this specific proposal may be obtained upon request.
Project Documents:	Please follow this file path to access the associated documents for this project: https://mieplan.mercergov.org/public/SUB17-015/
Written Comments:	**This may be the only opportunity to comment on the environmental impacts of the proposal.** Written comments on this proposal may be submitted to the City of Mercer Island either by email, in person, or by mail to the City of Mercer Island, 9611 SE 36th Street, Mercer Island, WA 98040-3732. Anyone may comment on the application, receive notice, and request a copy of the decision once made. Only those persons who

	submit written comments or participate at the public hearing (if a hearing is required) will be parties of record; and only parties of record will have the right to appeal.
Public Hearing and Public Meeting:	Pursuant to MICC 19.08.020(F)(3), MICC 19.15.010(E), and MICC 19.15.020(F)(1), the applicant is required to participate in both an open record public hearing in front of the Hearing Examiner and a subsequent public meeting with the City Council. The public hearing and the public meeting are not scheduled at this time. Once scheduled, public notice for the hearing will be provided at least 30 days in advance of the hearing, in accordance with MICC 19.15.020(E)(2).
Applicable Development Regulations:	Applications for Long Subdivisions are required to be processed as Discretionary Action pursuant to Mercer Island City Code (MICC) 19.15.010(E). Applications for Critical Area Determinations are required to be processed as Administrative Actions pursuant to MICC 19.15.010(E). Processing requirements for a Discretionary Action are further detailed in MICC 19.15.020.
Other Associated Permits:	Future site development and building permits are anticipated.
Environmental Documents:	A copy of all studies and / or environmental documents is available through the above project documents link.
Application Process Information:	Date of Application: October 31, 2017 Determined to Be Complete: November 27, 2017 Bulletin Notice: December 4, 2017 Date Mailed: December 4, 2017 Date Posted on Site: December 4, 2017 Comment Period Ends: 5:00PM on January 3, 2018

The project is available for review at the City of Mercer Island, Development Services Group, 9611 SE 36th Street, Mercer Island, Washington.

Project Contact:
Robin Proebsting, Senior Planner
Development Services Group
City of Mercer Island
9611 SE 36th Street
Mercer Island, WA 98040
(206) 275-7717
robin.proebsting@mercergov.org

PROJECT NARRATIVE

4320 Island Crest Way Subdivision

Jayson Taylor
Jayson.m.taylor@gmail.com

10/31/2017

Exhibit 5a

Contents

Project Overview 2
Subdivision and Lot Layout 3
Critical Areas 4
Tree Preservation 5
Access & Grading 5
Stormwater Management 6
Sewer and Water Utilities 6

Project Overview

The 4320 Island Crest Way project is a 5 lot single family residential subdivision located Mid-Island on the east side of Island Crest Way. This property is zoned R-9.6 and is approximately 72,900 sq. ft. in size. Figure 1 shows the project location.



Figure 1: Vicinity Map

Major portions of the lot are designated as type 3 wetlands, see Figure 2, and a watercourse divides the lot flowing from east to west. Specific mitigation techniques will be used for buffer reductions, wetland alterations, and a previous correction notice relating to unauthorized fill and tree removal. While the critical areas are proposed to be part of individual lots, they will be restricted under a native growth protection easement.

The existing parcel has two single family residences, each with an access point from the arterial. Both existing access points from Island crest way will be removed, and a single 20 ft private access road will be added to support the proposed development in the northwest corner of the lot.

Utilities will be installed to serve the new development, including sewer, water, power, gas, and communications. A detention system will be installed to collect, treat, and control discharge of stormwater for the impervious areas proposed as part of this project.



Figure 2: Wetland and Watercourse Delineation Sketch

Subdivision and Lot Layout

The subdivision will create 5 new single family lots in the R9.6 Zone of Mercer Island. The Minimum lot size, width, and depth, are 9600 sf, 75 ft, 80 ft respectively. The project proposes to be evaluated under the Optional Standards for Development per 19.08.030 (G) which would allow for a reduction to 75% of the lot size, width, and depth requirements. This corresponds to a minimum lot size, width, and depth of 7200 sf, 56.25 ft, and 60 ft respectively. The proposed lot sizes are 8,971 sf, 10,864 sf, 8993 sf, 7,762 sf, and 34,934 sf. To meet the conditions of the optional standards, the project will forgo the development the of the south end of the lot and provide a recreational tract. This will also allow for a full width wetland buffer and the protection of all trees on the southern half of the lot. The recreational tract will contain 1,344 sq. ft. of wooded area. Access to the tract will be from the sidewalk on Island Crest Way. There will be a split rail fence separating the tract from the wetland buffer with a metal sign showing the wetland designation. The tract will be landscaped to provide a visual barrier from island crest way, and a picnic table will be installed for the use of the property owners. Ownership and maintenance costs will be shared equally by the 5 properties.

Per the city code, front and rear setbacks are 20 ft and 25 ft respectively. Both side yards add up 15 ft with a minimum side yard of 5 ft and a 10 ft yard abutting a street. Building pads shown are a minimum of 3 ft from the edge of wetland buffers. All critical areas will be protected with fencing to prevent disturbance from construction activities.

The lots are generally rectangular except for lot 1. This lot took on a flag shape to maintain its required lot size without impinging on the surrounding lots. This also provided that all lot owners have a stake in maintaining the critical areas. Precedent for a unique lot shape can be found in many of the short and long plats approved by The City of Mercer Island during the last decade. The following list provides the Mercer Island subdivision number, date approved by the City of Mercer Island, and apparent reason of employing a unique lot shape.

Number	Date	Shape/Reasoning
SUB 08-009	02-08-11	Flag lot used to provide access to waterfront in 2 lot short subdivision
SUB 13-006	03-31-14	T and L lots used to provide for an extra lot where lot width requirements wouldn't otherwise allow in a 3 lot short subdivision
SUB 06-007	09-05-07	Unique lot line jogging to maintain an existing house in 2 lot short subdivision
SUB 06-011	01-23-08	L shaped lot used to provide a minimum required area for a single lot in a 5 lot long subdivision
SUB 07-003	09-27-07	T-shaped lot used to contain all excess lot area in a 4 lot short subdivision
SUB 13-013	02-10-16	Flag lot used for access in a 2 lot short subdivision
SUB 14-005	09-08-15	L-shape used to even out areas in a 2 lot short subdivision

Many of these subdivisions either have a similar lot shape or similar reason as in the condition of Lot 1 of our proposed subdivision. We expect that because the city has recently approved of these lots, we too can employ a similar configuration.

Critical Areas

Much of the subject lot is covered in critical areas. There are 3 delineated wetlands and a watercourse on the lot. Much of the eastern side of the lot is covered by a larger depressional wetland. The watercourse originates in this wetland and flows westward through a culvert until it reaches the smaller depressional wetland. The watercourse continues west and enters a riverine wetland then exits the lot through culvert under Island Crest way. The wetlands all classify as type 3 and have a standard 50 ft buffer and a minimum 25 ft buffer. The standard buffer on the watercourse varies from 25 ft – 50 ft, but also has the same 25 ft minimum buffer. Refer to the Wetland and Watercourses Delineation Report prepared by The Watershed Company dated May 31, 2017.

The project proposes to use the 25 ft minimum butter with enhancement adjacent to the development on the north end of the lot. Alterations to wetland boundaries are also proposed per 19.07.080 (D) to provide a suitable area for development. Mitigation for each of these items will be treated separately. Wetland buffers will be enhanced to allow for the minimum, and on-site mitigation for wetland alterations will be provided with added wetland of equivalent or greater function. All critical areas and their buffers will be restricted under a native growth protection easement.

In addition, this project will respond to a notice of correction sent by the city dated August 10, 2016. Woodchips and other fill had been dumped in the wetland area over time, and multiple trees had been removed in the critical area. The subdivision project will bring the property into conformance by restoring the wetland, and the replacement of removed trees.

Refer to the Critical Area Report provided by The Watershed Company for specifics on the mitigation efforts and how these plans represent no net-loss of wetland function.

Tree Preservation

27 trees are proposed to be removed as part of the development of the property. With there being over 150 trees currently on the lot, this represents less than a 20% removal. 16 of these trees would be removed during the construction of the subdivision. All trees to be removed will be mitigated with additional planting in the critical areas during the subdivision process.

Efforts were made preserve as many trees as was feasible. Revised grading allowed for the retention of a cluster of 5 trees in the northwest corner of the lot. Also, many trees will be preserved because we are forgoing the option to develop the south end of the lot. The south end of the lot will consist of a recreational tract and conservation easements. Refer to the Arborist report prepared by The Watershed Company for additional details on tree preservation.

Access & Grading

Access to the proposed subdivision will be provided at a single new location from Island Crest way. While there are 2 existing entrances to the property, both will be removed as part of the subdivision. The 20 ft wide private access road is shown as an easement over the proposed lots. The road tapers down to a 16’ width to provide access to lot 5. The road also tapers to 18’ as it extends north to provide access to Lots 1 and 2. Corners of the road are radiused per City code.

Significant grading will be required to bring in access to the proposed lots. Our current estimate indicates 300 cubic yards of soil removal. The proposed grading allows for a gradually sloped entrance, and provides the required clearing to achieve clear sight lines looking north and south.

Stopping sight distance (SSD) requirements are met by the proposed private road location on Island Crest Way. Intersection sight distance (ISD) is acceptable assuming clearing and grading. The ISD looking north will meet or exceed the AASHTO requirements. The ISD looking south does not meet the AASHTO standard. The required ISD is 470 ft while the proposed ISD will be 404 ft. The transportation engineering consultant for the project, TENW, deemed the ISD to be satisfactory considering the fact that a majority of the traffic from the proposed development will be turning right onto island crest way. Refer to the Memorandum provided by TENW dated August 22, 2017 for additional information regarding sight distance and trip generation.

Stormwater Management

A collective stormwater system will be provided for all the impervious surfaces in the subdivision. A detention vault will be constructed between lots 1 and 2. The vault will discharge to the wetland south of lot 3 at a controlled rate. Refer to the drainage report provided by CHS Engineers.

Sewer and Water Utilities

Sewer and water mains exist on the east side of Island Crest Way. New water and sewer lines will connect to these existing mains. All lots will be serviced by gravity sewer connections. The water line sizing will be determined based on the required pressure for sprinkler systems.

Shared utilities will be located within the private access road or in a 5 ft. easement on either side of the road.

April 25, 2018

Robin Proebsting, Senior Planner
City of Mercer Island Development Services Group
robin.proebsting@mercergov.org

RE: SUB17-015 Request for Information 1

Robin,

See below for our project team's responses to the City comments dated January 25, 2018. The City comments are repeated below and are italicized. Our responses follow in standard text.

Planning:

1. *Please indicate whether the proposed subdivision is consistent with the transportation, capital facilities, and land use elements of the comprehensive plan. Reference information available in the City's comprehensive plan, available online at: http://www.codepublishing.com/WA/MercerIsland/#!/MercerIslandCompPlan/MercerIslandCompPlan00.html*

Response: MICC 19.08.030(A) states the proposed subdivision shall comply with arterial, capital facility, and land use elements of the Comprehensive Plan. The proposed subdivision is consistent with the transportation, capital facilities, and land use elements of the Comprehensive Plan per MICC 19.08.030(A) and as detailed below:

Transportation Element:

Goal 6.2 of the Transportation Element of the comprehensive plan applies to our project. It states: "Develop strategies to manage property access along arterial streets in order to preserve their function."

The project site gains access from Island Crest Way, which is classified by the Comprehensive Plan as a secondary arterial. To comply with this goal, the project has oriented rear or side portions of the lots to abut the arterial and provided for internal access streets. This reduces the number of access points on Island Crest Way and thus manages the property access on the arterial street, Island Crest Way.

Capital Facilities Element:

The Mercer Island Comprehensive Plan states: "Fortunately, Mercer Island has already acquired and/or built most of the facilities needed to meet its LOS goals (e.g. parks acreage, recreational facilities, water and sewer system capacity, street system capacity, police, fire and administration buildings). As a result, while a few "LOS deficiencies" must be addressed over the next twenty years (open space, new trail construction, some street capacity improvements), most capital financing projections for Mercer Island involve reinvesting in and maintaining existing assets."

The Comprehensive Plan provides the Capital Facility standards for the City. Figure 1 of the Capital Facilities Element shows current and future capital facilities. The project site is not designated as either a current or future capital facility, and therefore the capital facility elements of the Comprehensive Plan do not apply to the proposed subdivision.

Land Use Element:

Goal 16.2 of the Land Use Element states: "Through zoning and land use regulations provide adequate development capacity to accommodate Mercer Island's projected share of the King County population growth over the next 20 years."

This project adds capacity to Mercer Island's housing inventory. It replaces a single home with an ADU with 5 single family homes. The proposed subdivision is consistent with the Comprehensive Plan in providing development capacity to accommodate the population growth in King County.

Goal 16.5 of the Land Use Element states: "Infill development on vacant or under-utilized sites should occur outside of critical areas and ensure that the infill is compatible with the surrounding neighborhoods."

The proposed long plat constitutes infill development that increases density on an under-utilized site. The development is clustered in the northwest corner of the site and is located outside of critical areas (watercourse and wetland areas).

The existing zoning of the property is Single Family Residential R-9.6 (9,600 square foot minimum lot size). The project employs the Optional Standards for Development (19.08.030.G) which allow for lot sizes to be 75% of that otherwise required in the zone. The proposal results in a density of 2.94 lots per gross acre (5 lots / 1.7 acres = 2.94 lots/acre). This is consistent with the adjacent properties. If the site was unencumbered by critical areas, trees, and the need for infrastructure the R-9.6 zone would allow for a density of up to 4.54 lots per acre (43,560 sqft / 9,600 sqft = 4.54 lots/acre). The maximum number of lots that could be created from this site is 7 (72725 sqft / 9600 sqft = 7.57 lots). The proposed density and land use is consistent with the allowed density for the zone and the Comprehensive Plan.

Goal 18: "The protection of the natural environment will continue to be a priority in all Island development."

The project site encompasses critical areas including wetlands, watercourse, and erosion hazards. This project includes wetland restoration that will enhance the wetlands and their buffers. The wetlands and buffers are currently lightly vegetated and include significant amounts of impervious surfaces and invasive plants. The impervious surfaces and invasive plants will be removed, and all critical areas will be replanted with trees, shrubs, and ground cover. The wetland area will also be placed in a permanent conservation easement, and the area will be fenced off with appropriate critical area signage, which will deter future unauthorized intrusions. The collective effect of the site restoration/mitigation will be a return to natural stream flows, reduced potential for flooding, and increased protection of the area in perpetuity. These restoration plans meet the natural environment policies and goals of the Comprehensive Plan.

2. *MICC 19.08.030(E)(2) requires each side lot line of a lot to be approximately perpendicular or radial to the center line of the street on which the lot fronts. Lot 5 contains a side lot line, shared with southern rear lot line of lot 4, that is neither parallel nor radial from the street from which it takes access. Please revise the lot design to meet this standard.*

Response: The lot line has been revised and is now perpendicular to the street. See revised drawings.

3. *The graphic scale on the preliminary plat drawings does not match the given dimensions. Please revise the graphic scale to match the scale used for the drawings.*

Response: The drawings have been updated to correct the discrepancies between the graphic scale and drawing dimensions. See revised drawings.

4. *Please reconcile the name of the proposed tract on the preliminary plat drawings. (Sheet 2 refers to it "Tract A", sheet 3 labels it "Tract 999".)*

Response: The drawings have been revised to refer to the tract exclusively as "Track A". See revised drawings.

5. *Include information in the resubmittal regarding provision of a safe walking path to schools (MICC 19.08.020(E)(1)(a) and RCW 58.17.110). Please revise the subdivision plans to provide a walking path from each of the proposed lots, and demonstrate that there is a safe walking path to each of the schools that will serve this subdivision (Northwood Elementary, Islander Middle School, and Mercer Island High School).*

Response: A 5' sidewalk has been included on the south side of the new private drive to provide a safe walking path to schools. This new sidewalk will serve all the new homes in the proposed subdivision and connects to the sidewalk on Island Crest Way which then connects to the extensive sidewalk system of Mercer Island. See revised drawings. Also see included the Safe Walking Path to School exhibit showing the mapped paths to each school. The following also describes the path to each school:

Northwood Elementary: The proposed 5' internal path connects to the sidewalk on the East side of Island Crest way. This path can be followed North approximately 0.4 miles to SE 40th St. Heading East on SE 40th St for about 0.13 miles will meet up with the Northwest corner of Northwood Elementary school after crossing 86th Ave SE. Total distance: 0.53 miles.

Islander Middle School: This school is located on the south end of Mercer Island and the distance of 2.5 miles from the project site makes walking infeasible. The nearest bus stop is at the intersection of 86th Ave SE and Maple Ln. The path to this bus stop is as follows: The proposed 5' internal path connects to the sidewalk on the East side of Island Crest way. This path can be followed South approximately 0.1 miles to SE 44th St. Heading East on SE 44th St. for 0.11 miles to 86th Ave SE. Follow 86th Ave South for approximately 150 ft to arrive at Maple Ln. Total distance: 0.25 miles.

Mercer Island High School: Follow the same path above to Northwood Elementary School. Proceed South on 86th Ave SE for approximately 0.25 miles. The East side of 86th Ave SE has an

asphalt walking path. Head East on SE 42nd St for approximately 0.25 miles to arrive at the entrance of Mercer Island High School. Total distance: 1 mile.

6. *Please revise building pads to provide sufficient area for a 20-foot front yard for each lot, starting from the edge of the street. (Reference MICC 19.02.020: "The front yard is the yard abutting an improved street from which the lot gains primary access or the yard abutting the entrance to a building and extending the full width of the lot." See also the definition of "street" in MICC 19.16: "An improved or unimproved public or private right-of-way or easement which affords or could be capable of affording vehicular access to property.")*

Response: The proposed private drive, lot lines, and building pads have been adjusted to accommodate a 20-foot front yard for each of the lots. See revised drawings.

7. *The geotechnical information states that mapped geologic hazard areas are located off-site. This is inconsistent with City of Mercer Island GIS information, which show erosion and landslide hazard areas on the subject site. Please verify whether any portion of the site meets the definition of a geologic hazard area. If it is determined that portions of the site meet the definition of a geologic hazard area, then please address the standards in MICC 19.07.060.*

Response: See the Geotechnical Consultation letter from Earth Solutions NW.

8. *Please verify whether Wetland A meets the 10 percent minimum threshold for rating for a Depressional class wetland—reference the January 18, 2018 review memo from ESA, attached to this letter.*

Response from The Watershed Company: Wetland A does not meet the threshold for a depressional wetland. Wetland A was reclassified as a slope wetland. The wetland category remains unchanged as a Category III with a 50-foot standard buffer. See Wetland Delineation Report Addendum (Critical Areas Study Appendix B) prepared by The Watershed Company on March 22, 2018 for specific details.

9. *The plant schedules shown on sheet W7 of the Mitigation Plan specify plant quantities that exceed the area to be covered given the specified plant spacing. Please revise the listed plant quantities to be consistent with the proposed plant spacing and area to be planted.*

Response from The Watershed Company: Plant quantities have been revised to be consistent with proposed plant spacing and area to be planted. See Sheet W7.1 for revised plant schedule.

10. *Please revise the Mitigation Plan to include at least three species of trees in the Wetland Creation area, rather than only two.*

Response from The Watershed Company: Mitigation Plan has been updated to include at least three species of trees (see Sheet W7.1).

11. *Please revise the Mitigation Plan to use a minimum coverage standard, rather than survival rate.*

Response from The Watershed Company: Mitigation plan has been updated to use a minimum cover standard in addition to a survival standard for Years 1 and 2 (see Sheet W8.0).

12. *Please revise building pads to be sufficiently far away from buffer edges so that construction activities will not impact the reduced buffers.*

Response: Building pads have been offset from the buffers to allow for reasonable maintenance and constructions access without impacting the buffer.

13. *Please revise the Critical Area Study to clarify that the culverts will be removed and address how the proposal will result in a net improvement of ecological functions and will not significantly increase the threat of erosion or other hazard.*

Response from The Watershed Company: The Critical Area Study has been updated to clarify that the culverts will be removed, along with how the proposal will result in increased ecological function without significantly increasing threat of erosion or other hazard (see Sections 4.2 and 5).

14. *Please revise the Critical Area Study to clarify that the southwest portion of the property, gravel drive, and all other structures in the critical areas and buffers will be removed. Please also describe the intend use of the Tract 999.*

Response from The Watershed Company: Critical Area Study has been revised to clarify that the gravel drive, and all other structures within critical areas and buffers will be removed (see Section 4.2 and 5). Critical Area Study also describes the intended use of Tract 999 (renamed Tract A) (see Section 4.2).

15. *See the comment provided by Richard Karnes. Describe how proposed mitigation and site development will address the drainage concerns raised in the letter.*

Response from The Watershed Company: Mr. Karnes' letter expressed concerns that the proposed mitigation and site development could potentially cause Watercourse A to back up onto his property, which has reportedly occurred in the past as a result of unauthorized activities including the placement of stones, logs, and plant material in or near the watercourse channel. The proposed mitigation plan will remove all unauthorized fill materials, including those mentioned by Mr. Karnes. Additionally, all the wood chips placed throughout Wetland A and within Watercourse A will be removed. One adverse effect of the wood chips is that they slow runoff velocities in Watercourse A and surface flows in Wetland A. By removing the wood chips, Watercourse A will be able to re-establish its historic stream flow, and the flow will be less impeded than in the current condition. Re-establishing the native vegetation community will allow for increased, natural infiltration of runoff. The wetland area will also be placed in a permanent conservation easement, and the area will be fenced off with appropriate critical area signage, which will deter future unauthorized intrusions. The collective effect of the site restoration/mitigation will be a return to natural stream flows, reduced potential for flooding, and increased protection of the area in perpetuity.

Arborist:

1. *Please provide a plan sheet showing both the proposed plat (i.e. lot lines and building pads) together with tree locations and driplines.*

Response from The Watershed Company: See Sheet W4.0, Tree Preservation Plan prepared by The Watershed Company.

2. *Trees #821, 736, 827, 828, and 823 shall retained. The Project Arborist must assess the health and viability of these trees and designate the limits of disturbance for each. Building pads must be redrawn to be consistent with the limits of disturbance. Situate all building pads and site development improvements to retain the trees listed above.*

Response from The Watershed Company: See Mercer Island Chiu 5-lot Subdivision (SUB17-0015) Air-Excavation Root Inspection Memo prepared by the Watershed Company for information regarding limits of disturbance. See revised site plan prepared by CHS Engineers to revised building pads.

3. *Tree #820 (Chestnut) appears to be in decline. Please assess the health of this tree and provide revised information in the next submittal.*

Response from The Watershed Company: On February 23, 2018, Watershed Company Tree Risk Assessment Qualified Arborist Lucas Vannice, PLA, conducted a site visit to assess current health of this tree. During the assessment, up to 60 percent of the trunk circumference was observed to be without bark between the ground and 4 feet, the result of mechanical damage (Figure 1). Circumstantial evidence suggests that goats were previously kept in this area, and that they may have removed the bark from this tree. Although some response growth was observed around the trunk wounds, with time they are likely to girdle the tree. Additionally, previous failure of branches up to 10 inches in diameter were observed in the canopy, with many branches exhibiting exfoliated bark, which is atypical of the species. Our site observations agree with City comment that this tree is in decline and should be removed.

Figure 1: Tree #820 exhibiting significant mechanical damage.



4. *Please provide a plan sheet showing all trees subject to regulation (i.e. deciduous trees of 6" dbh or greater, and coniferous trees 6' or taller) with driplines, limits of disturbance, tree protection, tree numbers on both the Water & Sewer Plan, and Stormwater & Road Plan. Trees proposed for removal should be marked with an "X". Show entire lot with all proposed grading on Stormwater and Road Plan.*

Response from The Watershed Company: See Sheet W4.0, Tree Preservation Plan prepared by The Watershed Company.

5. *Within the plan set, please include a table of all trees, listing tree number, diameter, species, and indication of whether retention is proposed.*

Response from The Watershed Company: See Sheets W4.1 – W4.3, prepared by The Watershed Company.

6. *Provide documentation from the Project Arborist explaining the approximate location, number, size of trees removed without permit. Documentation should include aerial photos, stumps, invoices for past tree removal or other evidence.*

Response from The Watershed Company: See April 2009_Tree Locations for approximate location and number of trees removed without a permit and Tree Removal Invoice, which further clarify trees removed without a permit. These documents have been included at the end of this memo.

7. *At resubmittal, please include the mitigation/restoration plan in the plan set.*

Response from The Watershed Company: The mitigation/restoration plan has been included as part of the SUB17-0015 plan set.

8. *Please include the invasive removal notes with the mitigation plans included in the plan set.*

Response from The Watershed Company: The invasive removal notes with mitigation plans have been included as part of the SUB17-0015 plan set.

9. *Invasive species should be removed from the entire site, not only the areas identified in the mitigation plan.*

Response from The Watershed Company: Invasive species removal from the entire site are addressed in the mitigation plan.

Engineering:

Sheet 2

1. *Please provide details for the existing drainage system along the frontage of the property in the City ROW, clearly show all inlet pipes and out let pipes, culverts, etc. Based on the current survey, the existing drainage system in ROW is not clear.*

Response from CHS: The remainder of the existing drainage system along the frontage has been surveyed and the corresponding information added to the plans.

Sheet 5

1. *The water service lines/meters for Lot 1 and Lot 2 will be located on the north side of the access road.*

Response from CHS: The proposed water service lines for lots 1 and 2 are all along the north side of the access road.

2. *For less than 6 lots, no new manhole on the city sewer main, 6" shared side sewer connection per the city standard detail.*

Response from CHS: The plans have been updated to show a 6” shared side sewer. The previously proposed manhole is removed from the current set.

3. *Provide a minimum 5' wide safe route to school.*

Response from CHS: A proposed sidewalk along the south side of the access road has been added to provide for the safe route to school.

4. *The water service lines/meters for Lot 3, 4 and 5 will be located on the south side of the access road.*

Response from CHS: The proposed water service lines for lots 3, 4, and 5 are all along the south side of the access road.

5. *Provide all utility plans showing the entire site.*

Response from CHS: A composite plan has been added to show the overview of the entire site, including utility plans. Enlarged views of proposed utility improvements are included to allow for details to be adequately communicated.

Sheet 6

1. *Due to all utility cuts, a grind/overlay of the existing pavement, and replacements of curb/gutter/sidewalk along the frontage of the property are required.*

Response from CHS: Curb and gutter replacement is shown where work is planned. Grind/overlay of the road is shown at the locations where the connections to the city storm, water and sewer systems are planned. We recognized that additional curb and gutter replacement and/or grind/overlay may be required upon actual disturbance associated with construction activities.

2. *No cement driveway, it should be an asphalt driveway apron.*

Response from CHS: The proposed access road apron has been updated to be asphalt.

3. *The drainage report including the flow control design and WQ design were not reviewed. Please make sure that all assumptions in the calculation will need to be based on the 2014 DOE. All impervious surface area assumption for the future building construction is reasonable. The sizes of the future buildings will be limited based on your assumptions.*

Response from CHS: Noted. The drainage report is based on the 2014 DOE SWMWW. Impervious surface areas used in the analysis include the proposed access road, sidewalk, curb, gutter, an allowance for driveways, and the entire area of each lot within the proposed building setback lines.

4. *No discharge into water course/wetland to minimize the impacts to water course/wetland . Discharge into the storm system on Island Crest Way, the drainage improvements along Island Crest Way may be required based on the existing condition and proposed drainage design.*

Response from CHS: Noted. The proposed drainage system has been revised so that runoff from the proposed development area is conveyed to the existing system along Island Crest Way. We have confirmed that the existing City stormwater system in Island Crest Way has adequate capacity to convey runoff from the existing tributary area and the proposed development for at least the 25-year storm event. The drainage report demonstrates this. The drainage report shows that this will not have an adverse effect on wetland hydrology.

Please feel free to reach out if you have any additional questions.

Sincerely,

Jayson Taylor, Project Manager
jayson.m.taylor@gmail.com
(509) 863-1966

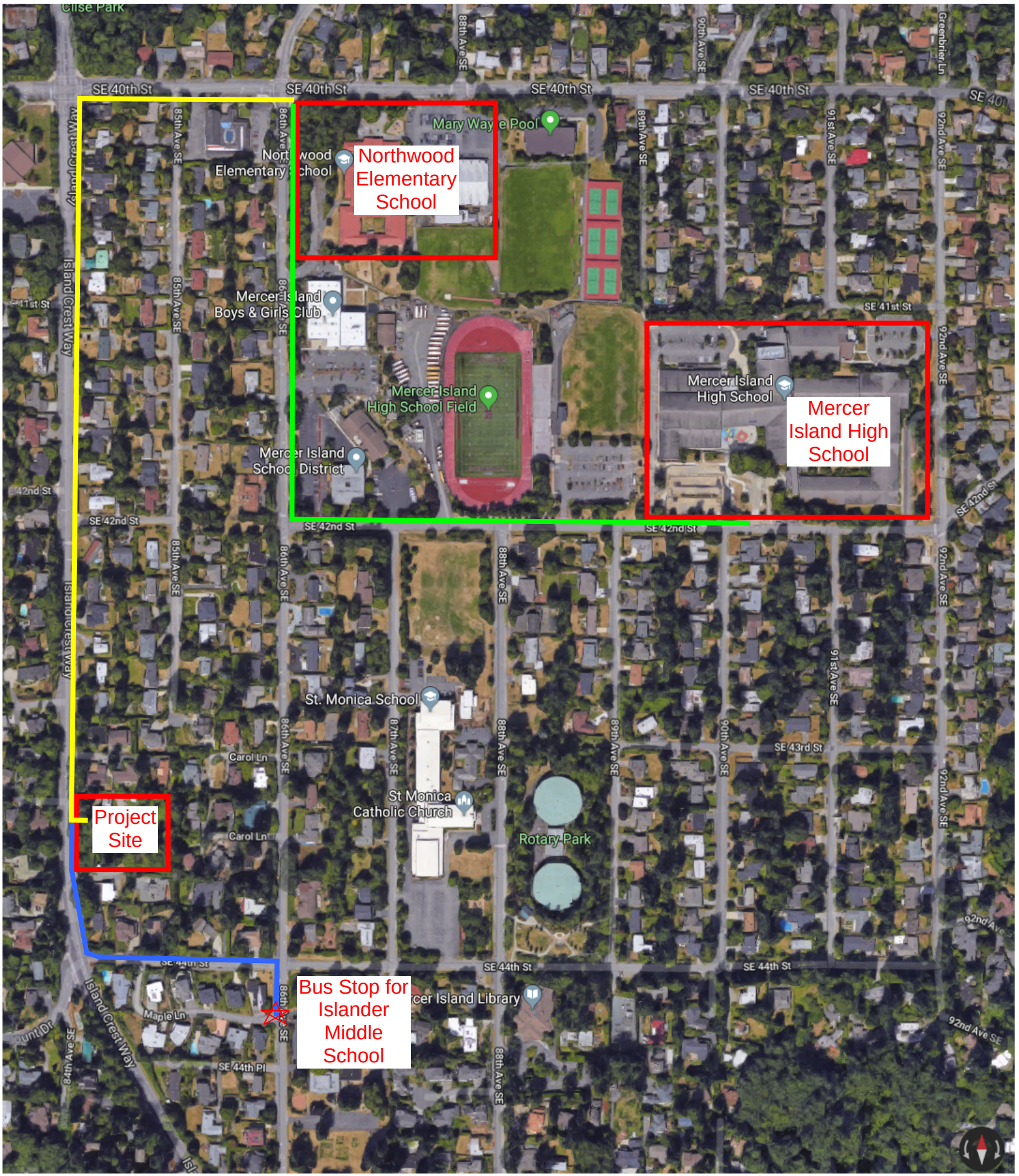
Attachments:

1. Safe Path to Schools Exhibit
2. Geotechnical Consultation letter from Earth Solutions NW
3. Wetland A Classification Memo from The Watershed Company
4. Air Excavation Memo from The Watershed Company
5. 2009 Tree Location Exhibit from The Watershed Company
6. 2014 Tree removal Invoice

7. Response Memo from The Watershed Company
8. Response Memo from CHS

Also included with this submittal:

1. Revised Critical Area Study from The Watershed Company
2. Revised Stormwater Drainage Report from CHS
3. Revised Project Drawings, combined. By CHS and The Watershed Company



Safe Walking Path to School Exhibit

Exhibit 5c

CRITICAL AREA STUDY

4320 Island Crest Way, Mercer Island, WA

Prepared for:

City of Mercer Island
Development Services: Building & Planning
9611 SE 36th Street
Mercer Island, WA 98040

Prepared on behalf of:

Alan Chiu
Mercertech International, LLC
6955 SE 33rd St
Mercer Island, WA 98040

Prepared by:

THE WATERSHED COMPANY
750 Sixth Street South
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April 20, 2018

The Watershed Company Reference Number:
160905

Study Preparers:
Hugh Mortensen, PWS
Mark Daniel, AICP

Exhibit 5d

Exhibit 5d

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Exhibit 5d

CRITICAL AREA STUDY

4320 ISLAND CREST WAY, MERCER ISLAND, WA

1 INTRODUCTION

This critical area study was prepared in support of corrective actions and proposed development for the property located at 4320 Island Crest Way in Mercer Island, Washington.

On August 10, 2016, the City Development Services Group issued a Notice of Correction (Code Compliance Case: CE16-0014) for the subject property. The notice stated that "This department has investigated the allegations that you are placing fill material such as wood chips into a water course, the buffer area, and possible wetlands on the subject property. Based on aerial mapping and a recent site visit with you it is clear that the wood chips fill is abundant and is within a protected environmental area of a water course and possible wetlands. Trees and shrubby vegetation have been cleared over time. You stated that you have removed several alder trees that were declining and hazardous." The notice identified corrective actions, including that a critical area study meeting the requirements of Mercer Island City Code (MICC) 19.07.050 be provided to the City.

In addition to addressing the issues identified in the Notice of Correction, the applicant also proposes to subdivide the subject property in anticipation of future single-family residential development. Plans showing the proposed subdivision are located in Appendix A of this critical area study. The proposed subdivision plans include actions, including wetland and watercourse buffer reduction, that require the submittal of a critical area study per the MICC.

In sum, both the Notice of Correction and the proposed subdivision plans require a critical area study. This critical area study has been prepared to meet these two requirements.

2 EXISTING CONDITIONS

2.1 Setting

The subject property, parcel number 1824059031, is located at 4320 Island Crest Way in the center of Mercer Island, Washington (see Figure 1). The subject property is situated in Section 18 of Township 24 North and Range 5 East. It is located in the Mercer Island drainage basin in the Cedar River/Lake Washington watershed, within the Cedar-Sammamish Water Resource Inventory Area (WRIA-8).

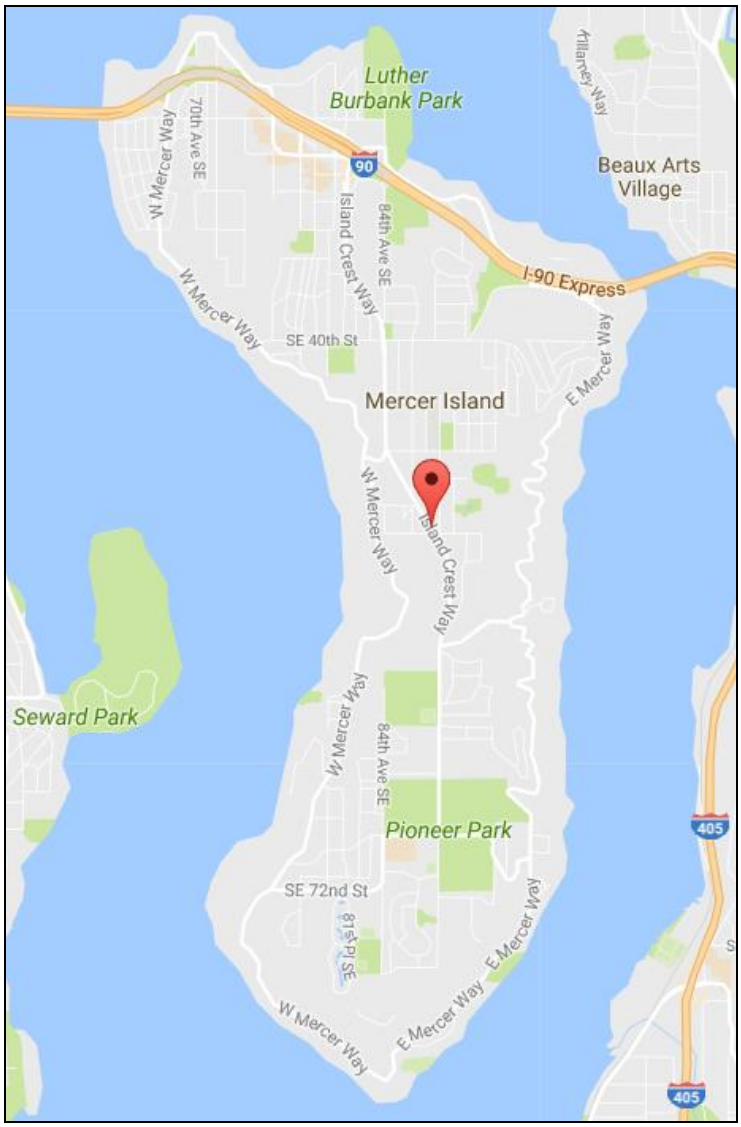


Figure 1. Vicinity map, with project location at red indicator

2.2 Use & Development

The subject property and adjacent properties are zoned for single-family residential use (R-9.6). The subject property is rectangular in shape and measures 72,745 square feet or 1.67 acres.

Two residences and associated development are currently situated on the subject property. One residence is located in the northwest portion of the property; the other residence is located in the southwest portion of the property. According to the King County Department of Assessments, both structures date to the 1950s.

Each residence has a driveway connecting to Island Crest Way. The two residences are connected internally by a crushed rock driveway that runs north-south through the central portion of the subject property.

2.3 Wetlands & Watercourses

In September 2016, ecologists from The Watershed Company visited the property to identify and delineate jurisdictional wetlands and watercourses. Subsequently, in February 2018, staff from The Watershed Company reassessed the hydrogeomorphic classification and wetland rating for Wetland A, based on comments provided by the City's peer review consultant (4320 Island Crest Way Critical Area Study [CAO17-015] – Environmental Review. ESA. January 18, 2018). The cumulative findings are thoroughly documented in the Wetland and Watercourses Delineation Report and Wetland Delineation Report Addendum provided in Appendix B of this critical area study.

In summary, the wetland findings indicate that three wetlands and one watercourse on the subject property were identified and delineated. The three wetlands (designated "A," "B" and "C") all rate as Category III wetlands under the City's current wetland rating system. The watercourse (designated "A") is typed as both Type 2 (downstream of Wetland B) and Type 3 (upstream of Wetland B within Wetland A). These wetland and watercourse features can be seen in the plans located in Appendix A of this critical area study.

The Wetland and Watercourses Delineation Report describes the vegetation for each of the three wetlands, and is summarized as follows.

- Wetland A: The report states that Wetland A was originally forested with alder and cottonwood trees with possibly a few conifers, but has since been cleared. The current disturbed dominant vegetation consists of Himalayan blackberry, field bindweed, reed canarygrass, and soft rush. Small-fruited bulrush, skunk cabbage, yellow-flag iris, and mannagrass are present in the seasonally ponded areas.

- Wetland B: Dominant forested vegetation includes red alder and western red cedar trees with an understory of Scouler's willow, Himalayan blackberry, and salmonberry. Along the periphery and within the ponded area, skunk cabbage, lady's thumb, yellow-flag iris, and watercress are present.

- Wetland C: Dominant vegetation consists of western red-cedar, salmonberry, Himalayan blackberry, skunk cabbage, knotweed, lady's thumb, and various grasses.

For more detailed information on these features, please see Appendix B.

3 LOCAL REGULATIONS

Wetlands and watercourses are regulated by the City under MICC Chapter 19.07, Environment. Trees are regulated by City under MICC Chapter 19.10, Trees.

3.1 Wetlands

The three wetlands on the subject property all rate as Category III wetlands under the 2004 Ecology rating system, the system currently used in MICC.

Per MICC 19.07.080.C, Category III wetlands have a standard buffer width of 50 feet and a minimum buffer width with enhancement of 25 feet. The City allows buffer averaging or reduction of buffer widths, provided that no-net-loss of wetland function occurs. In the case of buffer averaging, the total buffer area must also remain equivalent or greater after averaging, and may not be less than the minimum buffer width at any point.

Per MICC 19.07.080.D, Category III wetlands of less than one acre in size may be altered if the applicant can demonstrate that the wetland will be restored, enhanced, and/or replaced with a wetland area of equivalent or greater function.

3.2 Watercourses

The watercourse on the subject property is typed as both Type 2 (downstream of Wetland B) and Type 3 (upstream of Wetland B within Wetland A).

Per MICC 19.07.070.B, Type 2 watercourses have a standard buffer width of 50 feet and a minimum buffer width with enhancement of 25 feet. Type 3 watercourses have a standard buffer width of 35 feet and a minimum buffer width with enhancement of 25 feet. Watercourse segments within pipes or

culverts have a standard buffer of 25 feet and a minimum buffer width with enhancement as determined by the code official. Buffer reduction may be permitted with submittal of a critical area study and subject to guidelines listed in MICC 19.07.070.B.2.

Restoration of piped stream segments may only be permitted if it will result in improved function and will not increase the threat of other hazards, such as erosion or slope stability (MICC 19.07.070.B.4).

3.3 Trees

All trees cut on the subject property must be replaced pursuant to MICC 19.10.060, Tree replacement. MICC 19.10.060.D addresses the number of replacement trees required, and indicates that the City Arborist must apply a replacement ratio of 0:1 up to 4:1, depending on four criteria. One of the criteria is "proximity to critical tree areas and/or the existence and retention of vegetative cover in any critical tree area." "Critical tree areas" include, but are not limited to, wetlands, watercourses and their buffers. Additionally, all replacement trees must be maintained in a healthy condition for two years after planting, with the applicant obligated to replant any replacement tree that dies, becomes diseased, or is removed during the two-year time period (MICC 191.10.060.E).

4 PROPOSED PLANS

As alluded to the in Section 1, Introduction, the proposed mitigation and restoration plans have been prepared for the following two primary purposes:

1) To restore previously altered areas subject to a Notice of Correction; and

2) To mitigate wetland and watercourse buffers impacts associated with the proposed subdivision.

Section 4.1 addresses the restoration of previously altered areas. Section 4.2 addresses the mitigation of wetland and watercourse buffer impacts associated with the proposed subdivision. Section 4.3 discusses maintenance and monitoring measures applicable to both restoration and mitigation.

Mitigation and restoration plans for the proposed development are located in Appendix A of this critical area study.

4.1 Restoration Actions (to address Notice of Correction)

The proposed project would provide restoration actions to address the Notice of Correction. As discussed in Section 1 of this critical areas study, the Notice of Correction indicated that fill material such as wood chips had been placed on the subject property, and that trees and shrubby vegetation have been cleared over time. According to the property owner, several alder trees that were removed were declining and hazardous.

Based on site-reconnaissance and aerial photo interpretation, the area subject to the Notice of Correction appears to have been applied to approximately 12,748 square feet of the subject property (see sheet W2.0 of 14 in Appendix A of this critical area study). This area is located within Wetland A and is bisected by Watercourse A. During the delineation, the wood chip areas were evaluated and it was determined that, while wood chips did impact wetland vegetation, no loss of wetland area resulted from their placement. Approximately twelve trees appear to have been removed from this area, based on *Tree Removal Invoice* provided by the client. The Wetland and Watercourses Delineation Report indicates that this area was originally forested with alder and cottonwood trees, and possibly a few conifers.

Restoration of the area subject to the Notice of Correction includes removal of the wood chips and non-native and invasive plant species, and the installation of a native tree, shrub and groundcover plant community. As discussed above in Section 3.3, Trees, MICC 19.10.060.D addresses the number of replacement trees required, and indicates that the City Arborist must apply a replacement ratio of 0:1 up to 4:1, depending on four criteria. One of the criteria is "proximity to critical tree areas and/or the existence and retention of vegetative cover in any critical tree area." "Critical tree areas" include, but are not limited to, wetlands, watercourses and their buffers. As the trees removed appear to have been located within a critical tree area, the project proposes tree replacement at the maximum replacement ratio of 4:1. Accordingly, 48 trees would be replanted in the area subject to the Notice of Correction. In addition, 180 shrubs would be planted in the area subject to the Notice of Correction.

4.2 Subdivision Impacts & Mitigation

In addition to addressing the Notice of Correction, the applicant also proposes to subdivide the subject property in anticipation of future single-family residential development. More specifically, the applicant proposes to subdivide the subject property into five single-family residential lots and one tract (Tract A). The five residential lots would be located in the northwestern portion of the subject

property. Tract A, which is proposed as a shared-use recreation tract that will include picnic and outdoor grilling areas, would be located in the southwestern corner of the subject property outside of all critical areas and buffers. All five residential lots would be accessed from a shared driveway off Island Crest Way. The project does not propose stormwater management facilities within wetlands, the watercourse, or their buffers.

Avoidance & Minimization of Impacts

By clustering the proposed residential lots in the northwestern portion of the subject property and through the thoughtful siting of associated development, the project avoids direct impacts to wetlands and watercourses. Further, the project minimizes impacts to wetlands and watercourses by requiring buffer reduction only where necessary to accommodate residential development. As required by the code, after buffer reduction, building pads are located outside of wetlands, the watercourse, and their buffers.

During construction, impacts will be avoided through project erosion control measures. Erosion control measures will be in place prior to clearing and grading.

Impacts & Mitigation

As allowed by the code, the project proposes buffer reduction with enhancement in areas adjacent to the proposed residential development. As discussed in Section 3, all wetlands and watercourses on the subject property have a minimum buffer width with enhancement of 25 feet. Enhancement of the existing degraded buffer areas includes the removal of existing structures within the buffer, removal of non-native and invasive species, and the installation of a native tree, shrub and groundcover plant community. Trees removed from the wetland creation area will be repurposed as large woody debris. In total, 5,703 square feet of existing structures will be removed from the buffers; 21,080 square feet of buffer will be enhanced; and 2,305 square feet of wetland will be re-established/created. This enhancement and wetland creation is proposed to take place in areas previously degraded due to past land use and are outside of the recently-disturbed areas identified in the Notice of Correction. Additionally, concerning the buffer reduction in the wetland-as-buffer areas on Lots 2 and 5, the current condition provides essentially no water quality or hydrologic function. This is due to the fact the buffer is sloping away from (west) of Wetland A in the area proposed for reduction. Buffer reduction is expected to result in no-net-loss of wetland or watercourse functions.

The proposed buffer reduction includes 1,988 square feet of wetland as buffer. "Wetland as buffer," also referred to as "paper fill," means that a wetland is being treated as though it were being filled in order to reduce its buffer, but does not mean that a wetland is actually being filled. As mentioned above in Section 3,

Category III wetlands of less than one acre in size may be altered if the applicant can demonstrate that the wetland will be restored, enhanced, and/or replaced with a wetland area of equivalent or greater function. To mitigate for the wetland as buffer, the creation of 2,305 square feet of wetland is proposed in the area between Wetlands A and B.

As required under MICC 19.07.080.D the wetland creation area will replace the wetland-as-buffer area with equivalent or greater function. The proposed areas of wetland creation will establish more natural hydrologic functions by restoring prior landscape modifications. The area of wetland creation (between Wetlands A and B) would occur in through the removal of the existing driveway. The total wetland creation area is 317 square feet larger than the wetland-as-buffer area. The entire wetland creation area would be planted with a native tree, shrub and emergent plant community. Five trees in the wetland creation are expected to be removed due to the grading associated with wetland creation. These trees will be replaced in accordance with City tree replacement requirements. Ten trees are currently proposed in the wetland creation area.

To improve hydrologic connectivity between Wetland A/Wetland B and Wetland B/Wetland C, two culverts will be removed, using hand tools where feasible, including within any wetland areas to minimize temporary impacts to existing wetland areas. Stream flows will be diverted around work areas during culvert removal and channel grading activities. The proposed plan will remove the upper Watercourse A culvert, and the flow will discharge into a newly excavated depression that will connect Wetland A to Wetland B. Hydrology from Watercourse A will help maintain wetland conditions in the wetland creation area. Flow will continue as the watercourse overtops the depression, flowing into the existing middle portion of Watercourse A. The depression will increase the diversity of hydrologic regimes and habitat niches in the wetland system, while also functioning to slow flows from Watercourse A, reducing erosion potential.

Watercourse A continues flowing through Wetland B; this section will not be modified. Flows from Watercourse A currently split between Wetland B and Wetland C, with much of the flow being conveyed though a second (lower) culvert, and overflows exiting near the northern wetland boundary and continuing into Wetland C. The lower culvert will be removed, and natural stream conditions will be restored. A new channel will be constructed in place of the culvert. The new, roughened channel will slow stream flows compared to the existing culvert, reducing erosion potential.

For the long-term-protection of the wetlands, watercourse and buffers, these areas will be placed under a native growth protection easement. Additionally, split-rail fencing will be installed to demarcate these areas to prevent unauthorized intrusion and encroachment.

5 NO NET LOSS

Without mitigation and restoration, a slight decrease in hydrologic, water quality, and habitat function could be anticipated to occur under the proposed project due to the increase of impervious surfaces on-site, the reduction of the standard buffer, and the previous clearing and mulch placement in Wetland A. The mitigation and restoration plan is designed to ensure no net loss of ecological function as a result of the proposed improvements and prior actions.

Proposed mitigation and restoration will benefit on-site critical areas and buffers by: increasing the ability of the buffer vegetation to store/trap sediments and nutrients; increasing the ability of the buffer to attenuate flood flow during heavy rain; improving cover and forage opportunities for wildlife; increasing the diversity of hydrologic regimes and habitat niches; restoring piped watercourse segments; and improving drainage capacity on the site. Mitigation and restoration areas include all portions of Wetland A, including, but not limited to, the violation area; the reduced buffer, degraded portions of the existing 25-foot buffer, and portions of the standard 50-foot buffer that will not be reduced; and wetland re-establishment/creation areas.

Table 1, below, summarizes how the proposed mitigation and restoration will achieve no net loss of ecological functions on-site.

Table 1. Summary showing no net loss of critical area and buffer functions with proposed conditions

Critical Area / Buffer Function	Existing Conditions	Proposed Conditions	Determination
Water Quality	The current water quality function of critical areas and buffers is limited by sparsely vegetated critical areas and buffers and existing pollutant-generating surfaces in the buffer.	Vegetative density to be substantially increased in critical area buffers through the planting of native trees, shrubs, and groundcovers. Driveway to be removed from the buffer.	Increasing the amount of dense, rigid vegetation will improve the ability of the wetlands and buffers to slow surface water flowing towards the watercourse and help filter and capture nutrients and sediments that might otherwise enter the waterbody. Removing the driveway from the buffer will eliminate a potential source of pollutants.

Critical Area / Buffer Function	Existing Conditions	Proposed Conditions	Determination
Hydrology	The current hydrologic function of critical areas and buffers is limited by sparsely vegetated areas and two culverts that increase flow velocities.	Vegetative density to be substantially increased in critical areas and buffers through the planting of native trees, shrubs, and groundcovers. Culverts to be removed. Additional storage capacity will be added with the creation of new ponded wetland area. Impervious surfaces to be removed from buffer.	The addition of trees, shrubs, and groundcover plants will help attenuate flood flow during heavy rain events. Creating additional flood storage capacity in the wetland creation area will allow flows to be retained during storm events. The removal of the wood chips will ensure that stream flows do not back up onto the neighboring property to the east. Removing existing impervious surfaces will reduce stormwater inputs into the wetland and watercourse.
Habitat	The habitat function of the critical areas and buffers is limited by low understory vegetative density, low structural diversity, and prevalence of non-native plant species.	Non-native plant species to be removed. Vegetative density to be substantially increased in critical areas and buffers through planting of native trees, shrubs, and groundcovers. Woody debris to be installed. Impervious surfaces to be removed from buffer.	Woody debris installation and understory planting of trees, shrubs, and groundcover plants will increase vegetative density and structural diversity, improving cover and forage opportunities for wildlife. Non-native plant species removed.
Overall	Moderate- to low-functioning critical areas and buffers in the project area. Existing vegetated areas have significant amounts non-native plant species and are characterized by a relatively open or sparsely vegetated understory. Watercourse A is conveyed through two culverts on-site, and pollutant- and non-pollutant-generating surfaces are present in the buffer.	Removal of non-native plant species. Planting of trees, shrubs, and groundcovers in existing and created wetland and buffer areas. Installation of woody debris. Removal of pollutant-generating surfaces from the buffer.	The proposed project is expected to improve ecological functions over existing conditions. This includes habitat, hydrology, and water quality functions of the critical area buffers. Overall no net loss of functions is expected.

4.3 Maintenance & Monitoring

The proposed plans include five years of scheduled maintenance and monitoring. This time period is the maximum allowable under the City code (MICC 19.07.040.J.1). To promote project success, the maintenance and monitoring during this time frame will be overseen by a single entity (either the property owner or homeowner's association).

The project includes several performance standards intended to ensure the success of the project over time. These performance standards are as follows:

1. Survival:

    a. Achieve 100% survival of installed plants by the end of Year 1.

    b. Achieve 80% survival of all installed plants by the end of Year 2.

    This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.

2. Cover:

    a. Achieve 60% cover of native trees and shrubs by Year 3 within planted wetland and buffer areas. Volunteer species may count towards this cover standard.

    b. Achieve 10% cover of native emergent plants within the created wetland area by Year 3.

    c. Achieve 80% cover of native trees and shrubs by Year 5 within planted wetland and buffer areas. Volunteer species may count towards this cover standard.

    d. Achieve 30% cover of native emergent plants within wetland areas by Year 5.

3. Diversity:

    a. Establish at least three native tree species, five native shrub species, and two native groundcovers within the wetland restoration and buffer mitigation areas. Volunteer species may count towards this standard.

b. Establish at least two native tree species, three native shrub species, and two native groundcovers within the wetland creation area.

   Establishment is defined as five or more individual plants of the same species alive and healthy.

4. Invasive cover: no more than 10% cover by invasive weed species within all planted areas in any monitoring year.

5. Hydrology standard (wetland creation area only):

   a. Evidence of wetland hydrology in the wetland creation area. Soil saturation within the upper 12 inches of the soil surface, present for two consecutive weeks during the growing season (March 1st to October 15th) during each monitoring year as measured per the protocol in the monitoring methods section, below.

6. Hydric soil standard (wetland creation area only):

   a. Hydric soils will be assumed present if the hydrology standard is met.

Monitoring reports addressing the project's compliance with the above performance standards will be submitted annually to the City. If any monitoring report reveals that the restoration plan has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, the applicant will submit a contingency plan to the City for approval.

6 SUMMARY

The Notice of Correction and the proposed subdivision plans require a critical area study. This critical area study has been prepared to meet these two requirements.

Two residences and associated development are currently situated on the subject property. Three wetlands and one watercourse on the subject property have been identified and delineated. The three wetlands (designated "A," "B" and "C") all rate as Category III wetlands under the City's current wetland rating system. The

watercourse (designated "A") is typed as both Type 2 (downstream of Wetland B) and Type 3 (upstream of Wetland B within Wetland A).

The proposed project would provide restoration actions to address the Notice of Correction. Restoration of the area subject to the Notice of Correction includes removal of the wood chips and non-native and invasive plant species, and the installation of a native tree, shrub and groundcover plant community. Under the proposed plans, the previously cleared trees (an estimated 12 trees) would be replanted at a 4:1 ratio.

As allowed by the Code, the project proposes buffer reduction with enhancement in areas adjacent to the proposed residential development. All wetlands and watercourses on the subject property all have a minimum buffer width with enhancement of 25 feet. Enhancement of the existing degraded buffer areas will include the removal of non-native and invasive species, and the installation of a native tree, shrub and groundcover plant community. Buffer reduction is expected to result in no-net-loss of wetland or watercourse functions.

The proposed buffer reduction includes 1,988 square feet of wetland as buffer. To mitigate for the wetland as buffer, the creation of 2,305 square feet of wetland is proposed. As required under MICC 19.07.080.D the wetland creation area will replace the wetland-as-buffer area with equivalent or greater function.

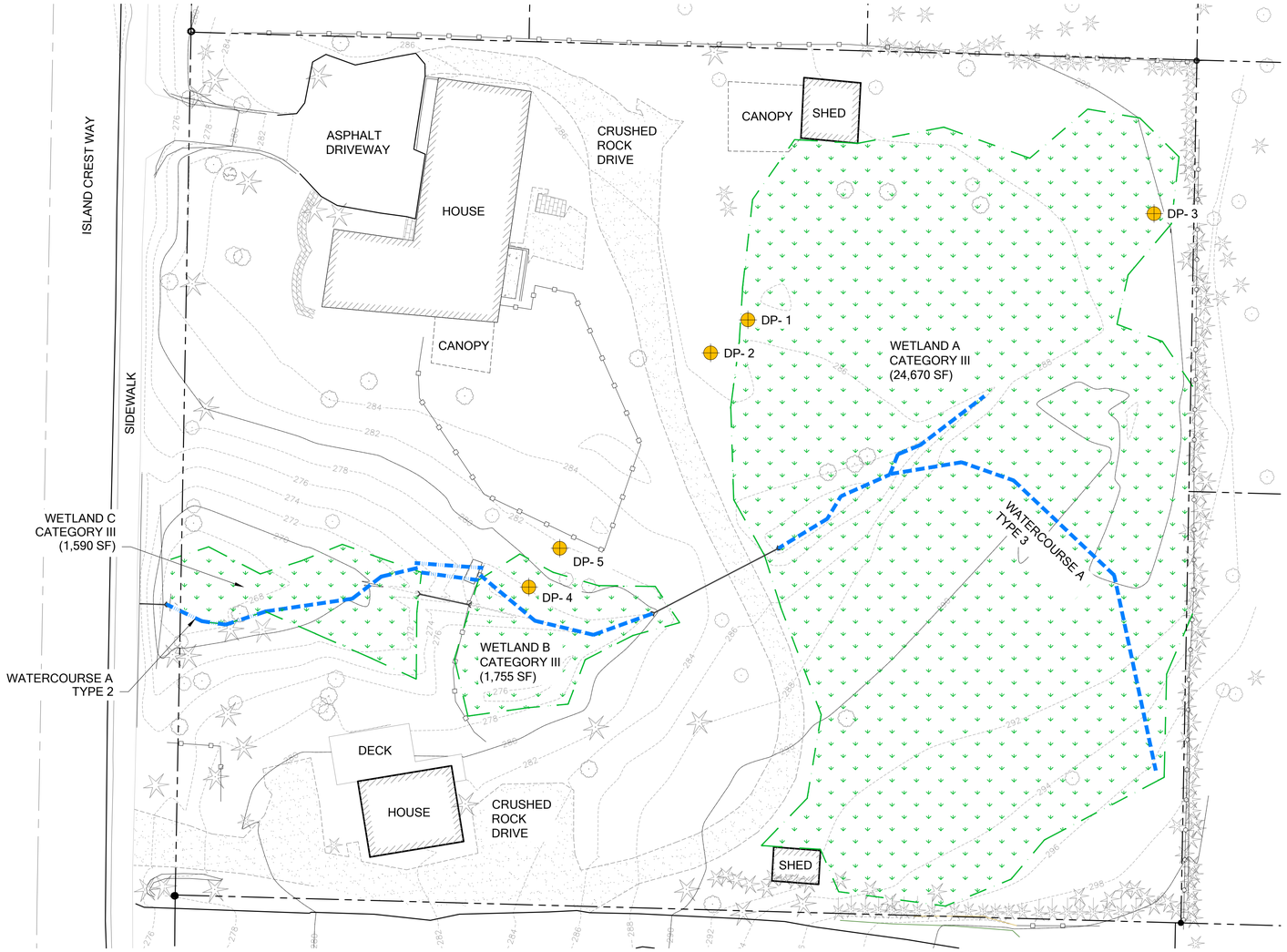
To conclude, the proposed restoration and mitigation plans meet applicable requirements of the MICC.

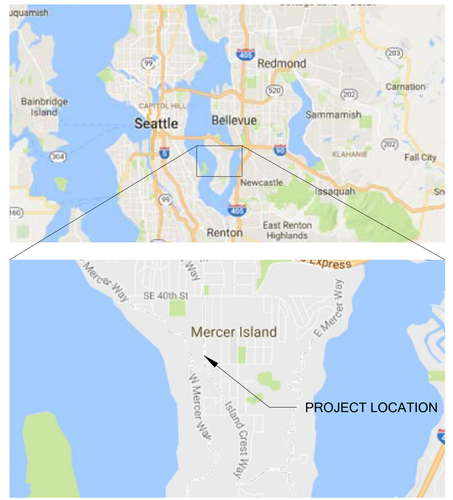
Exhibit 5d

APPENDIX A

Mitigation & Restoration Plan

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN





VICINITY MAPS

LEGEND

- PARCEL BOUNDARY
- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- DATA POINT
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE
- CULVERT (QTY. 3)

SHEET INDEX

W1.0	EXISTING CONDITIONS
W2.0	IMPACTS PLAN
W3.0	RESTORATION AND MITIGATION PLAN
W4.0	TREE PRESERVATION PLAN
W4.1	TREE INVENTORY TABLES 1-3
W4.2	TREE INVENTORY TABLES 4-6
W4.3	TREE INVENTORY TABLE 7 AND TREE PRESERVATION DETAILS
W5.0	TESC AND SITE PREPARATION PLAN
W5.1	TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES
W6.0	WETLAND CREATION AREA GRADING PLAN
W7.0	PLANTING PLAN
W7.1	TYPICAL PLANTING SCHEDULES
W7.2	PLANT INSTALLATION DETAILS AND NOTES
W8.0	MITIGATION AND RESTORATION NOTES

NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY ON SEPTEMBER 21, 2016.
2. ONLY LEFT BANK OF WATERCOURSE A DELINEATED WITHIN WETLAND C.
3. SURVEY RECEIVED FROM PLS, INC. 1595 NW GILMAN BOULEVARD, #15 ISSAQUAH, WA 98027. (425) 313-9378.

NFC

NOT FOR CONSTRUCTION

EXISTING CONDITIONS

0 10' 20' 40' 80'

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THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242
www.watershedco.com
Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

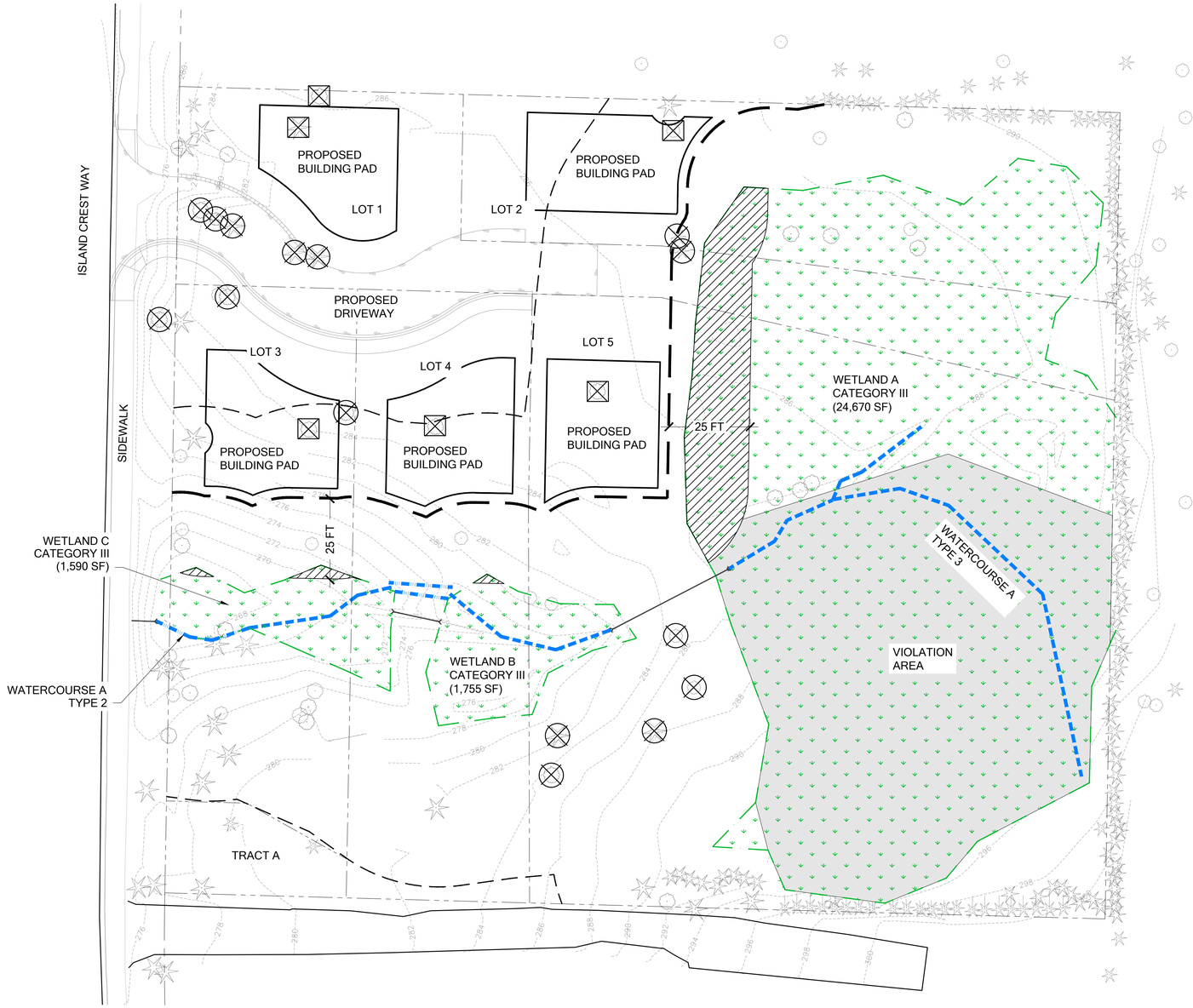
NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W1.0 OF 14

FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG
PRINTED BY ROEN HOHLFELD
DATE 10/27/17

Exhibit 5d



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- VIOLATION AREA (12,748 SF)
- EXISTING TREE

PROPOSED FEATURES

- PROPOSED PROPERTY BOUNDARY
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- WETLAND AS BUFFER (1,988 SF)

IMPACT CALCULATIONS

IMPACT	AREA (SF)
WETLAND VIOLATION	12,748
WETLAND AS BUFFER	1,988
TOTAL IMPACTS	**14,736**

NOTES

1. SEE SHEETS 34.0-W4.3 FOR TREE PRESERVATION INFORMATION.
2. WETLAND VIOLATION AREA PER NOTICE OF CORRECTION FROM CITY OF MERCER ISLAND, DATED AUGUST 10, 2016.
3. EXISTING WETLAND VIOLATION AREA EXTRAPOLATED FROM 2012 AND 2015 KING COUNTY IMAP AERIAL PHOTOGRAPHY. ADDITIONALLY, SEE INVOICE IN REQUEST FOR INFORMATION #1 LETTER FROM THE WATERSHED COMPANY, DATED APRIL 13, 2013.
4. SEE CIVIL PLANS FOR PROPOSED GRADING OUTSIDE MITIGATION AREA.

IMPACTS PLAN

0 10' 20' 40' 80'

NFC

NOT FOR CONSTRUCTION

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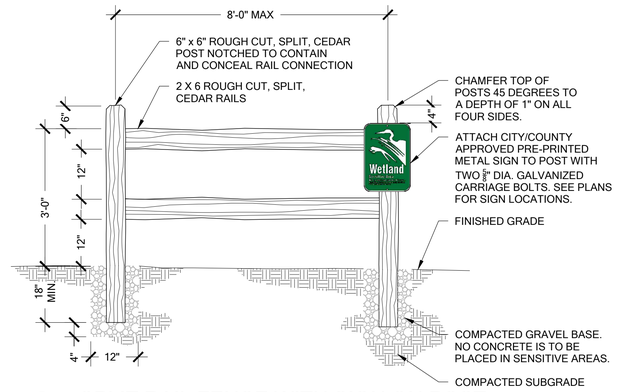
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W2.0 OF 14

PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d





A SPLIT RAIL FENCE WITH SIGN ON POST

Scale: NTS

LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- PROPOSED PROPERTY BOUNDARY
- WETLAND/WATERCOURSE AREA BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- EXISTING STRUCTURES AND DRIVEWAY TO BE REMOVED WITHIN BUFFER (5,703 SF)
- CULVERT TO BE REMOVED (QTY. 2)
- WETLAND CREATION AREA (2,305 SF)
- WETLAND RESTORATION AREA (24,670 SF)
- BUFFER MITIGATION AREA (21,080 SF)
- SPLIT RAIL FENCE WITH SIGN ON POST (A / W3.0)

MITIGATION CALCULATIONS

MIITGATION	AREA (SF)
BUFFER RESTORATION	21,080
WETLAND RESTORATION	24,670
WETLAND CREATION	2,305
TOTAL MITIGATION	**48,054**

RESTORATION AND MITIGATION PLAN

0 10' 20' 40' 80'

NFC

NOT FOR CONSTRUCTION

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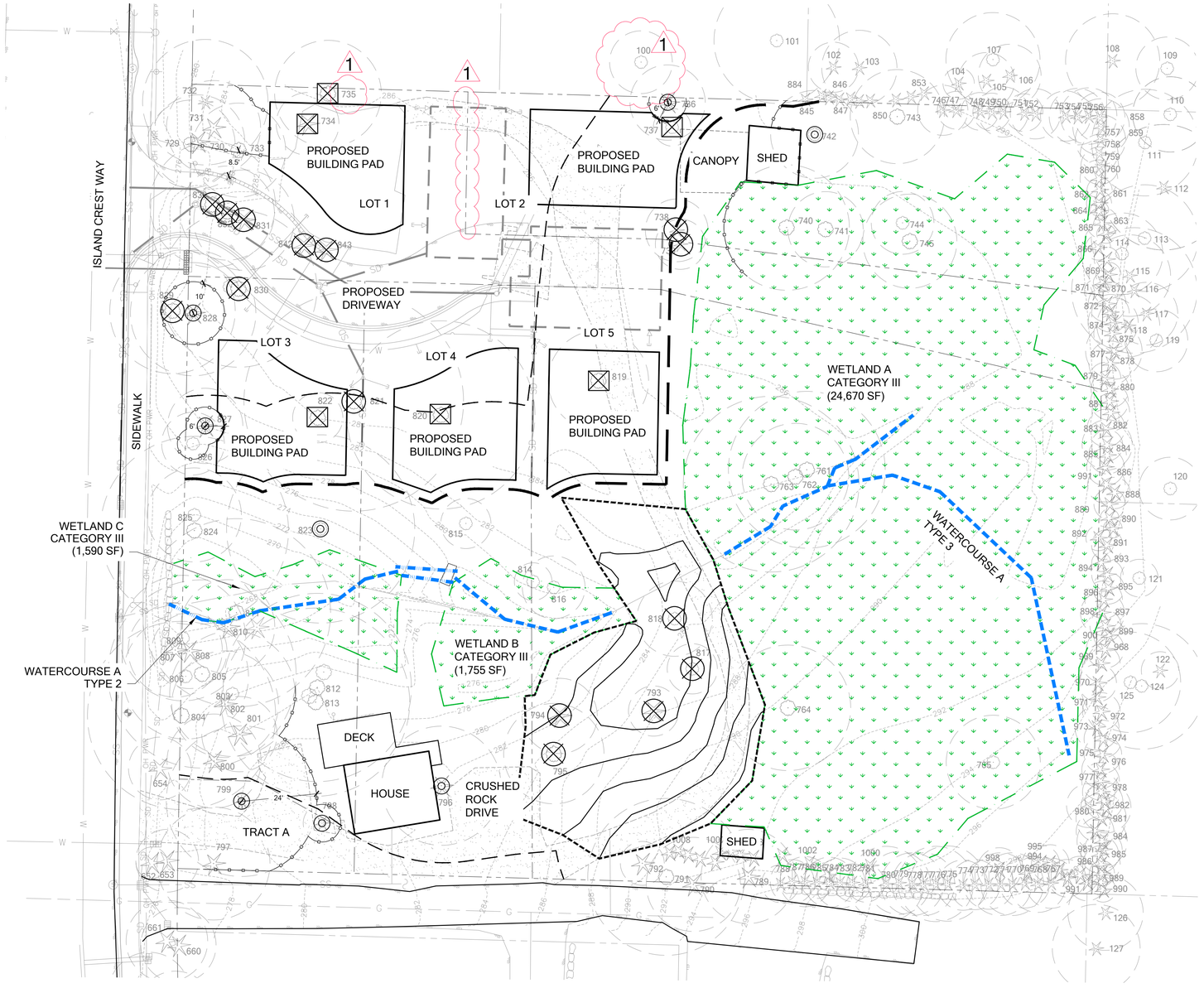
DATE: 10/27/17

Exhibit 5d



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR (WETLAND CREATION AREA)
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- TREE TO BE REMOVED WITH PLAT IMPROVEMENTS (QTY. 15)
- TREE TO BE REMOVED WITH HOME CONSTRUCTION (QTY.6)
- TREE TRUNK WRAP (B W4.3)
- 1 TREE PROTECTION FENCING (C W4.3)
- 1 APPROX. LIMITS OF GRADING (WETLAND CREATION AREA)

NOTES

1. QUANTITIES OF TREES TO BE REMOVED IN THE TREE RETENTION LEGEND REFLECT TOTAL TREES THAT WILL REQUIRE REMOVAL AS PART OF THE SITE DEVELOPMENT.
2. PER MICC 19.16.010, A SIGNIFICANT TREE IS ANY CONIFER THAT IS MORE THAN SIX FEET TALL OR ANY DECIDUOUS TREE WITH A DIAMETER OF SIX INCHES OR MORE.
3. TREES DESIGNATED FOR REMOVAL WITHIN TREE PROTECTION FENCE SHOULD BE SNAGGED OR FLUSH CUT TO MINIMIZE ROOT DAMAGE TO REMAINING TREES. DO NOT REMOVE TREES DESIGNATED FOR REMOVAL WITHIN TREE PROTECTION FENCING AREA BY PUSHING OVER WITH MACHINERY.
4. CONSTRUCTION WITHIN TREE PROTECTION FENCING SHALL BE COMPLETED BY HAND, MAINTAINING EXISTING GRADE UNLESS OTHERWISE INDICATED ON THE CIVIL PLANS.
5. EXISTING TREES TO REMAIN SHALL NOT BE DISTURBED DURING DEMOLITION OF EXISTING STRUCTURES OR CONSTRUCTION OF PROPOSED FEATURES. THIS INCLUDES DAMAGES TO TREE TRUNK, ROOTS, AND LIMBS. IF TREE LIMBS RESTRICT VERTICAL LIMITS OF DEMOLITION MACHINERY, A CERTIFIED ARBORIST MAY LIFT CANOPY BY PRUNING LIMBS UP TRUNK.
6. MACHINERY ACCESS FOR DEMOLITION OF EXISTING SOUTHERLY HOUSE SHALL UTILIZE 5" OF WOOD CHIP MULCH OVERLAID WITH STEEL PLATE OR $\frac{3}{4}$ INCH PLYWOOD TO PREVENT DISTURBANCE OF EXISTING TREE ROOTS.

TREE PRESERVATION PLAN

0 10' 20' 40' 80'

NFC

NOT FOR CONSTRUCTION

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750 Sixth Street South
Kirkland WA 98033
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www.watershedco.com
Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905

SHEET NUMBER: W4.0 OF 14

DATE 10/27/17 | PRINTED BY ROEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
100	Malus domestica (Apple)	D	1	**10**	25	10	3	N	
101	Prunus emarginata (Bitter cherry)	D	1	**14**	55	20	4	N	broken main leader at 50'
102	Pinus monticola (Western white pine)	E	1	**6**	30	8	2	N	
103	Pinus monticola (Western white pine)	E	1	**5**	30	12	2	N	
104	Picea sitchensis (Sitka spruce)	E	1	**2**	20	5	2	N	
105	Tsuga canadensis (Canadian hemlock)	E	1	**7**	40	9	2	N	
106	Tsuga canadensis (Canadian hemlock)	E	1	**5**	30	10	2	N	
107	Sorbus aucuparia (European mountain ash)	D	1	**12**	50	15	3	N	
108	Cedrus deodara (Deodar cedar)	E	1	**13**	55	15	3	N	
109	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**14**	30	10	4	N	sig. ivy on trunk
110	Crataegus monogyna (Common hawthorn)	D	3	**8**	20	12	3	N	
111	Fraxinus latifolia (Oregon ash)	D	1	**13**	50	17	3	N	
112	Pseudotsuga menziesii (Douglas-fir)	E	1	**27**	85	20	3	N	
113	Fraxinus latifolia (Oregon ash)	D	1	**12**	45	17	3	N	
114	Gleditsia triacanthos (Honeylocust)	D	1	**10**	40	13	3	N	
115	Thuja plicata (Western red cedar)	E	1	**14**	40	13	4	N	chlorotic foliage
116	Thuja plicata (Western red cedar)	E	2	**15**	50	20	3	N	flagging
117	Thuja plicata (Western red cedar)	E	1	**10**	50	10	3	N	
118	Thuja plicata (Western red cedar)	E	1	**10**	35	10	3	N	
119	Acer macrophyllum (Bigleaf maple)	D	1	**28**	75	29	3	N	
120	Thuja plicata (Western red cedar)	E	1	**10**	40	10	4	N	chlorotic foliage, stressed cone crop
121	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
122	Thuja plicata (Western red cedar)	E	1	**6**	15	6	3	N	
123	Betula pendula (European white birch)	D	1	**15**	40	15	3	N	
124	Betula pendula (European white birch)	D	1	**14**	60	20	3	N	
125	Betula pendula (European white birch)	D	1	**9**	50	16	3	N	leader failure
126	Thuja plicata (Western red cedar)	E	1	**18**	50	12	3	N	
127	Thuja plicata (Western red cedar)	E	1	**18**	50	14	3	N	
128	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**7**	25	15	3	N	
129	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**7**	17	12	4	N	decay in trunk; necrotic foliage; deadwood
130	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**8**	17	15	4	N	deadwood; chlorotic foliage
131	Prunus avium <cultivated> (Fruiting Cherry)	D	1	**14**	18	12	4	N	significant ivy on trunk
132	Pseudotsuga menziesii (Douglas-fir)	E	1	**15**	26	16	4	N	topped for utility lines; significant ivy on trunk
652	Pseudotsuga menziesii (Douglas-fir)	E	1	**6**	15	5	3	N	topped for power line
653	Tsuga heterophylla (Western hemlock)	E	1	**8**	15	10	4	N	
654	Pseudotsuga menziesii (Douglas-fir)	E	1	**4**	20	10	3	N	growing into power lines
655	Pinus sylvestris (Scots pine)	E	1	**14**	50	15	3	N	
656	Prunus cerasifera 'thunderdoud' (Cherry plum)	D	2	**16**	30	20	4	N	poor branch form
657	Quercus palustris (Pin oak)	D	1	**28**	70	26	2	N	ivy on trunk
658	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	49	12	2	N	
659	Pinus sylvestris (Scots pine)	E	1	**15**	50	10	4	N	necrotic foliage

A TREE INVENTORY TABLE (1 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	1 NOTES
660	Pseudotsuga menziesii (Douglas-fir)	E	1	**15**	65	12	3	N	
661	Pseudotsuga menziesii (Douglas-fir)	E	1	**18**	75	13	3	N	self corected lean
668	Pinus sylvestris (Scots pine)	E	1	**11**	30	13	4	N	topped for utility line
669	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	20	12	4	N	topped for utility line
670	Pseudotsuga menziesii (Douglas-fir)	E	1	**12**	20	20	4	N	topped for utility line; poor root flare
671	Pseudotsuga menziesii (Douglas-fir)	E	1	**5**	25	8	3	N	
672	Pseudotsuga menziesii (Douglas-fir)	E	1	**8**	20	15	4	N	topped for utility line
729	Arbutus menziesii (Pacific madrone)	E	1	**10**	50	14	3	N	50% of dripline impervius
730	Thuja plicata (Western red cedar)	E	1	**15**	40	15	3	N	retaining wall 1-ft from trunk
731	Thuja plicata (Western red cedar)	E	4	**16**	45	15	3	N	included bark
732	Arbutus menziesii (Pacific madrone)	E	1	**6**	15	20	4	N	not on survey
733	Arbutus menziesii (Pacific madrone)	E	1	**12**	55	15	3	N	3-ft from retaining wall; ivy on trunk; self-corrected lean
734	Picea abies (Norway spruce)	E	1	**13**	45	10	4	Y	low lcr
735	Betula pendula (European white birch)	D	3	**26**	60	17	3	Y	ivy on trunk; co-dominant from base
736	Pinus sylvestris (Scots pine)	E	1	**14**	17	12	3	N	phototropically oriented
737	Ginkgo biloba (Maidenhair tree)	D	1	**5**	20	6	2	Y	not on survey
738	×Hesperotropsis leylandii (Leyland cypress)	E	1	**8**	25	10	2	Y	
739	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	8	2	Y	
740	Prunus domestica (Plum)	D	1	**16**	40	20	4	N	low lcr
741	Prunus domestica (Plum)	D	1	**10**	35	12	4	N	low lcr
742	Prunus domestica (Plum)	D	1	**8**	20	14	3	Y	low lcr; not on survey
743	Prunus domestica (Plum)	D	1	**17**	60	15	3	Y	
744	Prunus domestica (Plum)	D	2	**10**	35	10	4	N	low lcr; not on survey
745	Prunus domestica (Plum)	D	1	**12**	40	15	4	N	virginia creeper on trunk
746	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	13	8	3	N	base at 2'=5.4"; not on survey
747	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	6	3	N	base at 2'=7.5"; not on survey
748	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	base at 2'=4.5"; not on survey
749	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	6	3	N	base at 2'=5.2"; not on survey
750	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	8	3	N	base at 2'=5.8"; not on survey
751	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	base at 2'=4"; not on survey
752	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	15	8	3	N	base at 2'=5.3"; not on survey
753	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	8	3	N	base at 2'=5"; not on survey
754	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	9	3	N	base at 2'=6"; not on survey
755	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	15	9	3	N	base at 2'=5.8"; not on survey
756	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	8	3	N	base at 2'=5"; not on survey
757	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	9	3	N	base at 2'=4.7"; not on survey
758	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	8	3	N	base at 2'=4.4"; not on survey
759	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	6	3	N	base at 2'=5.4"; not on survey
760	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	12	6	3	N	base at 2'=4"; not on survey
761	Alnus rubra (Red alder)	D	2	**26**	60	25	3	N	
762	Alnus rubra (Red alder)	D	1	**9**	60	17	3	N	

B TREE INVENTORY TABLE (2 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
763	Alnus rubra (Red alder)	D	4	**32**	65	28	3	N	
764	Prunus armeniaca (Apricot)	D	1	**14**	55	20	4	N	low lcr
765	Prunus armeniaca (Apricot)	D	1	**9**	50	15	4	N	low lcr; ivy on trunk; not on survey
766	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	12	6	3	N	base at 2'=4.3"; not on survey
767	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	25	8	3	N	base at 2'=5"; not on survey
768	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	9	3	N	base at 2'=6.5"; not on survey
769	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	8	3	N	base at 2'=6.2"; not on survey
770	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	10	3	N	base at 2'=5.3"; not on survey
771	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	10	3	N	base at 2'=6.7"; not on survey
772	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	30	8	3	N	base at 2'=5"; not on survey
773	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	25	8	3	N	base at 2'=6.5"; not on survey
774	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	8	3	N	base at 2'=5.5"; not on survey
775	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	12	3	N	base at 2'=4.8"; not on survey
776	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	12	3	N	base at 2'=4.8"; not on survey
777	×Hesperotropsis leylandii (Leyland cypress)	E	1	**6**	20	10	3	N	base at 2'=6.5"; not on survey
778	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	10	3	N	base at 2'=4.6"; not on survey
779	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	25	10	3	N	base at 2'=6.4"; not on survey
780	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	12	3	N	base at 2'=5.8"; not on survey
781	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	18	6	3	N	base at 2'=5.5"; not on survey
782	×Hesperotropsis leylandii (Leyland cypress)	E	1	**5**	20	6	3	N	base at 2'=5.5"; not on survey
783	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	8	3	N	base at 2'=5"; not on survey
784	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	base at 2'=5.2"; not on survey
785	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	5	3	N	
786	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	17	8	3	N	base at 2'=4.3"; not on survey
787	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	base at 2'=5"; not on survey
788	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	base at 2'=4.8"; not on survey
789	Pseudotsuga menziesii (Douglas-fir)	E	1	**18**	50	15	3	N	30% impervious within dripline
790	Pseudotsuga menziesii (Douglas-fir)	E	1	**14**	20	15	4	N	topped at 20-ft for powerlines, 50% impervious in dripline
791	Betula pendula (European white birch)	D	2	**18**	35	25	4	N	included bark
792	Thuja plicata (Western red cedar)	E	1	**19**	55	7	3	N	codominate at 30'
793	Cunninghamia lanceolata (China fir)	E	1	**13**	30	8	2	Y	
794	Thuja plicata (Western red cedar)	E	1	**20**	45	12	2	Y	ivy on trunk
795	Prunus domestica (Plum)	D	1	**11**	45	16	3	Y	trunk wound at base with good response growth
796	Pinus monticola (Western white pine)	E	1	**26**	65	19	2	N	50% of dripline is a house
797	Pseudotsuga menziesii (Douglas-fir)	E	1	**22**	20	18	4	N	limited root zone; topped at 20'; fungi on trunk
798	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	6	3	N	base at 2'=4.1"; not on survey
799	Cedrus deodara (Deodar cedar)	E	1	**25**	65	24	2	N	not on survey
800	Pseudotsuga menziesii (Douglas-fir)	E	1	**16**	60	15	3	N	
801	Cedrus deodara (Deodar cedar)	E	1	**16**	55	12	4	N	suppressed canopy
802	Pseudotsuga menziesii (Douglas-fir)	E	1	**19**	65	17	4	N	self-corrected lean; low lcr
803	Acer macrophyllum (Bigleaf maple)	D	1	**22**	70	20	3	N	not on survey

C TREE INVENTORY TABLE (3 OF 7)
Scale: NTS

TREE INVENTORY TABLES 1-3

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Science & Design

MERCER ISLAND CHIU LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
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4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W4.1 OF 14

DATE 10/27/17 PRINTED BY ROEN HOHLFELD FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) (ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
804	Acer macrophyllum (Bigleaf maple)	D	1	**28**	65	30	3	N	12-in cavity at 10'; potential circling root; 10-degree lean to the south
805	Acer macrophyllum (Bigleaf maple)	D	1	**18**	70	30	3	N	
806	Acer macrophyllum (Bigleaf maple)	D	1	**7**	30	20	4	N	not on survey; phototropic lean
807	Thuja plicata (Western red cedar)	E	1	**18**	70	15	3	N	
808	Thuja plicata (Western red cedar)	E	1	**13**	40	12	3	N	suppressed canopy; pistol butt trunk
809	Acer macrophyllum (Bigleaf maple)	D	2	**11**	20	20	4	N	co-dominant; topped at 12'; not on survey
810	Thuja plicata (Western red cedar)	E	1	**21**	60	15	3	N	rooting branches that look like separate trees growing
811	Acer macrophyllum (Bigleaf maple)	D	1	**21**	70	30	3	N	trunk cavity 6-in in dia.; codominate at 15-ft
812	Acer macrophyllum (Bigleaf maple)	D	1	**22**	60	30	3	N	scaffold branch failure at 25-ft with good response growth
813	Acer macrophyllum (Bigleaf maple)	D	3	**39**	70	30	3	N	co-dominant at base; included bark; significant trunk wound
814	Alnus rubra (Red alder)	D	1	**4**	15	6	3	N	base at 2'=4.3'; not on survey
815	Prunus domestica (Plum)	D	1	**14**	20	8	4	N	poor pruning history; ivy on trunk; not on survey
816	Alnus rubra (Red alder)	D	1	**5**	20	10	3	N	not on survey
817	Pyrus domestica (Common pear)	D	1	**5**	15	8	4	Y	base at 2'=5.8"; not on survey
818	Fraxinus latifolia (Oregon ash)	D	1	**10**	30	12	3	Y	topped at 10-ft; not on survey
819	Styrax japonicus (Japanese snowbell)	D	6	**20**	25	16	4	Y	additional DBH-8", 6"
820	Castanea dentata (American chestnut)	D	2	**44**	70	30	3	Y	
821	Acer macrophyllum (Bigleaf maple)	D	1	**34**	75	35	2	Y	
822	Thuja plicata (Western red cedar)	E	1	**17**	50	8	2	Y	
823	Acer macrophyllum (Bigleaf maple)	D	1	**32**	70	30	3	N	co-dominant at 6'; not on survey
824	Acer macrophyllum (Bigleaf maple)	D	5	**32**	80	30	3	N	additional DBH-7"
825	Crataegus monogyna (Common hawthorn)	D	2	**7**	25	15	3	N	not on survey
826	Prunus emarginata (Bitter cherry)	D	1	**7**	40	10	3	N	not on survey
827	Pinus nigra (Austrian pine)	E	1	**21**	50	12	4	N	co-dominant at 20'; included bark; low LCR
828	Pinus sylvestris (Scots pine)	E	1	**18**	65	20	3	N	
829	Acer macrophyllum (Bigleaf maple)	D	1	**14**	15	20	4	Y	co-dominant at 10'; topped at 15' for power lines
830	Betula pendula (European white birch)	D	2	**25**	65	25	3	Y	
831	Pinus sylvestris (Scots pine)	E	1	**21**	70	16	3	Y	co-dominant at 15'; included bark; circling root
832	Arbutus menziesii (Pacific madrone)	E	2	**8**	25	15	3	Y	
833	Acer macrophyllum (Bigleaf maple)	D	1	**10**	50	20	3	Y	pistol-butt trunk
842	Thuja plicata (Western red cedar)	E	1	**1**	10	2	2	N	
843	Pseudotsuga menziesii (Douglas-fir)	E	1	**1**	8	3	3	N	se lean, self corected
844	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
845	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	5	3	N	
846	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	5	4	N	topped at 10'
847	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
848	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	5	3	N	
849	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
850	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	5	2	N	
851	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	15	4	3	N	
852	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	

A TREE INVENTORY TABLE (4 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) (ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
853	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
854	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
855	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	3	N	
856	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
857	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
858	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	
859	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
860	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	15	6	3	N	
861	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	3	N	
862	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	14	4	3	N	
863	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	18	5	3	N	
864	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	3	3	N	
865	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	3	3	N	
866	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	4	3	N	
867	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	5	3	N	suppressed
869	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	8	4	3	N	
870	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	3	3	N	suppressed
871	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	11	4	3	N	
872	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	10	6	3	N	suppressed
873	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	14	5	3	N	
874	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
875	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
876	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	5	3	N	
877	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	9	3	N	
878	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	7	3	N	
879	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	22	5	3	N	
880	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
881	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	6	6	3	N	
882	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
883	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	8	3	N	
884	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	5	4	N	chlorotic foliage
885	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	6	3	N	
886	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	12	6	4	N	chlorotic foliage
887	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	5	3	N	
888	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	5	3	N	
889	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	15	10	3	N	
890	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	3	3	N	
891	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	5	3	N	
892	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	4	3	N	
893	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	13	3	3	N	
894	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	18	5	3	N	

B TREE INVENTORY TABLE (5 OF 7)
Scale: NTS

MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN) (ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
895	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	5	3	N	
896	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	3	N	
897	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
898	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
899	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	18	5	3	N	
900	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	5	3	N	
968	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	6	3	N	
969	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
970	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
971	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
972	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	4	N	sig trunk wound on ne side
973	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
974	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
975	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	6	4	N	trunk wound on ne side
976	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
977	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	14	6	4	N	trunk wounds
978	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
979	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	8	3	N	
980	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	22	7	3	N	
981	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	8	3	N	
982	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	8	3	N	
983	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	17	6	3	N	
984	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	22	8	3	N	
985	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	21	6	3	N	
986	×Hesperotropsis leylandii (Leyland cypress)	E	1	**4**	20	6	3	N	
987	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
988	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	18	7	3	N	
989	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	4	N	suppressed
990	×Hesperotropsis leylandii (Leyland cypress)	E	2	**1**	9	4	4	N	
991	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	8	6	4	N	
992	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	7	4	4	N	
993	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	15	6	3	N	
994	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	6	3	N	
995	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
996	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	13	6	3	N	
997	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
998	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	7	3	N	
999	×Hesperotropsis leylandii (Leyland cypress)	E	2	**2**	15	6	3	N	
1000	×Hesperotropsis leylandii (Leyland cypress)	E	2	**3**	15	6	3	N	
1001	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1002	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	25	8	3	N	

C TREE INVENTORY TABLE (6 OF 7)
Scale: NTS

NFC
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TREE INVENTORY TABLES 4-6

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750 Sixth Street South
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Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W4.2 OF 14

DATE 10/27/17 | PRINTED BY RGEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

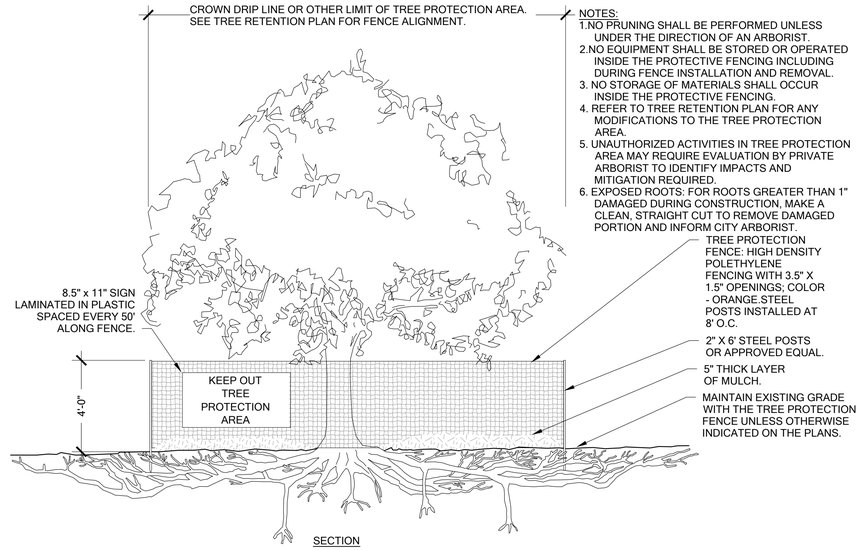
MERCER ISLAND CHIU
4320 Island Crest Way, Mercer Island, WA 98040 Site Visit: 5/16/2017 and 8/24/2017
parcel # 1824059031

Table Issued: 4/9/2018

TAG #	TREE NAME	E/V / DEC	# STEMS	CAL/DBH (IN, ROUNDED)	HEIGHT (FT)	RADIUS (FT)	CONDITION	REMOVE (Y/N)	NOTES
1003	×Hesperotropsis leylandii (Leyland cypress)	E	2	**3**	17	6	3	N	
1004	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1005	×Hesperotropsis leylandii (Leyland cypress)	E	1	**3**	20	6	3	N	
1006	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	20	6	3	N	
1007	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	13	5	3	N	
1008	×Hesperotropsis leylandii (Leyland cypress)	E	1	**2**	15	5	3	N	
1009	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	10	4	3	N	
1010	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	7	3	4	N	
1011	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	12	4	3	N	
1012	×Hesperotropsis leylandii (Leyland cypress)	E	1	**1**	6	5	4	N	trunk wound
1013	×Hesperotropsis leylandii (Leyland cypress)		1	**0**	6	3	4	N	trunk wound

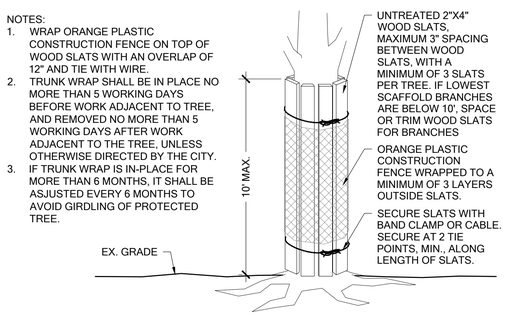
A TREE INVENTORY TABLE (7 OF 7)

Scale: NTS



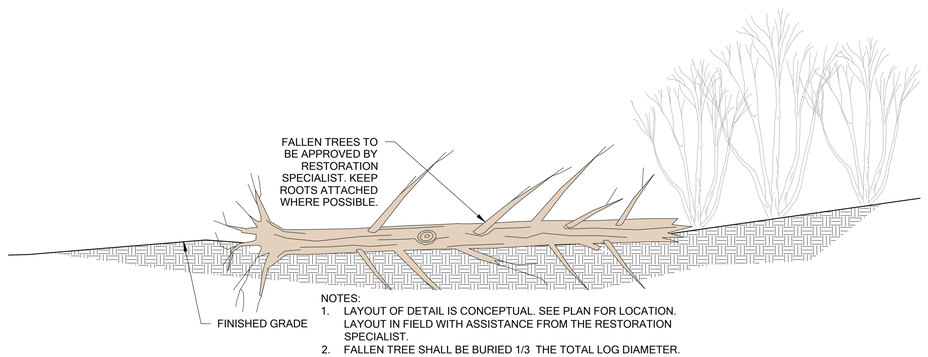
C TREE PROTECTION FENCING

Scale: NTS



B TREE TRUNK WRAP

Scale: NTS



D LARGE WOODY DEBRIS

Scale: NTS

NFC

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TREE INVENTORY TABLE 7 AND TREE PRESERVATION DETAILS

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2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W4.3 OF 14

DATE 10/27/17 | PRINTED BY ROEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN DWG

Exhibit 5d



TESC NOTES - ALL AREAS

1. CONTRACTOR TO VERIFY TEMPORARY HIGH VISIBILITY FENCE IS INSTALLED AROUND THE LIMITS OF WORK PRE-CONSTRUCTION.
2. SEE SHEETS W4.0-4.3 FOR TREE PRESERVATION INFORMAITON.
3. SURVEY AND STAKE THE LIMITS OF WETLAND BUFFER ENHANCEMENT AREA PRE-CONSTRUCTION.
4. INSTALL SILT FENCE AND FIBER ROLL AS SHOWN ON THIS SHEET. MITIGATION CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS AS NEEDED TO ASSURE PROPER TESC MEASURES ARE IN-PLACE.

SOIL PREPARATION NOTES - WETLAND RESTORATION PLANTING AREAS

1. REMOVE ALL WOOD CHIPS PLACED IN WETLAND AND DISPOSE OF OFF-SITE. WOOD CHIP REMOVAL IS TO BE DONE WITHOUT MECHANIZED TOOLS.
2. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED IN INVASIVE SPECIES REMOVAL NOTES ON W5.1.
3. PLANT PER W7.0-W7.2.
4. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

SOIL PREPARATION NOTES - WETLAND BUFFER PLANTING AREAS

1. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED ON W5.1.
2. BACKFILL ANY DIVOTS WITH TOPSOIL TO RETURN TO EXISTING GRADE.
3. PLANT PER W7.0-7.2.
4. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR (WETLAND CREATION AREA)
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED COMBINED WETLAND/WATERCOURSE BUFFER (25 FT)
- WETLAND CREATION AREA (2,305 SF)
- WETLAND RESTORATION AREA (24,670 SF)
- BUFFER MITIGATION AREA (21,080 SF)
- FIBER ROLL (B / W5.1)
- SILT FENCE (A / W5.1)

TESC AND SITE PREPARATION PLAN

0 10' 20' 40' 80'

NFC

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SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
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2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER: 160905
SHEET NUMBER: W5.0 OF 14

PRINTED BY: RODEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

INVASIVE SPECIES REMOVAL NOTES:

NOXIOUS WEED REMOVAL & CONTROL PROTOCOLS

NOTE:
1. ALL INVASIVE PLANTS TO BE DISPOSED OF OFF-SITE. NO INVASIVE SPECIES SHALL BE CHIPPED FOR REUSE AS MULCH.
2. THIS PLAN ADDRESSES INVASIVE SPECIES REMOVAL WITHIN CRITICAL AREAS AND BUFFERS. PRIOR TO PROJECT COMPLETION, ALL INVASIVE SPECIES ON THE PARCEL WILL BE REMOVED. 1

REMOVE REED CANARYGRASS:

1. DIG WITH HAND TOOLS ALL REED CANARYGRASS RHIZOMES FROM THE PLANTING AREA.
2. REED CANARYGRASS CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL RHIZOMES SHALL BE GRUBBED OUT. AROUND SIGNIFICANT VEGETATION TO REMAIN, REED CANARYGRASS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
3. AFTER REED CANARYGRASS HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
4. DISPOSE OF REMOVED MATERIAL OFF SITE AT A PROFESSIONAL FACILITY.

REMOVE HIMALAYAN/EVERGREEN BLACKBERRY:

1. CUT ABOVE GROUND PORTION OF BLACKBERRY AND REMOVE OFFSITE. ENSURE THAT NO NATIVE PLANTS ARE REMOVED.
2. CANES SHALL BE REMOVED FROM CANOPY OF TREES TO REMAIN TO THE EXTENT FEASIBLE AS DETERMINED BY THE RESTORATION SPECIALIST.
3. DIG UP OR PULL THE REMAINING ROOT BALL. ENSURE THAT NO NATIVE PLANT ROOTS ARE DAMAGED.
4. REPLACE ANY DIVOTS CREATED WHEN REMOVING THE PLANT WITH APPROVED TOPSOIL.
5. ALL CANES SHALL BE CUT BACK AND REMOVED WITHIN THE TEN (10) FEET ADJACENT TO THE PLANTING AREA, INCLUDING TREE CANOPY. CANES SHALL BE PULLED AND DISPOSED OF OFF-SITE.
6. REVEGETATE PER PLANTING PLAN. COVER WITH WOOD CHIP MULCH FOUR INCHES DEEP.
7. MONITOR SITE THROUGHOUT GROWING SEASON FOR EMERGING CANES AND GRUB OUT AND REMOVE ANY NEW PLANTS. CONTINUE TO CUT BACK CANES TEN (10) FEET FROM THE PLANTING AREA.

REMOVE ENGLISH IVY:

1. PHYSICALLY REMOVE ALL ENGLISH IVY VINES AND ROOTS FROM THE PLANTING AREA.
2. IF GROWING ON TREE TRUNKS, CUT VINES TO HEIGHT OF 4' OFF GROUND AND AROUND THE BASE OF EACH TREE, TO PREVENT THE IVY FROM GIRDLING. DO NOT PULL DOWN FROM TREE CROWNS. REMOVE STANDING VINES FROM THE LOWER 4' OF EVERY TREE TRUNK THAT CONTAINS ANY IVY.
3. IVY CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL ROOTS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
4. AFTER IVY HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
5. DISPOSE OF REMOVED MATERIAL PROPERLY OFF SITE.

REMOVE JAPANESE KNOT WEED:

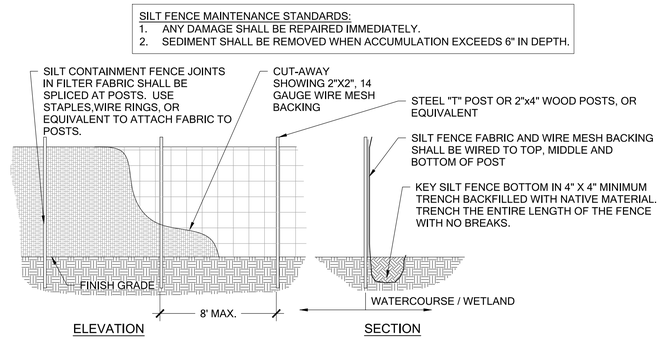
1. STAKE OUT INVASIVE CONTROL AREA AND VERIFY WITH RESTORATION SPECIALIST. INVASIVE PLANTS OTHER THAN KNOTWEED THAT IS NOT IN CONCENTRATED AREA ARE TO BE FLAGGED THROUGHOUT THE SITE AND THEN VERIFIED BY THE RESTORATION SPECIALIST FOR REMOVAL.
2. CUT STEMS CLOSE TO THE GROUND TWICE A MONTH OR MORE BETWEEN AT LEAST APRIL AND AUGUST, AND THEN ONCE A MONTH OR MORE UNTIL THE FIRST FROST, OVER 3-5 CONSECUTIVE YEARS. USE A MACHETE, LOPPERS, OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS.
3. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF OFF-SITE PROPERLY TO PREVENT RE-INFESTATION.
4. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD.
5. TO ERADICATE THE KNOTWEED, EITHER SMOTHER CANES AT START OF PROJECT AND ON A REGULAR BASIS DURING THE GROWING SEASON, OR CUT AND REMOVE VEGETATED GROWTH REGULARLY DURING THE GROWING SEASON TO DEPLETE ENERGY STORES IN THE PLANT.
6. MONITOR KNOTWEED INFESTATION AND REPEAT AS NEW STARTS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST.

REMOVE ENGLISH LAUREL:

1. SMALL PLANTS CAN BE DUG UP WHEN SOIL IS MOIST (USE PROPER PERSONAL PROTECTIVE EQUIPMENT WHEN HANDLING BECAUSE THIS PLANT MAY BE POISONOUS).
2. TO CONTROL LARGER PLANTS, CUT STEMS AND TRUNKS BY HAND OR CHAINSAW, CUTTING AS CLOSE TO THE GROUND AS POSSIBLE, AND REMOVE STEMS TO MAKE IT EASIER TO CONTROL RE-GROWTH. LEAVING STEMS ON MOIST GROUND MIGHT RESULT IN SOME STEM-ROOTING.
3. AFTER CUTTING, PLANTS ARE VERY LIKELY TO RE-GROW. DIG OUT STUMPS INCLUDING AS MUCH ROOT AS POSSIBLE. TO AVOID REGROWTH, STUMPS SHOULD BE TURNED UPSIDE DOWN AND SOIL SHOULD BE BRUSHED OFF ROOTS. IF THE STUMPS ARE DUG UP, BE SURE TO STABILIZE THE AREA TO PREVENT EROSION.

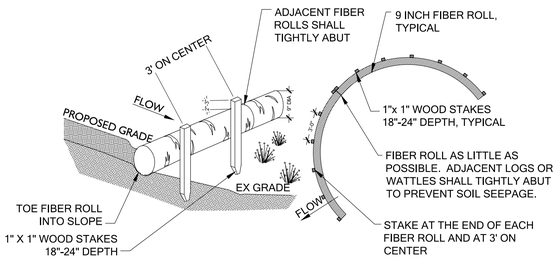
REMOVE OLD MAN'S BEARD

1. CUT VINES ON TREES OR FENCES AT ABOUT WAIST HEIGHT, FOLLOW THE VINE BACK TO THE ROOT AND DIG IT OUT. UPPER VINES CAN BE LEFT ON THE TREES SINCE THEY WILL DIE BACK, OR CAN BE REMOVED IF IT IS SAFE AND FEASIBLE TO DO SO.
2. MAKE SURE REMAINING VINES ARE NOT TOUCHING THE GROUND BECAUSE OLD MAN'S BEARD CAN FORM ROOTS AT STEM NODES
3. VINES GROWING ALONG THE GROUND SHOULD BE DUG UP AND REMOVED.
4. PULL SMALL PLANTS AND SEEDLINGS WHEN THE SOIL IS DAMP DURING WINTER OR SPRING. ALTHOUGH PLANTS CAN BE DUG UP YEAR ROUND, IT IS IDEAL TO DO SO DURING THE WINTER, WHEN MOST PLANTS ARE DORMANT, TO MINIMIZE DISTURBANCE TO THE SURROUNDING VEGETATION.



A SILT FENCE

Scale: NTS



NOTES
1. FIBER ROLL SHALL BE INSTALLED PRIOR TO START OF WORK.
2. FIBER ROLL SHALL BE 9 INCH IN DIAMETER.
3. STAKING: WOODEN STAKES ARE RECOMMENDED TO SECURE THE FIBER ROLL. BE SURE TO USE A STAKE THAT IS LONG ENOUGH TO PROTRUDE SEVERAL INCHES ABOVE THE COIR LOG OR STRAW WATTLE: 18" IS A GOOD LENGTH FOR HARD, ROCKY SOIL; FOR SOFT LOAMY SOIL USE A 24" STAKE.
4. WHEN INSTALLING RUNNING LENGTHS OF FIBER ROLL, BUTT THE SECOND LOG TIGHTLY AGAINST THE FIRST; DO NOT OVERLAP THE ENDS.
5. STAKE THE FIBER ROLLS AT EACH END AND THREE (3) FEET ON CENTER. STAKES SHOULD BE DRIVEN OUTSIDE THE FIBER ROLL, BUT CLOSE ENOUGH TO HOLD IT IN PLACE. LEAVE 2 - 3 INCHES OF THE STAKE PROTRUDING ABOVE THE FIBER ROLL. A HEAVY SEDIMENT LOAD WILL TEND TO PICK UP THE FIBER ROLL AND COULD PULL IT OFF THE STAKES IF THEY ARE DRIVEN DOWN TOO LOW.
6. WHEN FIBER ROLL IS USED FOR FLAT GROUND APPLICATIONS, DRIVE THE STAKES STRAIGHT DOWN; WHEN INSTALLING FIBER ROLL ON SLOPES, DRIVE THE STAKES PERPENDICULAR TO THE SLOPE. DRIVE THE FIRST END STAKE OF THE SECOND FIBER ROLL AT AN ANGLE TOWARD THE FIRST FIBER ROLL IN ORDER TO HELP ABUT THEM TIGHTLY TOGETHER.

B FIBER ROLL

Scale: NTS

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TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES

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MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W5.1 OF 14

DATE 10/27/17 | PRINTED BY LUCAS VANNICE | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d



LEGEND

EXISTING FEATURES

- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES

- 284 PROPOSED CONTOUR
- WETLAND/WATERCOURSE BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- APPROX. LIMIT OF GRADING

PRELIMINARY GRADING SEQUENCE FOR WETLAND CREATION AREA

1. MECHANIZED EXCAVATION SHALL BE AVOIDED IN WETLAND AND STREAM.
2. REMOVE ROAD BED TO MATCH ADJACENT GRADES.
3. CONDUCT SUBSURFACE EVALUATION BY GEOTECHNICAL ENGINEER TO DETERMINE DEPTH OF ADDITIONAL ROAD BED EXCAVATION.
4. COMPLETE ROAD BED EXCAVATION PER GEOTECHNICAL ENGINEER RECOMMENDATIONS.
5. BACKFILL ROAD BED EXCAVATION AREA WITH APPROVED WETLAND SOILS TO ACHIEVE PROPOSED GRADES.
6. COMPLETE PROPOSED GRADING.

NOTES

1. SEE CIVIL ENGINEER PLANS FOR ALL GRADING PLANS OUTSIDE OF WETLAND CREATION AREA.
2. GRADING SHOWN IS CONCEPTUAL AND SUPERFICIAL IN NATURE. SUBSURFACE EVALUATION IS REQUIRED TO ASSESS DRAINAGE CONDITION.

WETLAND CREATION AREA GRADING PLAN

0 5' 10' 20' 40'

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DATE 10/27/17
PRINTED BY ROEN HOHLFELD
FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG



LEGEND

EXISTING FEATURES
- EXISTING CONTOUR
- WETLAND BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (DELINEATED)
- WATERCOURSE BOUNDARY (APPROX.)
- EXISTING TREE

PROPOSED FEATURES
- 284 PROPOSED CONTOUR
- WETLAND/WATERCOURSE AREA BUFFER (50 FT)
- REDUCED WETLAND/WATERCOURSE BUFFER (25 FT)
- WETLAND CREATION PLANTING (2,305SF)
- WETLAND RESTORATION PLANTING (24,670 SF)
- BUFFER MITIGATION PLANTING (21,080 SF)

NOTES
1. SEE SHEET W7.1 FOR PLANTING SCHEDULE.

PLANTING PLAN

0 10' 20' 40' 80'

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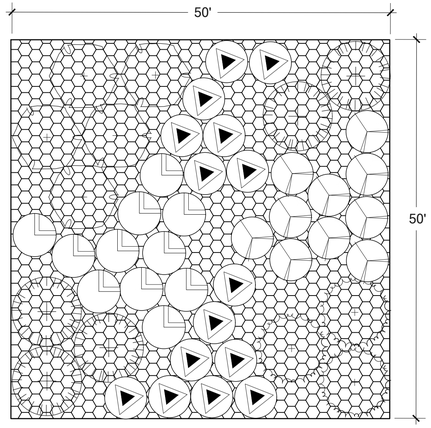
Exhibit 5d

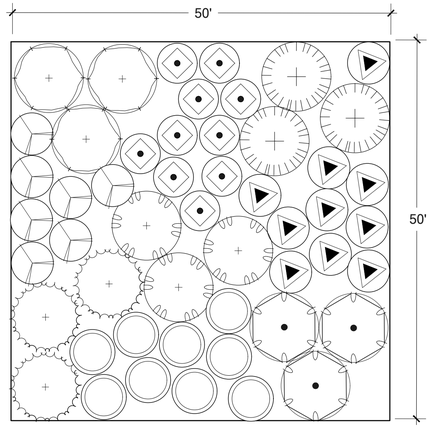
WETLAND CREATION CANDIDATE PLANT SCHEDULE (2,305 SF)

TREES*	1	QTY	SPACING	SIZE	NOTE
ALNUS RUBRA / RED ALDER	1	3	9' O.C.	2 GAL.	ALL PLANTS TO BE FULL AND WELL ROOTED
PICEA SITCHENSIS / SITKA SPRUCE		3	9' O.C.	2 GAL.	
THUJA PLICATA / WESTERN REDCEDAR		4	9' O.C.	2 GAL.	
SHRUBS					
CORNUS SERICEA / REDTWIG DOGWOD		10	6' O.C.	1 GAL.	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK		10	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY		10	6' O.C.	1 GAL.	
GROUNDCOVER** **SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY					
CAREX OBNUPTA / SLOUGH SEDGE		165	24" O.C.	4" POT	
JUNCUS EFFUSUS/ SOFT RUSH		165	24" O.C.	4" POT	
SCIRPUS MICROCARPUS / SMALL-FRUITED BULRUSH		165	24" O.C.	4" POT	



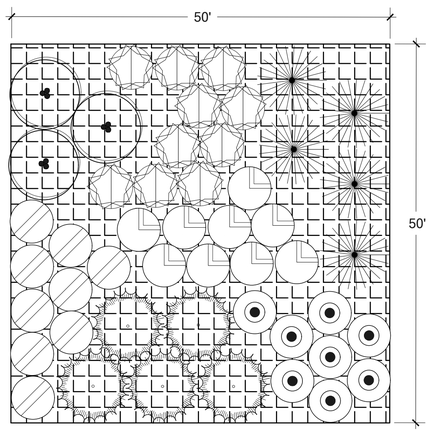
WETLAND RESTORATION CANDIDATE PLANT SCHEDULE (24,670 SF)

TREES*	1	QTY	SPACING	SIZE	NOTE
SALIX LUCIDA / PACIFIC WILLOW		31	9' O.C.	6' TALL	ALL PLANTS TO BE FULL AND WELL ROOTED
SALIX SITCHENSIS / SITKA WILLOW		30	9' O.C.	2 GAL.	
PICEA SITCHENSIS / SITKA SPRUCE		31	9' O.C.	6' TALL	
PRUNUS EMARGINATA / BITTER CHERRY		31	9' O.C.	6' TALL	
THUJA PLICATA / WESTERN REDCEDAR		31	9' O.C.	6' TALL	
SHRUBS					
CORNUS SERICEA / REDTWIG DOGWOOD		90	6' O.C.	1 GAL.	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK		90	6' O.C.	1 GAL.	
ROSA PISOCARPA / CLUSTER ROSE		90	6' O.C.	1 GAL.	
SPIRAEA DOUGLASII / HARDHACK		90	6' O.C.	1 GAL.	



BUFFER MITIGATION CANDIDATE PLANT SCHEDULE (21,080 SF)

TREES*	1	QTY	SPACING	SIZE	NOTE
ACER MACROPHYLLUM / BIG-LEAF MAPLE		35	9' O.C.	2 GAL.	ALL PLANTS TO BE FULL AND WELL ROOTED
PSEUDOTSUGA MENZIESII / DOUGLAS-FIR		35	9' O.C.	2 GAL.	
TSUGA HETEROPHYLLA / WESTERN HEMLOCK		35	9' O.C.	2 GAL.	
SHRUBS					
OEMLERIA CERASIFORMIS / OSOBERRY		75	6' O.C.	1 GAL.	
SAMBUCUS RACEMOSA / RED ELDERBERRY		75	6' O.C.	1 GAL.	
CORYLUS CORNUTA / BEAKED HAZELNUT		75	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY		75	6' O.C.	1 GAL.	
GROUNDCOVER** **SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY					
FRAGARIA CHILOENSIS / COASTAL STRAWBERRY		600	3' O.C.	4" POT	
POLYSTICHUM MUNITUM / WESTERN SWORDFERN		600	3' O.C.	4" POT	
MAHONIA NERVOSA / LOW OREGON GRAPE		600	3' O.C.	4" POT	



TYPICAL PLANTING SCHEDULES

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DATE 10/27/17 | PRINTED BY ROEN HOHLFELD | FILENAME 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

PLANT INSTALLATION SPECIFICATIONS

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 SUN SCALD WILL BE REJECTED.
4. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO FLORA OF THE PACIFIC NORTHWEST BY HITCHCOCK AND CRONQUIST, UNIVERSITY OF WASHINGTON PRESS, 1973 AND/OR TO A FIELD GUIDE TO THE COMMON WETLAND PLANTS OF WESTERN WASHINGTON & NORTHWESTERN OREGON, ED. SARAH SPEAR COOKE, SEATTLE AUDUBON SOCIETY, 1997.

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 RESTORATION 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 RESTORATION 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 RESTORATION CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH. AFTER INSPECTION AND ACCEPTANCE, THE RESTORATION 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.

MEASUREMENT 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.

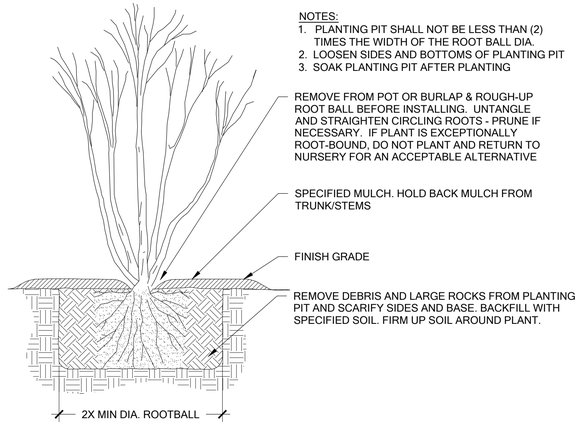
REPLACEMENT
1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

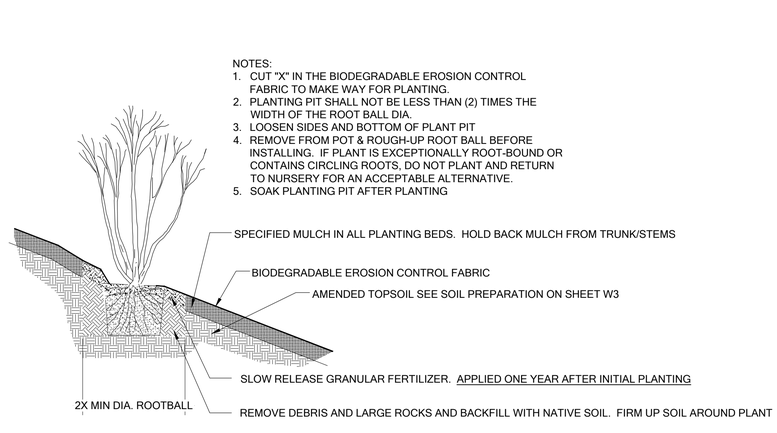
GENERAL
1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS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

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.

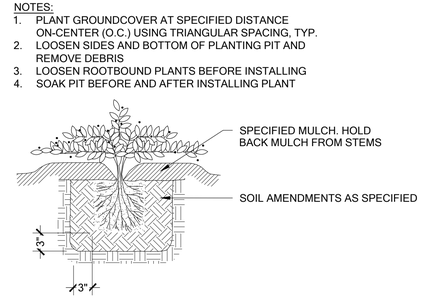
ROOT TREATMENT
1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.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



A TREE AND SHRUB PLANTING
Scale: NTS



B TREE AND SHRUB PLANTING ON A SLOPE
Scale: NTS



C GROUNDCOVER PLANTING
Scale: NTS

PLANT INSTALLATION DETAILS AND NOTES

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2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W7.2 OF 14

FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN DWG
PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17

Exhibit 5d

MITIGATION / RESTORATION SPECIFICATIONS

PROJECT SUMMARY

THIS PLAN HAS BEEN PREPARED 1) TO RESTORE PREVIOUSLY ALTERED AREAS SUBJECT TO A NOTICE OF CORRECTION AND 2) TO MITIGATE WETLAND AND WATERCOURSE BUFFER IMPACTS ASSOCIATED WITH THE PROPOSED SUBDIVISION.

THE NOTICE OF CORRECTION INDICATED THAT FILL MATERIAL SUCH AS WOOD CHIPS HAD BEEN PLACED ON THE SUBJECT PROPERTY, AND THAT TREES AND SHRUBBY VEGETATION HAVE BEEN CLEARED OVER TIME. THE AREA SUBJECT TO THE NOTICE OF CORRECTION APPEARS TO HAVE BEEN APPLIED TO APPROXIMATELY 12,748 SQUARE FEET OF THE SUBJECT PROPERTY. RESTORATION OF THE AREA SUBJECT TO THE NOTICE OF CORRECTION INCLUDES REMOVAL OF THE WOOD CHIPS AND NON-NATIVE AND INVASIVE PLANT SPECIES, AND THE INSTALLATION OF A NATIVE TREE, SHRUB AND GROUNDCOVER PLANT COMMUNITY.

THE PROJECT PROPOSES BUFFER REDUCTION WITH ENHANCEMENT IN AREAS ADJACENT TO THE PROPOSED RESIDENTIAL DEVELOPMENT. ENHANCEMENT OF THE EXISTING DEGRADED BUFFER AREAS WILL INCLUDE THE REMOVAL OF NON-NATIVE AND INVASIVE SPECIES, AND THE INSTALLATION OF A NATIVE TREE, SHRUB AND GROUNDCOVER PLANT COMMUNITY.

THE PROPOSED BUFFER REDUCTION INCLUDES 1,988 SQUARE FEET OF WETLAND AS BUFFER. TO MITIGATE FOR THE WETLAND AS BUFFER, THE CREATION OF 2,305 SQUARE FEET OF WETLAND IS PROPOSED. THE WETLAND CREATION AREA WILL BE PLANTED WITH A NATIVE TREE, SHRUB AND EMERGENT PLANT COMMUNITY.

WORK SEQUENCE (SEE MATERIALS SECTION FOR MATERIAL INFORMATION)

A RESTORATION SPECIALIST SHALL MAKE SITE VISITS TO VERIFY THE FOLLOWING PROJECT MILESTONES:

1. BEFORE BEGINNING CONSTRUCTION WORK, ESTABLISH AND DEFINE THE WORK AREA. IDENTIFY AND DEMARCATE THE LIMITS OF PROJECT GRADING AND CLEARING WITH HIGH VISIBILITY FENCING OR SIMILAR MEANS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES AS IDENTIFIED ON THE TESC PLANS.
3. CLEAR AND GRUB THE MITIGATION AND RESTORATION AREAS. CLEARING AND GRUBBING IN WETLAND AND WATERCOURSE AREAS TO BE PERFORMED USING HAND TOOLS ONLY. INVASIVE SPECIES AREA TO BE REMOVED FROM ENTIRE SITE.
4. REMOVE PREVIOUSLY PLACED WOOD CHIPS FROM VIOLATION AREA. REMOVAL TO BE PERFORMED USING HAND TOOLS ONLY.
5. SURVEY AND PAINT PROPOSED 1-FOOT CONTOURS AND STAKE CUT/FILL DEPTHS WITHIN THE WETLAND CREATION AREA BASED ON THE APPROVED PLAN SET.
6. EXCAVATE AS NECESSARY TO TIE INTO THE SURROUNDING GRADE AND CREATE WETLAND TOPOGRAPHY. ALL EXCAVATED MATERIAL NOT NEEDED FOR RE-USE IS TO BE DISPOSED OF OFFSITE. OVER-EXCAVATION MAY BE RECOMMENDED TO ACCOMMODATE THE PLACEMENT OF TOPSOIL AND/OR COMPOST AMENDMENTS. EQUIPMENT USED TO CONDUCT EXCAVATION WOULD LIKELY INCLUDE TRACKED EXCAVATORS AND DUMP TRUCKS.
7. UNDER THE DIRECTION OF THE RESTORATION SPECIALIST, PERFORM FINISHING TOUCHES ON THE WETLAND AND RESTORATION AREAS. COMPLETE ANY ADDITIONAL TOUCH-UP WORK AS DIRECTED.
8. PRIOR TO FINISH GRADING, THE RESTORATION SPECIALIST SHALL INSPECT THE SOIL CONDITION AND DETERMINE IF SOIL AMENDMENTS OTHER THAN COMPOST ARE NECESSARY.
9. INCORPORATE 5 INCHES OF COMPOST INTO THE FINISH GRADE OF THE WETLAND CREATION AREA. SEE SHEET W3 FOR SOIL PREPARATION NOTES.
10. INCORPORATE 3 INCHES OF COMPOST INTO THE FINISH GRADE OF THE BUFFER AREAS, INCLUDING THE RESTORED PORTION OF THE CONSTRUCTION ACCESS AREAS. SEE SHEET W3 FOR SOIL PREPARATION NOTES.
11. LAYOUT PLANTS PER SEQ W7
12. INSTALL NATIVE PLANTS PER PLANTING DETAILS ON SHEET W8.
    A. NATIVE PLANT INSTALLATION SHALL OCCUR DURING THE DORMANT SEASON (OCTOBER 15TH THROUGH MARCH 1ST) IN FROST-FREE PERIODS ONLY.
    B. LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE RESTORATION SPECIALIST. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE RESTORATION SPECIALIST.
    C. INSTALL PLANTS PER PLANTING DETAILS
13. WATER EACH PLANT THOROUGHLY TO REMOVE AIR POCKETS.
14. INSTALL A TEMPORARY IRRIGATION SYSTEM CAPABLE OF SUPPLYING AT LEAST 1-INCH OF WATER PER WEEK TO THE ENTIRE PLANTED AREA OUTSIDE WETLAND DURING THE DRY SEASON (JUNE 1ST THROUGH SEPTEMBER 30TH).
15. ONE YEAR AFTER INITIAL PLANTING, APPLY A SLOW-RELEASE, PHOSPHOROUS-FREE, GRANULAR FERTILIZER TO EACH INSTALLED PLANT.
16. PLANT GROUNDCOVERS IN WETLAND RESTORATION AREA IN YEAR 3 AFTER INVASIVE PLANTS HAVE BEEN SUCCESSFULLY MANAGED.

MAINTENANCE

THE SITE SHALL BE MAINTAINED FOR FIVE YEARS FOLLOWING SUCCESSFUL INSTALLATION.

1. REPLACE EACH PLANT FOUND DEAD IN THE SUMMER MONITORING VISITS IN THE FOLLOWING DORMANT SEASON (OCTOBER 15 - MARCH 1). REPLACEMENT SHALL BE OF THE SAME SPECIES AND SIZE PER PLAN UNLESS OTHERWISE APPROVED BY THE RESTORATION SPECIALIST.
2. GENERAL WEEDING FOR ALL PLANTED AREAS
    A. AT LEAST TWICE ANNUALLY, REMOVE COMPETING GRASSES AND WEEDS FROM AROUND THE BASE OF EACH INSTALLED PLANT TO A RADIUS OF 12 INCHES. WEEDING SHOULD OCCUR AT LEAST ONCE IN THE SPRING AND ONCE IN THE SUMMER. THOROUGH WEEDING WILL RESULT IN LOWER PLANT MORTALITY AND ASSOCIATED PLANT REPLACEMENT COSTS.
    B. MORE FREQUENT WEEDING MAY BE NECESSARY DEPENDING ON WEED CONDITIONS THAT DEVELOP AFTER PLANT INSTALLATION.
    C. NOXIOUS WEEDS MUST BE REMOVED FROM THE ENTIRE MITIGATION AREA, AT LEAST TWICE ANNUALLY.
    D. DO NOT USE STRING TRIMMERS IN THE VICINITY OF INSTALLED PLANTS, AS THEY MAY DAMAGE OR KILL THE PLANTS.
3. MAINTAIN A FOUR-INCH-THICK LAYER OF WOODCHIP MULCH ACROSS THE ENTIRE BUFFER MITIGATION PLANTING AREA. MULCH SHOULD BE PULLED BACK TWO INCHES FROM THE PLANT STEMS. 4. INSPECT AND REPAIR THE IRRIGATION SYSTEM AS NECESSARY EACH SPRING. DURING AT LEAST THE FIRST TWO GROWING SEASONS, MAKE SURE THAT THE ENTIRE PLANTING AREA RECEIVES A MINIMUM OF ONE INCH OF WATER PER WEEK FROM JUNE 1ST THROUGH SEPTEMBER 30TH.

GOALS

1. RESTORE 24,670 SQUARE FEET OF DEGRADED WETLAND AREA.
    A. CREATE A DENSE, NATIVE TREE AND SHRUB COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE WETLAND RESTORATION AREA.
2. ENHANCE 21,080 SQUARE FEET OF DEGRADED BUFFER AREA.
    A. CREATE A DENSE, NATIVE TREE AND SHRUB COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE ENTIRE SITE.
3. CREATE 2,303 SQUARE FEET OF ADDITIONAL WETLAND AREA.
    A. CREATE A DENSE, NATIVE SHRUB AND EMERGENT COMMUNITY.
    B. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE WETLAND CREATION AREA.
4. RE-ESTABLISH HISTORIC STREAM/WETLAND CONDITIONS BY DAYLIGHTING PIPED WATERCOURSE AND REMOVING DRIVEWAY.

PERFORMANCE STANDARDS

THE FOLLOWING PERFORMANCE STANDARDS WILL BE USED TO GAUGE THE SUCCESS OF THE PROJECT OVER TIME. IF ALL PERFORMANCE STANDARDS HAVE BEEN SATISFIED BY THE END OF YEAR FIVE, THE PROJECT SHALL BE CONSIDERED COMPLETE AND THE CITY OF MERCER ISLAND SHALL RELEASE THE PERFORMANCE BOND (IF REQUIRED).

1. SURVIVAL:
    A. ACHIEVE 100% SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1.
    B. ACHIEVE 80% SURVIVAL OF INSTALLED WOODY PLANTS BY THE END OF YEAR 2.

    THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2. COVER:
    A. ACHIEVE 60% COVER OF NATIVE TREES AND SHRUBS BY YEAR 3 WITHIN PLANTED WETLAND AND BUFFER AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
    B. ACHIEVE 10% COVER OF NATIVE EMERGENT PLANTS WITHIN THE CREATED WETLAND AREA BY YEAR 3.
    C. ACHIEVE 80% COVER OF NATIVE TREES AND SHRUBS BY YEAR 5 WITHIN PLANTED WETLAND AND BUFFER AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
    D. ACHIEVE 30% COVER OF NATIVE EMERGENT PLANTS WITHIN WETLAND AREAS BY YEAR 5.
3. DIVERSITY:
    A. ESTABLISH AT LEAST THREE NATIVE TREE SPECIES, FIVE NATIVE SHRUB SPECIES, AND TWO NATIVE GROUNDCOVERS WITHIN THE WETLAND RESTORATION AND BUFFER MITIGATION AREAS. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD.
    B. ESTABLISH AT LEAST TWO NATIVE TREE SPECIES, THREE NATIVE SHRUB SPECIES, AND TWO NATIVE GROUNDCOVERS WITHIN THE WETLAND CREATION AREA.

    ESTABLISHMENT IS DEFINED AS FIVE OR MORE INDIVIDUAL PLANTS OF THE SAME SPECIES ALIVE AND HEALTHY.
4. INVASIVE COVER: NO MORE THAN 10% COVER BY INVASIVE WEED SPECIES WITHIN ALL PLANTED AREAS IN ANY MONITORING YEAR.
5. HYDROLOGY STANDARD (WETLAND CREATION AREA ONLY):
    A. EVIDENCE OF WETLAND HYDROLOGY IN THE WETLAND CREATION AREA. SOIL SATURATION WITHIN THE UPPER 12 INCHES OF THE SOIL SURFACE, PRESENT FOR TWO CONSECUTIVE WEEKS DURING THE GROWING SEASON (MARCH 1ST TO OCTOBER 15TH) DURING EACH MONITORING YEAR AS MEASURED PER THE PROTOCOL IN THE MONITORING METHODS SECTION, BELOW.
6. HYDRIC SOIL STANDARD (WETLAND CREATION AREA ONLY):
    A. HYDRIC SOILS WILL BE ASSUMED PRESENT IF THE HYDROLOGY STANDARD IS MET.

MONITORING

PRIOR TO THE COMMENCEMENT OF THE MONITORING PHASE, AN AS-BUILT PLAN DOCUMENTING THE SUCCESSFUL INSTALLATION OF THE PROJECT WILL BE SUBMITTED TO THE CITY OF MERCER ISLAND. IF NECESSARY, THE AS-BUILT REPORT MAY INCLUDE A MARK-UP OF THE ORIGINAL PLAN THAT NOTES ANY SIGNIFICANT CHANGES OR SUBSTITUTIONS THAT OCCURRED. DURING THE AS-BUILT INSPECTION, THE RESTORATION SPECIALIST WILL ESTABLISH AT LEAST FOUR PERMANENT PHOTO-POINTS.

DURING THE AS-BUILT INSPECTION, THE RESTORATION SPECIALIST SHALL INSTALL AT LEAST TWO REPRESENTATIVELY LOCATED SHALLOW GROUNDWATER WELLS IN THE WETLAND CREATION AREA. GROUNDWATER WELLS SHALL BE INSTALLED TO A MINIMUM DEPTH OF 24 INCHES. WELLS TO BE CONSTRUCTED OF 2-INCH DIAMETER PVC PIPE WITH CAPS. BELOW GROUND PORTIONS ARE TO BE PERFORATED WITH ¼" HOLES SPACED NO FARTHER THAN ½" APART. ALTERNATIVELY, AUTOMATED GROUNDWATER MONITORING DATA LOGGING DEVICES MAY BE USED IN-LIEU OF MANUALLY MONITORED WELLS.

THE SITE WILL BE MONITORED TWICE ANNUALLY FOR FIVE YEARS BEGINNING WITH APPROVAL OF THE AS-BUILT REPORT. EACH SPRING THE RESTORATION SPECIALIST WILL CONDUCT A BRIEF MAINTENANCE INSPECTION FOLLOWED BY A MEMO SUMMARIZING MAINTENANCE ITEMS NECESSARY FOR THE UPCOMING GROWING SEASON. THE FORMAL LATE-SEASON MONITORING INSPECTION WILL TAKE PLACE ONCE ANNUALLY DURING LATE SUMMER OR EARLY FALL. DURING EACH LATE-SEASON MONITORING INSPECTION, THE FOLLOWING DATA WILL BE COLLECTED:

1. PERCENT SURVIVAL OF ALL INSTALLED PLANTINGS, INCLUDING SPECIES SPECIFIC COUNTS OF INSTALLED TREE AND SHRUB PLANTINGS (NOTE: GROUNDCOVER PLANTS COUNTED IN YEAR-1 ONLY, FOR WARRANTY PURPOSES).
2. NATIVE WOODY COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
3. NATIVE GROUNDCOVER PLANT COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
4. ESTIMATES OF INVASIVE HERBACEOUS PLANTS OR GROUNDCOVER USING VISUAL COVER ESTIMATES.
5. THE SPECIES COMPOSITION, NOTING WHETHER A SPECIES IS NATIVE OR EXOTIC AND WHETHER PLANTS WERE INSTALLED OR ARE VOLUNTEERS.
6. THE GENERAL HEALTH AND VIGOR OF THE INSTALLED VEGETATION.
7. PHOTOGRAPHS FROM FIXED PHOTO-POINTS ESTABLISHED DURING THE AS-BUILT INSPECTION.
8. ANY EVIDENCE OF WILDLIFE USAGE.
9. DEPTH OF GROUNDWATER BELOW THE SOIL SURFACE SHALL BE RECORDED AT ESTABLISHED WELLS IN THE WETLAND CREATION AREA.

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY TO THE CITY. REPORTS SHALL DOCUMENT THE CONDITIONS OF THE SITE, INCLUDING QUANTITATIVE DATA COLLECTED DURING THE MONITORING INSPECTION, AND SHALL PROVIDE MAINTENANCE RECOMMENDATIONS THAT MAY BE NECESSARY TO HELP THE SITE ACHIEVE THE STATED PERFORMANCE STANDARDS.

CONTINGENCY PLAN

IF ANY MONITORING REPORT REVEALS THAT THE RESTORATION PLAN HAS FAILED IN WHOLE OR IN PART, AND SHOULD THAT FAILURE BE BEYOND THE SCOPE OF ROUTINE MAINTENANCE, THE APPLICANT WILL SUBMIT A CONTINGENCY PLAN TO THE CITY OF MERCER ISLAND FOR APPROVAL. THIS PLAN MAY INCLUDE REPLANTING, SOIL AMENDMENTS OR TOPDRESSING, SUBSTITUTIONS FOR SPECIES SELECTED IN THE ORIGINAL PLAN, AND ADAPTIVE WEED CONTROL METHODS.

MATERIALS

1. WOODCHIP MULCH: "ARBORIST CHIPS" (CHIPPED WOODY MATERIAL) APPROXIMATELY ONE TO THREE INCHES IN MAXIMUM DIMENSION (NOT SAWDUST). THIS MATERIAL IS COMMONLY AVAILABLE IN LARGE QUANTITIES FROM ARBORISTS OR TREE-PRUNING COMPANIES. 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. APPROX. QUANTITY REQUIRED: 60 CUBIC YARDS.
2. COMPOST: CEDAR GROVE COMPOST OR EQUIVALENT "COMPOSTED MATERIAL" PER WASHINGTON ADMIN. CODE 173-350-220. QUANTITY REQUIRED: 35 CUBIC YARDS
3. FERTILIZER: SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. MOST COMMERCIAL NURSERIES CARRY THIS PRODUCT. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.
4. RESTORATION SPECIALIST: QUALIFIED PROFESSIONAL ABLE TO EVALUATE AND MONITOR THE CONSTRUCTION OF ENVIRONMENTAL RESTORATION PROJECTS.
5. FERTILIZER (FOR NEAR AQUATIC ENVIRONMENTS): SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. LABEL MUST INDICATE THAT PRODUCT IS SAFE FOR AQUATIC ENVIRONMENTS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.

NFC

NOT FOR CONSTRUCTION

MITIGATION AND RESTORATION NOTES

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Science & Design

MERCERTECH INTERNATIONAL LLC
LONG PLAT MITIGATION AND RESTORATION PLAN
PREPARED FOR ALAN CHIU
PARCEL # 1824059031
4320 ISLAND CREST WAY
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	08-29-17	30% SUBMITTAL - PREAPP	LV
2	10/17/17	30% SUBMITTAL - PREAPP 2	RH
3	10/27/17	30% SUBMITTAL - APPLICAITON	RH
4	04/18/18	CITY COMMENT RESPONSE 1	

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: MD
DESIGNED: LV, RH
DRAFTED: LV, RH
CHECKED: LV, AM
JOB NUMBER:
160905
SHEET NUMBER:
W8.0 OF 14

PRINTED BY: ROEN HOHLFELD
DATE: 10/27/17
FILENAME: 160905 MERCER ISLAND CHIU MITIGATION PLAN.DWG

Exhibit 5d

APPENDIX B

Wetland & Watercourses Delineation Report and Addendum

May 31, 2017

Alan Chiu
Mercertech International, LLC
4320 Island Crest Way,
Mercer Island, WA 98040

Re: Chiu property at 4320 Island Crest Way, Wetland and Watercourses Delineation Report

The Watershed Company Reference Number: 160905

Dear Alan:

On September 21, 2016, ecologists Anna Hoenig and Rose Whitson visited the Chiu property located at 4320 Island Crest Way on Mercer Island to delineate jurisdictional wetland and watercourses (parcel no. 1824059031). Three wetlands and one watercourse were identified and delineated. This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following documents are enclosed:

- Photographs
- Field Delineation Sketch
- Wetland Determination Data Forms
- 2004 Ecology Rating Forms

Methods

Public-domain information on the subject properties was reviewed for this reconnaissance study. These sources include:

- USDA Natural Resources Conservation Service Soil maps (WebSoil);
- U.S. Fish and Wildlife Service National Wetland Inventory (NWI) maps;
- Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web);
- Washington Department of Natural Resources, Forest Practices Application Mapping Tool (FPARS);

- King County's GIS mapping website (iMAP); and
- City of Mercer Island GIS interactive mapping application

Wetlands

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). The wetland boundary was determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundary to make the determination. Five recorded data point locations were marked with yellow- and black-striped flagging.

After determining the wetland edge, pink- and black-stripped flagging was hung along each wetland boundary (see attached sketch). Identified wetlands within the property were then classified using the *Washington State Wetland Rating System for Western Washington, Version 2* (Publication #04-06-025) (Rating System).

Watercourses

Watercourses were identified according to the Mercer Island Municipal Code definition The ordinary high water mark (OHWM) was evaluated based on the definition provided by the Washington Department of Fish and Wildlife, WAC 173-22-030. The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods. The left OHWM and right OHWM were marked with blue- and white-striped flagging when the watercourses formed the outer edge of a wetland and for segments of watercourses outside of wetland boundaries.

Findings

The subject property is situated in Section 18 of Township 24 North and Range 5 East. It is located in the Mercer Island drainage basin in the Cedar River/Lake Washington watershed, within the Cedar-Sammamish Water Resource Inventory Area (WRIA-8).

The property is zoned by the City of Mercer Island as R-9.6 Single Family and has two dwelling units. Gravel driveways connect each of the structures to one another and to Island Crest Way. There are also associated lawn areas and several dilapidated appurtenant structures, including an old chicken coop and an old shed. The remainder of the property is comprised of three wetlands and one watercourse, described below.

Wetland A

Wetland A is a slope-depressional wetland that comprises most of the east half of the subject parcel. It was originally forested with alder and cottonwood trees with possibly a few conifers (King County iMap 2013 aerial basemap), but has since been cleared and partially filled with wood chips. The current disturbed dominant vegetation consists of Himalayan blackberry, field bindweed, reed canarygrass, and soft rush. Small-fruited bulrush, skunk cabbage, yellow-flag iris, and mannagrass are present in the seasonally ponded areas. The hydrologic indicator soil layer at data point 1 (DP-1) consists of dark brown (10YR 3/2) gravelly loam with redoximorphic concentrations in the pore linings and matrix, while the indicator layer at DP-3 contains a mixed matrix with the dominant percentage of the matrix consisting of a depleted sandy loam with forty percent redoximorphic concentrations in the matrix and pore linings. Oxidized rhizospheres are present at both sampling locations. Hydrology is provided primarily by ground water. Watercourse A originates in Wetland A.

Wetland A is rated based on a combination of presumed wetland conditions prior to the recent alterations. This included a review of aerial imagery and conditions seen in the field. It rates moderately for water quality function based on capacity to trap nutrients in an area presumed to have been greater than 95% persistent ungrazed vegetation based on dense canopy coverage in aerial imagery. The outlet, which is the culvert by which Watercourse A exits, is also constricted. Hydrologic function is high due to landscape position and capacity to slow and store potential flooding. Habitat function is moderate, but limited in landscape connectivity by surrounding development.

Wetland B

Wetland B is a slope-depressional wetland. It consists of ponding resulting from a man-made berm and possible excavation occurring between 1946 and 1963 (Mercer Island GIS mapping application, historical aerial basemaps). It is difficult to determine if Wetland B is a man-made feature. Historic wetland and watercourse studies for this site could not be identified, and aerial photography in 1946 and prior show only dense forested canopy. However, given the hydrology of the surrounding area in present day, it is likely that the area was either wetland or watercourse even prior to the implementation of the berm.

Wetland B contains aquatic bed and palustrine forested Cowardin vegetation classes. Dominant forested vegetation include red alder and western red cedar trees with an understory of Scouler's willow, Himalayan blackberry, and salmonberry. Along the periphery and within the ponded area, skunk cabbage, lady's thumb, yellow-flag iris, and watercress are present. The hydrologic soil indicator layer at DP-4 is depleted (10YR 4/1) loam with ten percent redoximorphic concentrations along pore linings and in the matrix. Oxidized rhizospheres are present. The primary hydrology inputs are ground water and Watercourse A, which is piped through a culvert underneath the gravel road

from Wetland A. Watercourse A exits Wetland B through a culvert in the manmade berm and via overbank flooding over the berm, as well.

It rates moderately for water quality function based on capacity to trap nutrients based on area of seasonal ponding and moderate coverage of persistent vegetation. The outlet is also constricted. Hydrologic function is moderate due to landscape position and limited live storage to slow and store potential flooding. Habitat function is moderate, but limited in landscape connectivity by surrounding development.

Wetland C

Wetland C is a palustrine forested slope-riverine wetland that continues along Watercourse A downstream of the man-made berm until the watercourse exits the subject property via a culvert under Island Crest Way. Dominant vegetation consists of western red-cedar, salmonberry, Himalayan blackberry, skunk cabbage, knotweed, lady's thumb, and various grasses. Soils are mapped by NRCS as Argents and Alderwood material at six to fifteen percent slopes (AmC). The primary hydrological inputs are Watercourse A and groundwater.

There is no recorded data point within Wetland C due to a separation of Wetland B and C into separate wetlands units after fieldwork within the office; however, as part of standard delineation methodology, the field ecologist team did regularly check soils, vegetation, and hydrology while hanging flags along the wetland boundary.

It rates moderately for water quality function based on capacity to trap nutrients via dense tree and shrub coverage and opportunity based on landscape position. Hydrologic function also is moderate based on ability of dense vegetation to slow flood waters. Habitat function is moderate, but limited in landscape connectivity by surrounding development.

Watercourse A

Watercourse A originates in Wetland A and flows west, exiting Wetland A via a culvert into Wetland B. Only parts of Watercourse A contained water at the time of the site visit. The bed was mostly silt with some cobble and gravel. Watercourse A is intermittent in this upstream segment.

Within Wetland B, Watercourse A loses stream definition. Water exists Wetland B through a constricted culvert under a manmade berm and via flooding over the berm in times of peak flooding. Bed and bank characteristics become defined once again as it exists the culvert and flows west through Wetland C before exiting via a culvert underneath Island Crest Way. Watercourse A is perennial through Wetlands B and C, with flowing water observed during this late summer site visit.

Watercourse A does not likely to support fish passage due to downstream segments of steep slopes of 20 percent or greater slope. These slope approximations are based on analysis of contours provided by both Mercer Island GIS mapping services and King County iMap.

Local Regulations

Wetlands and watercourses are regulated in the City of Mercer Island in the Mercer Island Municipal Code (MIMC), Chapter 19.07 "Environment".

Wetlands A, B, and C all rate as Category III wetlands under the 2004 rating system, summarized in Table 1. Per MIMC 19.07.080, they each have 50-foot standard buffers widths; the minimum buffer width permitted is also provided in the buffer summary below (Table 2).

Mercer Island permits buffer averaging or reduction of buffer widths, provided that no-net-loss of wetland function occurs. In the case of buffer averaging, total buffer area must also remain equivalent or greater after averaging and may not be less than the minimum buffer width at any point.

Table 1. Summary of 2004 Rating System wetland ratings and classification.

	HGM[1]	Water Quality	Hydrologic	Habitat	Total	Category
Wetland A	Depressional	14	20	16	50	III
Wetland B	Depressional	16	16	15	47	III
Wetland C	Riverine	14	16	15	45	III

[1] HGM = hydrogeomorphic classification

Type 2 Watercourses are defined as watercourses or reaches of watercourses with year-round flow, not used by fish, while Type 3 watercourses or reaches of watercourses have intermittent or seasonal flow and not used by fish. As described above, the high gradient (greater than 20%) precludes fish use as defined by the WAC 173-22-030. Watercourse A is typed as a Type 3 intermittent watercourse upstream of Wetland B within Wetland A, and is typed as a perennial Type 2 watercourse downstream of Wetland B. The water type break was determined based upon observations of flow (or lack thereof) at the time of the visit in late summer/ early fall of 2016.

Buffer widths are summarized below in Table 2 based on MIMC 19.07.070. Type 3 watercourses receive a 35-foot standard buffer width, while Type 2 watercourses receive a 25-foot standard buffer width. Watercourse segments within pipes or culverts also

receive a 25-foot standard buffer width. Buffer reduction may be permitted with submittal of a critical areas study and subject to guidelines listed in MIMC 19.07.070.B.2. Restoration of piped stream segments may only be permitted if it will result in improved function and will not increase the threat of other hazards, such as erosion or slope stability (MIMC 19.07.070.B.4).

Table 2. Wetland and watercourse buffer summary

	Category or Type	Standard Buffer[1]	Minimum Buffer Width with Enhancement[2]
Wetland A	III	50	25
Wetland B	III	50	25
Wetland C	III	50	25
Watercourse A (seasonal)	3	35	25
Watercourse A (perennial)	2	50	25
Watercourse A (piped)	Piped or Restored	25	Determined by MI official

[1] Buffer averaging permitted

[2] Buffer width reduction only permitted with no net loss of function

State and Federal Regulations

Wetlands are also regulated by the Corps under section 404 of the Clean Water Act. Any proposed filling or other direct impacts to Waters of the U.S., including wetlands (except isolated wetlands), would require notification and permits from the Corps. Wetlands A, B, and C would not considered isolated due to surface water connections. A formal isolated status inquiry can be requested from the Corps through the Jurisdictional Determination process. Note that a new Clean Water Rule for wetlands and other Waters of the U.S. went into effect in August 2015; however, the rule was recently "stayed" nationwide by the 6th Circuit Court due to pending litigation. Therefore, the prior rule is in effect until further notice.

Federally permitted actions that could affect endangered species may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology and a cultural resource study in accordance with Section 106 of the National Historic Preservation Act.

In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, affected wetlands will need to be re-rated using the 2014 Update to the Wetland Rating System. Mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

Disclaimer

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

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

Sincerely,



Anna Hoenig
Ecologist

Enclosures



Figure 1. Wetland A, facing northeast corner of parcel



Figure 2. Wetland A, facing east; wood chip fill



Figure 3. Wetland B, facing south



Figure 4. Wooden bridge over manmade berm, between Wetlands B and C



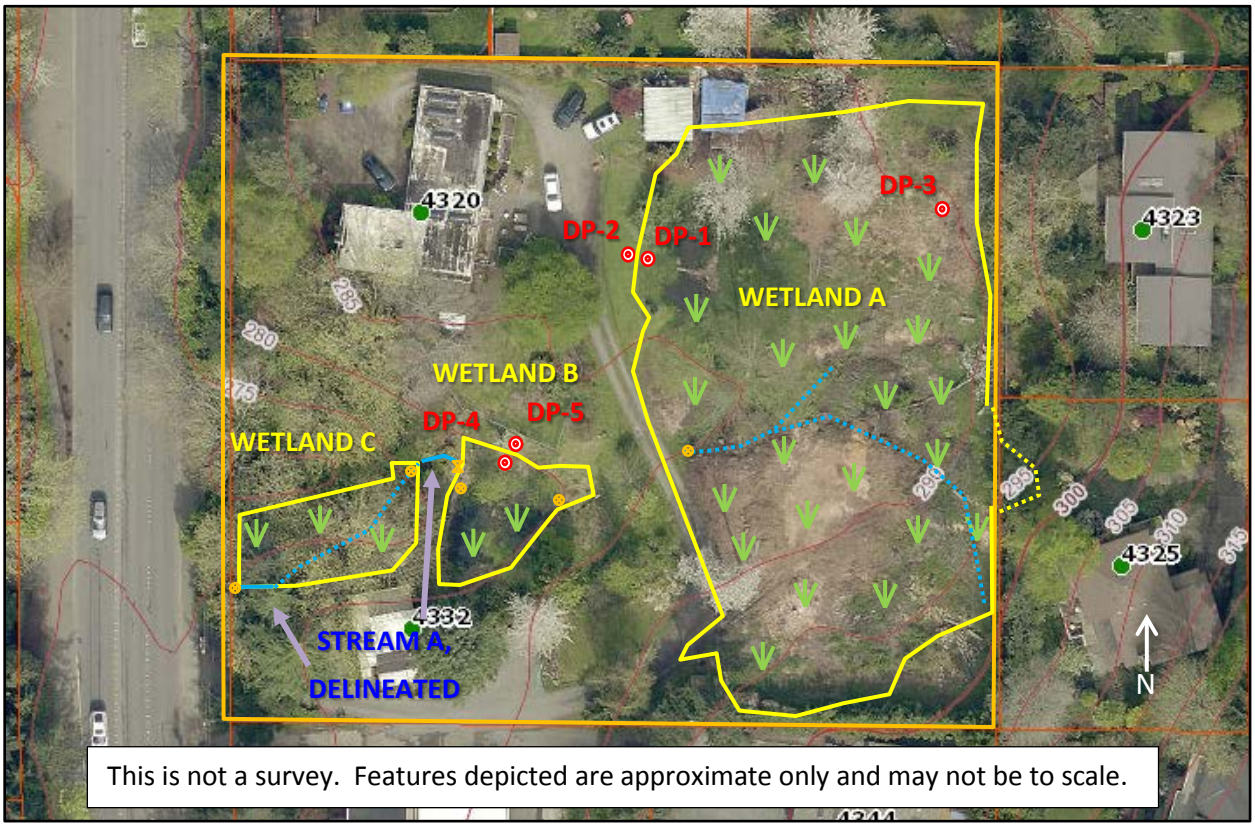
Figure 5. Wetland C: skunk cabbage, salmonberry, and Himalayan blackberry



Figure 2. Watercourse A exiting Wetland C, with culverts under Island Crest Way

THE WATERSHED COMPANY

750 Sixth Street South | Kirkland | WA 98033
p 425.822.5242 f 425.827.8136



Wetland Delineation Sketch

Parcel number: 1824059031
Jurisdiction: City of Mercer Island
Site visit: September 21, 2016
Prepared for: Alan Chiu

- Subject Parcel
- Approx. stream location
- Delineated stream
- Delineated wetland edge
- Approx. wetland edge off-site
- Wetland Area
- Data Point Location
- Culverts
- Bridge

Notes for Survey:

These notes supersede instructions written on field flagging due to post-processing modifications in office.

Data Points: 5 yellow- and black-stripped flag

Stream A: 8 blue- and white-stripped flags, limited segments delineated as follows

- Left OHWM only: WMA-1L to WMA-4L
- Left and right OHWM: WMA-5L to WMA -6L; WMA-1R to WMA-2R

Wetland A: 30 pink- and black-striped flags (A); do not connect A-9 to A-10.

Wetland B: 12 pink- and black-striped flags (B and BB); B-7 through B-15; BB-7 through BB-9; connect two lines to form closed unit.

Wetland C: 12 pink- and black-striped flags (B and BB); Connect stream flag WMA - 4L to wetland flag B-1; connect B-6 to BB-6; connect BB-1 to WMA-1L

Exhibit 5d

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 1

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**4320 Island Crest Way (parcel no. 1824059031)**	Sampling Date:	**9/21/2016**
Applicant/Owner:	**Alan Chiu**	Sampling Point:	DP- **1**
Investigator:	**R. Whitson, A. Hoenig**	City/County:	**Mercer Island / King**
Sect., Township, Range:	S **18** T **24N** R **5E**	State:	**WA**
Landform (hillslope, terrace, etc): **hillslope**	Slope (%): **<5**	Local relief (concave, convex, none): **none**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **AmC- Argents, Alderwood material, 6-15 percent slopes**		NWI classification: **none listed**	

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☐ Yes ☒ No
Are Vegetation☒, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation☐, Soil ☐, or Hydrology ☐ naturally problematic (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m diam.)			
1. ***Ranunculus repens***	**95**	**Y**	**FAC**
2. **Grasses (mowed, presumed FAC)**	**20**	**N**	**FAC***
3. ***Convolvulus arvensis***	**30**	**Y**	**FACU**
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	145 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**2**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**50**	(A/B)

Prevalence Index Worksheet

	Total % Cover of	Multiply by
OBL species		x 1 =
FACW species		x 2 =
FAC species	**115**	x 3 = **345**
FACU species	**30**	x 4 = **120**
UPL species		x 5 =
Column totals	(A) 145	(B) 465

Prevalence Index = B / A = **3.2**

Hydrophytic Vegetation Indicators

☐ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☒ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: **Bindweed is aggressive and invasive; since it is prevalent throughout site, in obviously wetland areas as well upland areas, it is considered problematic. When excluded based on this factor, the dominance test is 100% dominant FAC or wetter species. Hydrology and soil indicators are also present (see next page).**

SOIL **Sampling Point – DP-1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	**10YR 2/2**	**100**					**Gravelly loam**	**Trace redox**
8-14	**10YR 3/2**	**93**	**5YR 4/6**	**7**	**C**	**M, PL**	**Gravelly loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric soil present? Yes ☒ No ☐

Remarks: **Medium to large gravel in both layers**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ Surface water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (explain in remarks)

Secondary Indicators (2 or more required):

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in):

Water Table Present? Yes ☐ No ☒ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in):

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 2

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**4320 Island Crest Way (parcel no. 1824059031)**	Sampling Date:	**9/21/2016**
Applicant/Owner:	**Alan Chiu**	Sampling Point:	DP- **2**
Investigator:	**R. Whitson, A. Hoenig**	City/County:	**Mercer Island / King**
Sect., Township, Range:	S **18** T **24N** R **5E**	State:	**WA**
Landform (hillslope, terrace, etc): **top of hill**	Slope (%): **0**	Local relief (concave, convex, none): **convex**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **AmC- Argents, Alderwood material, 6-15 percent slopes**		NWI classification: **none listed**	

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☐ Yes ☒ No
Are Vegetation☒, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation☐, Soil ☐, or Hydrology ☐ naturally problematic (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soils Present?	Yes ☐	No ☒	**Is the Sampling Point within a Wetland?**	Yes ☐	No ☒
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m diam.)			
1. ***Achillea millefolium***	**30**	**Y**	**FACU**
2. **Grasses (mowed, presumed FAC)**	**10**	**N**	**FAC**
3. ***Taraxacum officinale***	**30**	**Y**	**FACU**
4. ***Ranunculus repens***	**30**	**Y**	**FAC**
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **1** (A)
Total Number of Dominant Species Across All Strata: **3** (B)
Percent of Dominant Species that are OBL, FACW, or FAC: **33** (A/B)

Prevalence Index Worksheet

	Total % Cover of	Multiply by
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

☐ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL **Sampling Point – DP-2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	**10YR 3/2**	**100**					**Gravelly loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric soil present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ Surface water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (explain in remarks)

Secondary Indicators (2 or more required):

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in):

Water Table Present? Yes ☐ No ☒ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 3

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**4320 Island Crest Way (parcel no. 1824059031)**	Sampling Date:	**9/21/2016**
Applicant/Owner:	**Alan Chiu**	Sampling Point:	DP- **1**
Investigator:	**R. Whitson, A. Hoenig**	City/County:	**Mercer Island / King**
Sect., Township, Range:	S **18** T **24N** R **5E**	State:	**WA**
Landform (hillslope, terrace, etc): **hillslope**	Slope (%): **2**	Local relief (concave, convex, none): **none**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **AmC- Argents, Alderwood material, 6-15 percent slopes**		NWI classification: **none listed**	

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation☐, Soil ☐, or Hydrology ☐ naturally problematic (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m diam.)			
1. ***Chamerion angustifolium***	**10**	**N**	**FACU**
2. ***Equisetum telmateia***	**60**	**Y**	**FACW**
3. ***Juncus effusus***	**40**	**Y**	**FACW**
4. ***Phalaris arundinacea***	**60**	**Y**	**FACW**
5. **Other grasses (presumed FAC)**	**20**	**N**	**FAC**
6. ***Veronica americana***	**2**	**N**	**OBL**
7. ***Convolvulus arvensis***	**2**	**N**	**FACU**
8.			
9.			
10.			
11.			
	194 = Total Cover		
Woody Vine Stratum (Plot size:)			
1. ***Rubus armeniacus***	**<5**	**N**	**FAC**
2.			
	= Total Cover		

% Bare Ground in Herb Stratum:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **3** (A)
Total Number of Dominant Species Across All Strata: **3** (B)
Percent of Dominant Species that are OBL, FACW, or FAC: **100** (A/B)

Prevalence Index Worksheet

	Total % Cover of	Multiply by
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

☒ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL **Sampling Point – DP-3**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	**10YR 2/2**	**100**					**Loam**	
8-14	**10YR 2/2 10YR 4/2**	**20 40**	**- 7.5YR 4/6**	**- 40**	**- C**	**- M, PL**	**Sandy loam**	**Mixed matrix**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☒ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric soil present? Yes ☒ No ☐

Remarks: **Mixed/jumbled; strong redox**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ Surface water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (explain in remarks)

Secondary Indicators (2 or more required):

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present? Yes ☒ No ☐ Depth (in):

Water Table Present? Yes ☒ No ☐ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (in):

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 4

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**4320 Island Crest Way (parcel no. 1824059031)**	Sampling Date:	**9/21/2016**
Applicant/Owner:	**Alan Chiu**	Sampling Point:	DP- **1**
Investigator:	**R. Whitson, A. Hoenig**	City/County:	**Mercer Island / King**
Sect., Township, Range:	S **18** T **24N** R **5E**	State:	**WA**

Landform (hillslope, terrace, etc): **hillslope**	Slope (%): **2**	Local relief (concave, convex, none): **concave**
Subregion (LRR): **A**	Lat:	Long: Datum:
Soil Map Unit Name: **AmC- Argents, Alderwood material, 6-15 percent slopes**		NWI classification: **none listed**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation☐, Soil ☐, or Hydrology ☐ naturally problematic (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			

Remarks: **Slope above pond, Wetland B**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Salix scouleriana***	**30**	**Y**	**FAC**
2. ***Alnus rubra***	**25**	**Y**	**FAC**
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. ***Juncus effusus***	**30**	**Y**	**FACW**
2. ***Convolvulus arvensis***	**5**	**N**	**FACU**
3. ***Iris pseudacoris***	**2**	**N**	**OBL**
4. ***Ranunculus repens***	**10**	**N**	**FAC**
5. ***Equisetum telmateia***	**90**	**Y**	**FACW**
6.			
7.			
8.			
9.			
10.			
11.			
	137	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **4** (A)
Total Number of Dominant Species Across All Strata: **4** (B)
Percent of Dominant Species that are OBL, FACW, or FAC: **100** (A/B)

Prevalence Index Worksheet

	Total % Cover of	Multiply by
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

☒ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL **Sampling Point – DP-4**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	**10YR 3/2**	**100**					**Loam**	
6-12	**10YR 4/1**	**90**	**7.5YR 4/6**	**10**	**C**	**PL, M**	**loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric soil present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ Surface water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (explain in remarks)

Secondary Indicators (2 or more required):

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in):

Water Table Present? Yes ☐ No ☒ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in):

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **Depleted layer is damp, upper layer is dry, no saturation- summer/early fall delineation**

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 5

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**4320 Island Crest Way (parcel no. 1824059031)**	Sampling Date:	**9/21/2016**
Applicant/Owner:	**Alan Chiu**	Sampling Point:	DP- **5**
Investigator:	**R. Whitson, A. Hoenig**	City/County:	**Mercer Island / King**
Sect., Township, Range:	S **18** T **24N** R **5E**	State:	**WA**
Landform (hillslope, terrace, etc): **hillslope**	Slope (%): **<1**	Local relief (concave, convex, none): **none**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **AmC- Argents, Alderwood material, 6-15 percent slopes**		NWI classification: **none listed**	

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation☐, Soil ☐, or Hydrology ☐ naturally problematic (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampling Point within a Wetland?**	Yes ☐	No ☒
Hydric Soils Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)		Absolute % Cover	Dominant Species?	Indicator Status
1.	***Prunus avium***	**5**	**Y**	**FACU**
2.				
3.				
4.				
		5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 1m diam.)				
1.	***Dactylis glomerata***	**20**	**N**	**FACU**
2.	***Ranunculus repens***	**20**	**N**	**FAC**
3.	***Phalaris arundinacea***	**2**	**N**	**FACW**
4.	***Taraxacum officinale***	**40**	**Y**	**FACU**
5.	***Equisetum telmateia***	**2**	**N**	**FACW**
6.	**Other grasses (presumed FAC)**	**60**	**Y**	**FAC**
7.	***Holcus lanatus***	**30**	**N**	**FAC**
8.				
9.				
10.				
11.				
		174	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species that are OBL, FACW, or FAC: **33** (A/B)

Prevalence Index Worksheet

	Total % Cover of	Multiply by
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

☐ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL **Sampling Point – DP-5**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	**10YR 3/3**	**100**					**loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):
Type:
Depth (inches):

Hydric soil present? Yes ☐ No ☒

Remarks: **dry**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ Surface water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (explain in remarks)

Secondary Indicators (2 or more required):

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland name or number: **Wetland A**

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland: Wetland A — Date of Site visit: 2/15/2018

Rated by: Kahlo, R — Trained by Ecology? Yes☒ No☐ — Date of Training: 3/2009

SEC: 18 TWNSHP: 24N RNGE: 5E — Is S/T/R in Appendix D? Yes☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I □ II □ III ☒ IV □

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

Score for Water Quality Functions	4
Score for Hydrologic Functions	16
Score for Habitat Functions	16
TOTAL score for functions	**36**

Category based on SPECIAL CHARACTERISTICS of wetland

I □ II □ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☐
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☒
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☐

Wetland name or number: **Wetland A**

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the wetland unit usually controlled by tides (i.e. except during floods)?

☒ NO – go to 2 ☐**YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m)?

☒NO – go to 4 ☐**YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☒ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐ NO – go to 5 ☒ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.

☐ The overbank flooding occurs at least once every two years

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☐ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7 ☐ **YES –** The wetland class is **Depressional**

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

☐ NO – go to 8 ☐ **YES –** The wetland class is **Depressional**

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

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

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

Wetland name or number: **Wetland A**

S	**Slope Wetlands**	**Points**
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
S	**S 1. Does the wetland have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	**S 1.1 Characteristics of average slope of wetland:** ☐ Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation horizontal distance*) *for every 100 ft* .....points = 3 ☐ Slope is 1% - 2% .....points = 2 ☐ Slope is 2% - 5% .....points = 1 ☒ Slope is greater than 5% .....points = 0	0
S	**S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)*.** YES = 3 points NO = 0 points	0
S	**S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants:** *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface. Dense vegetation means you have trouble seeing the soil surface (>75% cover) and uncut means not grazed or mowed and plants are higher than 6 inches.* ☐ Dense, ungrazed, herbaceous vegetation > 90% of the wetland area .....points = 6 ☐ Dense, ungrazed, herbaceous vegetation > 1/2 of area .....points = 3 ☒ Dense, woody, vegetation > ½ of area .....points = 2 ☐ Dense, ungrazed, herbaceous vegetation > 1/4 of area .....points = 1 ☐ Does not meet any of the criteria above for vegetation .....points = 0	2
S	**Total for S 1** *Add the points in the boxes above*	2
S	**S 2. Does the wetland have the <u>opportunity</u> to improve water quality? *(see p. 67)*** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields, logging or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ☐ Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 67) multiplier <u>2</u>
S	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from S 1 by S 2 ***Add score to table on p. 1***	**4**

Wetland name or number: **Wetland A**

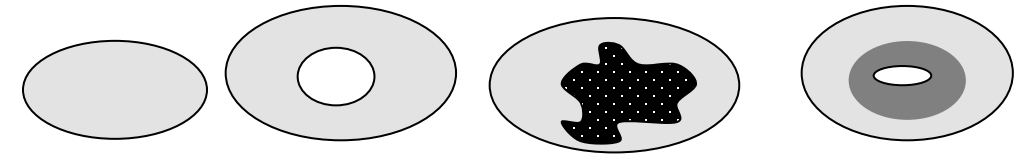
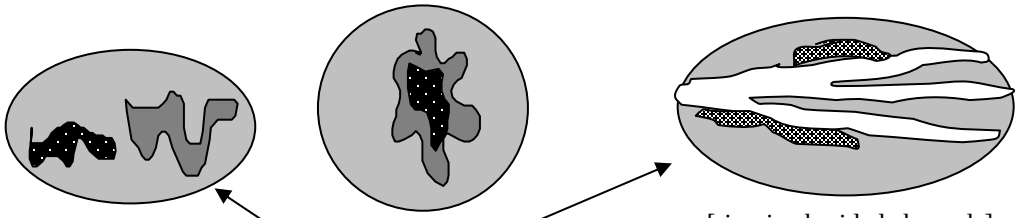
S	**Slope Wetlands**	**Points**
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	S 3. Does the wetland have the potential to reduce flooding and erosion?	***(see p. 68)***
S	**S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms.** *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* ☒ Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. .....points = 6 ☐ Dense, uncut, **rigid** vegetation > 1/2 area of wetland .....points = 3 ☐ Dense, uncut, **rigid** vegetation > 1/4 area .....points = 1 ☐ More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid .....points = 0	6
S	**S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows:** The slope wetland has small surface depressions that can retain water over at least 10% of its area. ☒ YES points = 2 ☐ NO points = 0	2
S	**Total for S 3** *Add the points in the boxes above*	8
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** ***(see p. 70)*** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ☒ Wetland has surface runoff that drains to a river or stream that has flooding problems ☐ Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 70) multiplier **2**
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	**16**

Comments

Wetland name or number: **Wetland A**

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)***	
Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres. ☐ Aquatic bed ☒ Emergent plants ☒ Scrub/shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) **(<u>PFO <10%</u>)** ☐ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more .....points = 4 3 structures .....points = 2 2 structures .....points = 1 1 structure .....points = 0	1
H 1.2. <u>Hydroperiods</u> ***(see p. 73)***	
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods) ☐ Permanently flooded or inundated — 4 or more types present .....points = 3 ☐ Seasonally flooded or inundated — 3 types present.....points = 2 ☒ Occasionally flooded or inundated — 2 types present.....points = 1 ☒ Saturated only — 1 types present points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☒ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland*** **= 2 points** ☐ ***Freshwater tidal wetland*** **= 2 points**	2
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: ☒ > 19 species points = 2 *List species below if you want to:* ☐ 5 - 19 species points = 1 ☐ < 5 species points = 0	2

Wetland name or number: **Wetland A**

H 1.4. Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  ☐None = 0 points ☐Low = 1 point ☒Moderate = 2 points  [riparian braided channels] ☐High = 3 points NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	2
H 1.5. Special Habitat Features: ***(see p. 77)*** *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☒ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☐ Standing snags (diameter at the bottom > 4 inches) in the wetland. ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m). ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present. ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants. *Note: The 20% stated in early printings of the manual on page 78 is an error.*	1
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	8

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

Wetland name or number: **Wetland A**

H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐ **Old-growth/Mature forests:** (<u>Old-growth west of Cascade crest</u>) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (<u>Mature forests.</u>) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	3

Wetland name or number: **Wetland A**

H 2.4 <u>Wetland Landscape</u> *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** ☐ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. ..... points = 5 ☐ The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5 ☒ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3 ☐ The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3 ☐ There is at least 1 wetland within ½ mile. ..... points = 2 ☐ There are no wetlands within ½ mile. ..... points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	8
TOTAL for H1 from page 14	8
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number: **Wetland A**

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. ☐ YES = Go to SC 1.1 ☐ NO	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number: **Wetland A**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* ☐ S/T/R information from Appendix D – **OR** – ☐ Accessed from WNHP/DNR web site ☐ YES – contact WNHP/DNR (see p. 79) and go to SC 2.2 ☐ NO SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? ☐ YES = Category I ☐ NO = Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) ☐ Yes – go to Q.3 ☐ NO – go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – go to Q.3 ☐ NO – is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? ☐ Yes – Is a bog for purpose of rating ☐ NO – go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? ☐ YES = Category I ☐ NO – is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*	
Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.*	
☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.	
Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.	**Cat. I**
☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.	
☐ YES = Category 1 ☐ NO – not a forested wetland with special characteristics	
SC 5.0 Wetlands in Coastal Lagoons (see p. 91)	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.	
☐ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)	**Cat. I**
☐ YES – Go to SC 5.1 ☐ NO – not a wetland in a coastal lagoon	
SC 5.1 Does the wetland meet all of the following three conditions?	
☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.	**Cat. II**
☐ The wetland is larger than 1/10 acre (4350 square feet)	
☐ YES = Category I ☐ NO = Category II	
SC 6.0 Interdunal Wetlands (see p. 93)	
Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?	
☐YES – go to SC 6.1 ☐ NO – not an Interdunal wetland for rating	
If you answer yes you will still need to rate the wetland based on its functions.	**Cat. II**
In practical terms that means the following geographic areas:	
– Long Beach Peninsula – lands west of SR 103	
– Grayland-Westport – lands west of SR 105	
– Ocean Shores-Copalis – lands west of SR 115 and SR 109	
SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger?	**Cat. III**
☐ YES = Category II ☐ NO – go to SC 6.2	
SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	
☐ YES = Category III	
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland: Wetland B Date of Site visit: 9/21/2016

Rated by: R. Whitson, A. Hoenig Trained by Ecology? Yes☒ No☐ Date of Training: 3/2015*, 10/2015*

SEC: 18 TWNSHP: 24N RNGE: 05E Is S/T/R in Appendix D? Yes☐ No ☒

**trained for 2014 update, not original 2004 rating system.*

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

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

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	15
TOTAL score for functions	**45**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☒
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☐
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☐	Check if unit has multiple HGM classes present	☒

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the wetland unit usually controlled by tides (i.e. except during floods)?

☒ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m)?

☒NO – go to 4 ☐**YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☒ The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐ NO – go to 5 ☐ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.

☐ The overbank flooding occurs at least once every two years

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☒ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7 ☒ **YES –** The wetland class is **Depressional**

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

☒ NO – go to 8 ☐ **YES –** The wetland class is **Depressional**

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

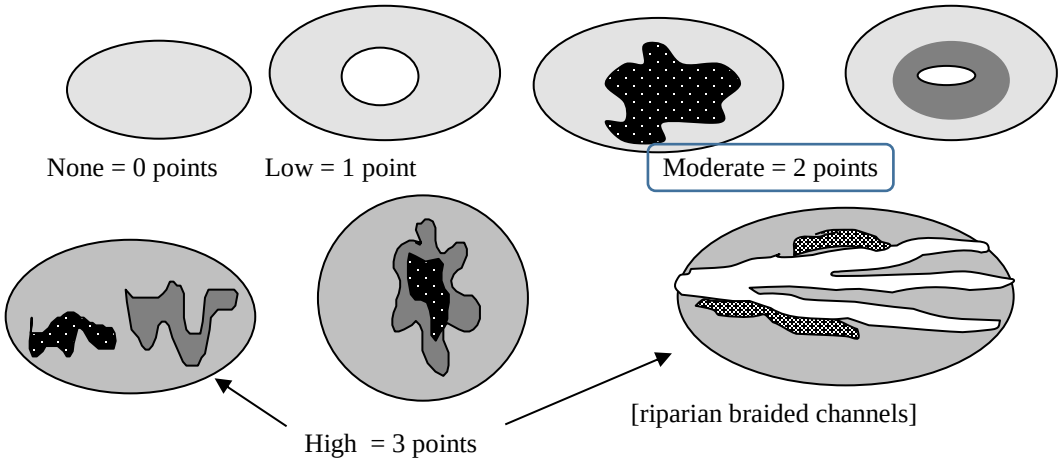
HGM classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and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

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the <u>potential</u> to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) .....points = 3 Unit has an intermittently flowing, or highly constricted permanently flowing outlet .....points = 2 Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)*..points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch .....points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing")*	2
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*). YES points = 4 NO points= 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed, vegetation > = 95% of area .....points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area .....points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area .....points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area .....points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland .....points = 4 Area seasonally ponded is > ¼ total area of wetland .....points = 2 Area seasonally ponded is < ¼ total area of wetland .....points = 0 NOTE: *See text for indicators of seasonal and permanent inundation.*	2
D	**Total for D 1** *Add the points in the boxes above*	7
D	**D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface <u>water coming into the wetland</u> that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ **YES** multiply score in D 1. **by 2** **NO** multiply score in D 1. **by 1**	***(see p. 44)*** multiplier 2
D	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	**14**

D	**Depresssional and Flats Wetlands**	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion?	*(see p. 46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) .....points = 4 Unit has an intermittently flowing, or highly constricted permanently flowing outlet .....points = 2 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch .....points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*)..points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are at least 3 ft or more above the surface or bottom of outlet .....points = 7 The wetland is a "headwater" wetland".....points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet .....points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet .....points = 3 Unit is flat (yes to Q.2 or Q.7 on key) but has small depressions on the surface that trap water .....points = 1 Marks of ponding less than 0.5 ft .....points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit .....points = 5 The area of the basin is 10 to 100 times the area of the unit .....points = 3 The area of the basin is more than 100 times the area of the unit .....points = 0 Entire unit is in the FLATS class .....points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following conditions apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems ☒ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ ☒ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	**16**

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☒ Aquatic bed ☐ Emergent plants ☐ Scrub/shrub (areas where shrubs have >30% cover) ☒ Forested (areas where trees have >30% cover) ☒ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 3 structures.....points = 2 2 structures.....points = 1 1 structure.....points = 0	2
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ☒ Permanently flooded or inundated ☒ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only 4 or more types present .....points = 3 3 types present.....points = 2 2 types present .....points = 1 1 types present…….points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points**	2
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: *List species below if you want to:* > 19 species.....points = 2 5 - 19 species.....points = 1 < 5 species.....points = 0	1

H 1.4. Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points [riparian braided channels] High = 3 points NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	2
H 1.5. Special Habitat Features: ***(see p. 77)*** *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☐ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☐ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	7

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

Exhibit 5d

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. ~~If wetland has **3 or more** priority habitats = **4 points**~~ If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits*) ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. ..... points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3 There is at least 1 wetland within ½ mile. ..... points = 2 There are no wetlands within ½ mile. ..... points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	8
TOTAL for H1 from page 14	7
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☐ or accessed from WNHP/DNR web site ☒ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)***	
Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.*	
☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.*	
☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth	
YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91)	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.	
☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)	
YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon	**Cat. I**
SC 5.1 Does the wetland meet all of the following three conditions?	
☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.	**Cat. II**
☐ The wetalnd is larger than 1/10 acre (4350 square feet)	
YES = Category I NO = Category II	

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	**N/A**

Exhibit 5d

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland: Wetland C Date of Site visit: 9/21/2016

Rated by: R. Whitson, A. Hoenig Trained by Ecology? Yes☒ No☐ Date of Training: 3/2015*, 10/2015*

SEC: 18 TWNSHP: 24N RNGE: 05E Is S/T/R in Appendix D? Yes☐ No ☒

**trained for 2014 update, not for original 2004 system*

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

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

Score for Water Quality Functions	16
Score for Hydrologic Functions	16
Score for Habitat Functions	15
TOTAL score for functions	**47**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☐
Natural Heritage Wetland	☐	**Riverine**	☒
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☐
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☐	Check if unit has multiple HGM classes present	☒

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the wetland unit usually controlled by tides (i.e. except during floods)?

☒ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m)?

☐NO – go to 4 ☐**YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☒ The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐ NO – go to 5 ☐ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.

☒ The overbank flooding occurs at least once every two years

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☐ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ NO – go to 7 ☐ **YES –** The wetland class is **Depressional**

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

☒ NO – go to 8 ☐ **YES –** The wetland class is **Depressional**

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

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

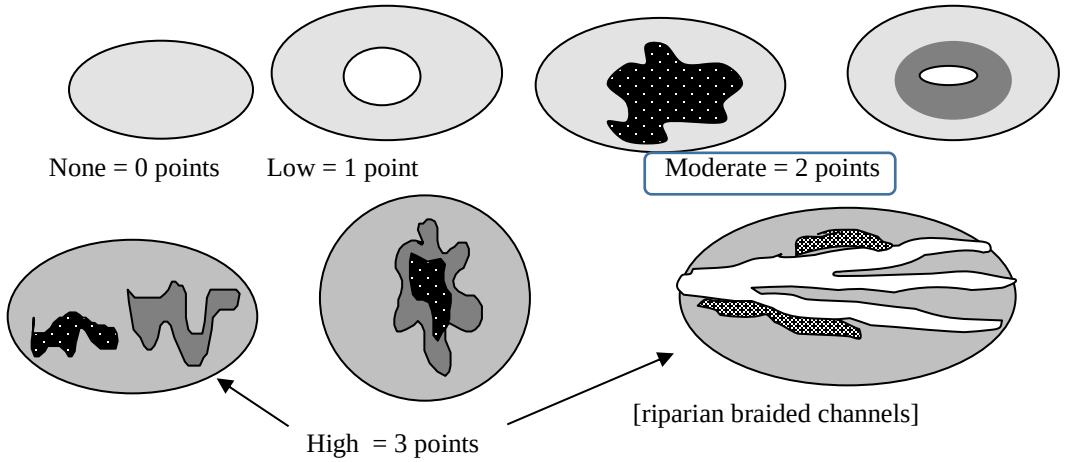
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
R	**R 1. Does the wetland have the potential to improve water quality?**	*(see p. 52)*
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland.....points = 8 Depressions cover > 1/2 area of wetland.....points = 4 Depressions present but cover < 1/2 area of wetland .....points = 2 No depressions present.....points = 0	0
R	R 1.2 Characteristics of the vegetation in the wetland (areas with > 90% cover at person height): Forest or shrub > 2/3 the area of the wetland .....points = 8 Forest or shrub > 1/3 area of the wetland .....points = 6 Ungrazed, emergent plants > 2/3 area of wetland .....points = 6 Ungrazed emergent plants > 1/3 area of wetland .....points = 3 Forest, shrub, and ungrazed emergent < 1/3 area of wetland .....points = 0	8
R	**Total for R 1** *Add the points in the boxes above*	8
R	**R 2. Does the wetland have the opportunity to improve water quality?** *(see p. 53)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, golf courses are within 150 ft of wetland ☐ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality ☐ Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
R	**TOTAL - Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	**16**

Comments

R	**Riverine and Freshwater Tidal Fringe Wetlands**	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	R 3. Does the wetland have the potential to reduce flooding and erosion?	***(see p. 54)***
R	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (width of wetland)/(width of stream).* If the ratio is more than 20.....points = 9 If the ratio is between 10 – 20 .....points = 6 If the ratio is 5- <10 .....points = 4 If the ratio is 1- <5 .....points = 2 If the ratio is < 1 .....points = 1	1
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes) Forest or shrub for >1/3 area OR Emergent plants > 2/3 area .....points = 7 Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area .....points = 4 Vegetation does not meet above criteria.....points = 0	7
R	**Total for R 3** *Add the points in the boxes above*	8
R	**R 4. Does the wetland have the opportunity to reduce flooding and erosion?** ***(see p. 57)*** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ☒ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ☒ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ☐ Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 57) multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	16

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐ Aquatic bed ☐ Emergent plants ☒ Scrub/shrub (areas where shrubs have >30% cover) ☒ Forested (areas where trees have >30% cover) ☒ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 3 structures.....points = 2 2 structures.....points = 1 1 structure.....points = 0	2
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ☐ Permanently flooded or inundated ☐ Seasonally flooded or inundated ☒ Occasionally flooded or inundated ☐ Saturated only 4 or more types present .....points = 3 3 types present.....points = 2 2 types present .....points = 1 1 types present…….points = 0 ☒ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points**	1
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: *List species below if you want to:* > 19 species.....points = 2 5 - 19 species.....points = 1 < 5 species.....points = 0	1

H 1.4. Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points [riparian braided channels] High = 3 points NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	2
H 1.5. Special Habitat Features: ***(see p. 77)*** *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☐ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☐ Standing snags (diameter at the bottom > 4 inches) in the wetland ☒ Undercut banks are present for at least 6.6 ft (2m) and/or **overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)** ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	1
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	7

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

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits*) ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. ..... points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3 There is at least 1 wetland within ½ mile. ..... points = 2 There are no wetlands within ½ mile. ..... points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	8
TOTAL for H1 from page 14	7
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☐ or accessed from WNHP/DNR web site ☒ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☒ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☒ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)***	
Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.*	
☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.*	
☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth	
YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91)	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.	
☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)	
YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon	**Cat. I**
SC 5.1 Does the wetland meet all of the following three conditions?	
☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.	**Cat. II**
☐ The wetland is larger than 1/10 acre (4350 square feet)	
YES = Category I NO = Category II	

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1.	**N/A**

TECHNICAL MEMORANDUM

THE WATERSHED COMPANY

Date:	March 22, 2018
To:	Alan Chiu, Mercertech International, LLC
From:	Ryan Kahlo, PWS
Project Number:	160905
Project Name:	Mercer Island Chiu

Subject: Wetland Delineation Report Addendum

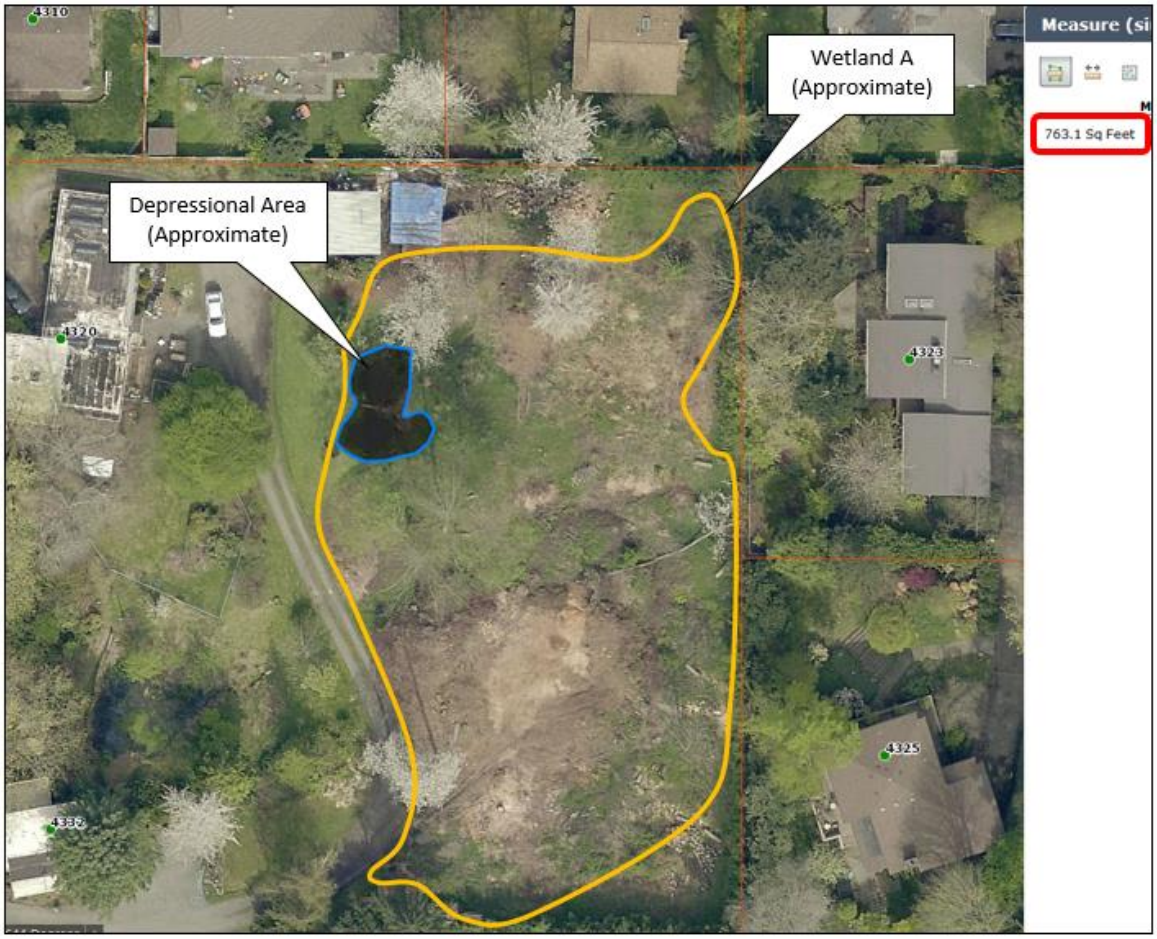
Staff from The Watershed Company previously delineated three wetlands on the property located at 4320 Island Crest Way on Mercer Island (Parcel #1824059031). The findings were summarized in the *Chiu Property at 4320 Island Crest Way, Wetland and Watercourses Delineation Report* (The Watershed Company. May 31, 2017) (Delineation Report). The City's peer review consultant reviewed the delineation study and provided written comments (*4320 Island Crest Way Critical Area Study [CAO17-015*]. ESA. January 18, 2018) (Peer Review Letter). Among the comments in the Peer Review Letter was a request to re-evaluate the hydrogeomorphic classification of Wetland A, which was identified in Delineation Report as a Category III depressional wetland. The Peer Review questioned whether the primarily slope-type wetland included a depressional component that is large enough (>10% of the total wetland area) to warrant classification as a depressional wetland.

Findings

On February 15, 2018, The Watershed Company Senior Ecologist Ryan Kahlo, PWS, conducted a site visit to assess the correct hydrogeomorphic classification, including an estimate of the depressional area within Wetland A. The wetland unit is primarily a slope wetland, with one obvious depression in the northwest corner of the wetland. The depression likely formed as a result of construction of the driveway that is contiguous with the western wetland boundary. The total area of the depression was estimated in the field using a manual tape measure. This method does not yield an exact measurement but, combined with GIS measurements, is sufficient for this exercise. According to the field measurements, the depressional area measured 747 square feet. The depressional area was also estimated using King County iMAP aerial measuring tool. According to this methodology, the depressional area measured 763 square feet (see Figure 1). The total wetland area, as determined by survey, is 24,670 square feet. Based on both measurements, the depressional area is approximately three percent of the total wetland area, significantly less than the 10 percent threshold required under the Ecology Wetland Rating Form. Since

the depressional area is less than 10 percent of the total wetland area, the entire wetland unit should be classified as a slope wetland. Based on these findings, Wetland A has been reclassified under the 2004 Ecology Wetland Rating System using the slope hydrogeomorphic classification. Under the revised classification, Wetland A received 4 points for water quality functions, 16 points for hydrology functions, and 16 points for wildlife functions for a total of 36 points. This score qualifies Wetland A as a Category III wetland, requiring a 50-foot standard buffer. This finding does not alter the classification or standard buffer associated with Wetland A.

Figure 1: Approximate depressional area within Wetland A (source: King County iMAP)



The information contained in this memo is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope,

and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

DRAFT FOR CLIENT REVIEW ONLY

TENW
Transportation Engineering NorthWest

MEMORANDUM

DATE: August 22, 2017

TO: Patrick Yamashita
City of Mercer Island

FROM: Chris Forster, P.E.
TENW

SUBJECT: Trip Generation & Sight Distance Evaluation
Chiu Subdivision – Mercer Island, WA
TENW Project No. 5523

This memorandum documents the trip generation and sight distance evaluation completed for the proposed 4320 Island Crest Way (Chiu Subdivision) development in Mercer Island, WA. The memo includes a project description, a trip generation estimate, and a sight distance assessment.

Key Findings

1. The proposed Chiu Subdivision project is estimated to generate less than 10 new PM peak hour trips. Therefore, based on the City's *General Traffic Impact Analysis Requirements,* the project does not require a traffic impact analysis (TIA).

2. Stopping sight distance requirements are met at both site access locations on Island Crest Way.

3. Intersection sight distance is acceptable at both site access locations assuming clearing and regrading is conducted within the right-of-way to achieve clear sight lines looking north and south of the proposed access points.

Project Description

The project site is located at 4320 Island Crest Way in Mercer Island, WA as shown in Attachment A (vicinity map). The proposed development would include 6 single-family residential detached dwelling units. The existing site includes 2 single-family homes, both of which would be removed with the proposed project, resulting in a net addition of 4 single-family units.

Vehicular access to/from five of the proposed lots (north access) would be provided via a new full-access private road onto Island Crest Way approximately 66 feet south of the north property line. This access would replace an existing driveway to the existing home on the north half of the site. Vehicular access to/from one lot (south access) would be provided at a new full access driveway located near the south property line in the same location as an existing driveway serving the existing home on the south half of the site.

The project is expected to be constructed in 2018. A preliminary site plan is included as Attachment B.

Trip Generation Estimate

The weekday daily, AM peak hour, and PM peak hour trip generation estimates for the proposed Chiu Subdivision development were based on trip rates documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 9th edition for land use code (LUC) 210 (Single-Family Detached Housing). Table 1 summarizes the trip generation estimate for the project (6 proposed single-family homes less 2 existing single-family homes).

Table 1
Chiu Subdivision Trip Generation Summary

	Net New Trips Generated		
Time Period	In	Out	Total
Weekday Daily	19	19	38
Weekday AM Peak Hour	1	2	3
Weekday PM Peak Hour	3	1	4

As shown in Table 1, the proposed Chiu Subdivision development is estimated to generate 38 net new weekday daily trips with 3 net new weekday AM peak hour trips (1 entering, 2 exiting), and 4 net new weekday PM peak hour trips (3 entering, 1 exiting). The detailed trip generation estimates are included in Attachment C.

Based on the City of Mercer Island *General Traffic Impact Analysis Requirements* dated 7/15/2015, a project requires a traffic impact analysis if the proposed use will generate 10 or more peak hour trips. The proposed Chiu Subdivision development is estimated to generate less than 10 net new peak hour trips. Therefore, the project does not require a traffic impact analysis.

Sight Distance Assessment

The following summarizes the results of the sight distance assessment conducted at the two site access driveways onto Island Crest Way based on a review of engineering standards, field measurements, and aerial photography. The posted speed limit on Island Crest Way in the vicinity of the project is 35 mph. A design speed of 40 MPH (posted speed + 5 MPH) was assumed for this analysis. The grade on Island Crest Way in the vicinity of the proposed site access location is less than 3 percent. Therefore, no adjustments were made to account for grade.

For this assessment, we analyzed both Intersection Sight Distance (ISD) and Stopping Sight Distance (SSD) based on the standards in *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* (AASHTO).

North Access

Intersection Sight Distance (ISD):

Based on *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* Table 9-6 (Case B1, Left Turn from Stop), the minimum required left turn ISD for a 40 MPH design speed is 445 feet. Because

Island Crest Way is a multilane roadway (vehicles must cross 2 lanes to turn left from the access driveways), this value was adjusted based on AASHTO standards to 470 feet by adjusting the time gap. ISD was measured based on an entering vehicle driver eye height of 3.5 feet, measured 14.5 feet back from the edge of traveled way.

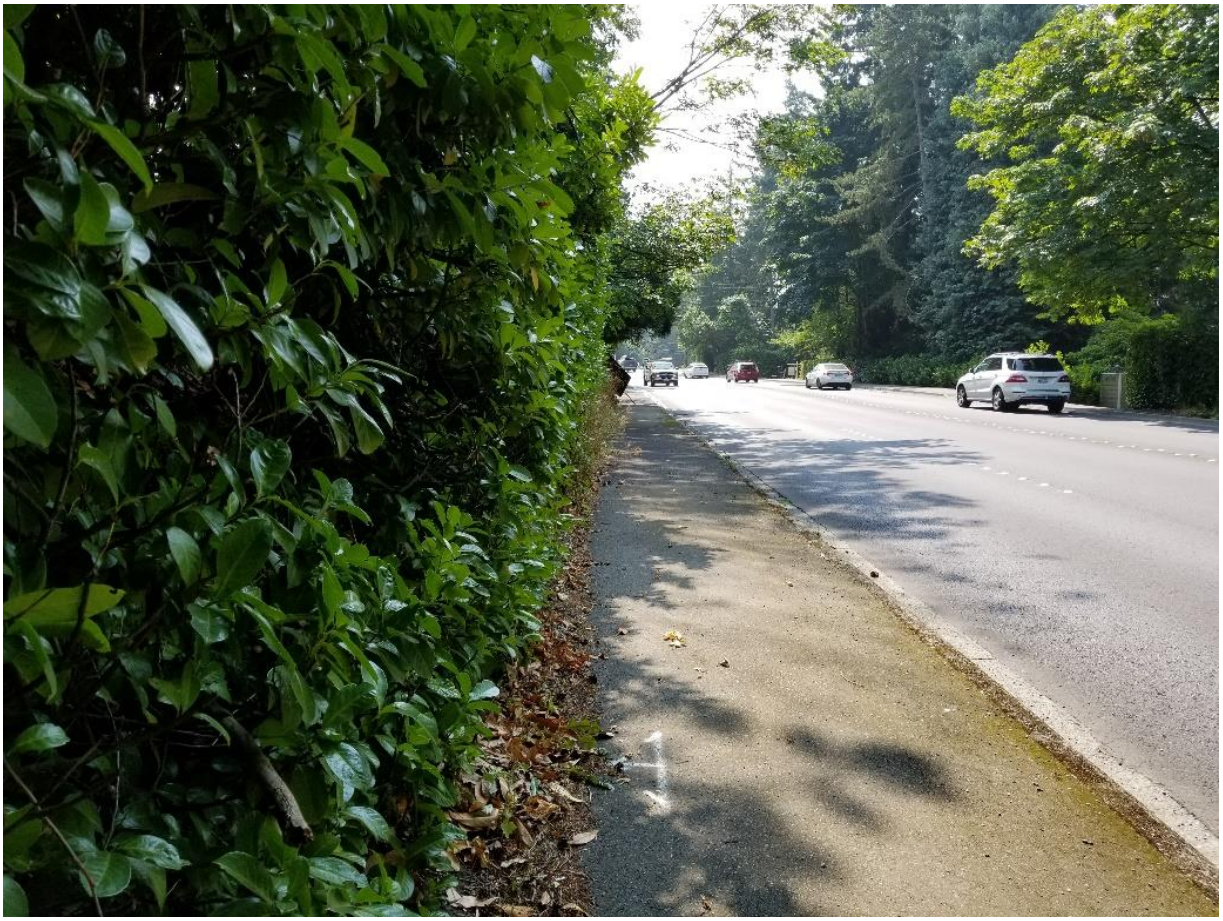
ISD Looking North: The available ISD at the Island Crest Way/North Access intersection looking north will meet or exceed 470 feet assuming existing vegetation is cleared and any slope regraded to obtain a clear line of sight. Based on our review of aerial photography and property lines from *King County Parcel Viewer*, it appears that all required clearing would be within existing City right-of-way (ROW). A diagram showing the ISD sight line looking north is provided in Attachment D.



View looking north on Island Crest Way from north site access location (view is from a point 6 feet behind the existing curb due to existing vegetation)

ISD Looking South: The maximum available ISD at the Island Crest Way/North Access intersection looking south would be approximately 404 feet (does not meet the 470-foot standard) using the existing ROW line as the limiting factor (sight line tangent to ROW line). Meeting the 470-foot standard is not feasible as the line of sight crosses into private property due to the horizontal curve in Island Crest Way. In order for 404 feet of ISD to be achieved, existing vegetation must be cleared and slope regraded within the limits of the existing ROW.

While 404 feet of ISD is less than the AASHTO standard for left-turns, it is greater than the minimum required ISD for a right turn. Based on *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* Table 9-7 Case B2, Right Turn from Stop, the standard for a 40 MPH design speed is 385 feet for right turns. Considering the fact that a majority of the traffic from these homes will be right turns onto Island Crest Way (as opposed to left-turns), we believe that 404 feet of ISD is acceptable (with clearing/regrading within ROW). In addition, TENW also reviewed the most recent 3-year collision history (2014-2016 WSDOT data) and confirmed that there were no reported collisions at the existing north site driveway (or at any of the nearby driveways on Island Crest Way). Diagrams showing the ISD sight lines looking south (470 feet and 404 feet) are provided in Attachment D.



View looking south on Island Crest Way from north site access location (view is from a point 6 feet behind the existing curb due to existing vegetation)

Stopping Sight Distance (SSD):

Based on *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* Table 3-1 (Stopping Sight Distance on Level Roadways), the minimum required SSD for a 40 MPH design speed is 305 feet. SSD was measured based on an approaching vehicle driver eye height of 3.5 feet and an object height of 2.0 feet. SSD was measured along the centerline of the curb-side lane on Island Crest Way.

Northbound: Based on field measurements, the existing available SSD for a vehicle traveling northbound on Island Crest Way approaching the north access location exceeds 305 feet.

Southbound: Based on field measurements, the existing available SSD for a vehicle traveling southbound on Island Crest Way approaching the north access location exceeds 305 feet.

South Access

Intersection Sight Distance (ISD):

Based on *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* Table 9-6 (Case B1, Left Turn from Stop), the minimum required left turn ISD for a 40 MPH design speed is 445 feet. Because Island Crest Way is a multilane roadway (vehicles must cross 2 lanes to turn left from the access driveways), this value was adjusted based on AASHTO standards to 470 feet by adjusting the time gap. ISD was measured based on an entering vehicle driver eye height of 3.5 feet, measured 14.5 feet back from the edge of traveled way

ISD Looking North: The available ISD at the Island Crest Way/South Access intersection looking north will meet or exceed 470 feet assuming existing vegetation is cleared and any slope regraded to obtain a clear line of sight (currently the available ISD is only 255 feet due to existing vegetation). Based on our review of aerial photography and property lines from *King County Parcel Viewer*, it appears that all required clearing would be within existing City right-of-way (ROW). A diagram showing the ISD sight line looking north is provided in Attachment E.



View looking north on Island Crest Way from south site access location (14.5 feet behind curb)

ISD Looking South: The maximum available ISD at the Island Crest Way/South Access intersection looking south would be approximately 310 feet (does not meet the 470-foot standard) using the existing ROW line as the limiting factor (sight line tangent to ROW line). Meeting the 470-foot standard is not feasible as the line of sight crosses into private property due to the horizontal curve in Island Crest Way. In order for 310 feet of ISD to be achieved, existing vegetation must be cleared and possibly slope regraded within the limits of the existing ROW.

While 310 feet of ISD is less than the AASHTO standard, it is greater than the required SSD standard of 305 feet. Meeting the minimum SSD standard ensures that safe ingress/egress can occur as there will be more than sufficient sight distance available for vehicles travelling on Island Crest Way to be able to stop for conflicting traffic. In addition, it should be noted that this is a driveway to one single family home at a location where one already exists. The existing available ISD looking south at this location is only 145 feet. If the recommended clearing of vegetation and regrading is conducted within the limits of existing ROW, the resulting ISD will be a significant improvement over existing conditions (more than 2 times the existing ISD). TENW also reviewed the most recent 3-year collision history (2014-2016 WSDOT data) and confirmed that there were no reported collisions at the existing driveway (or at any of the adjacent driveways on Island Crest Way). Based on these considerations, we believe that 310 feet of ISD is acceptable (with clearing/regrading within ROW) for an access to a single family dwelling. Diagrams showing the ISD sight lines looking south (470 feet and 310 feet) are provided in Attachment E.



View looking south on Island Crest Way from south site access location (14.5 feet behind curb)

Stopping Sight Distance (SSD):

Based on *AASHTO Policy on Geometric Design of Highways and Streets, 6th Edition, 2011* Table 3-1 (Stopping Sight Distance on Level Roadways), the minimum required SSD for a 40 MPH design speed is 305 feet. SSD was measured based on an approaching vehicle driver eye height of 3.5 feet and an object height of 2.0 feet. SSD was measured along the centerline of the curb-side lane on Island Crest Way.

Northbound: Based on field measurements, the existing available SSD for a vehicle traveling northbound on Island Crest Way approaching the south access location exceeds 305 feet.

Southbound: Based on field measurements, the existing available SSD for a vehicle traveling southbound on Island Crest Way approaching the south access location exceeds 305 feet

Sight Distance: Conclusions

1. Stopping sight distance requirements are met at both site access locations on Island Crest Way.

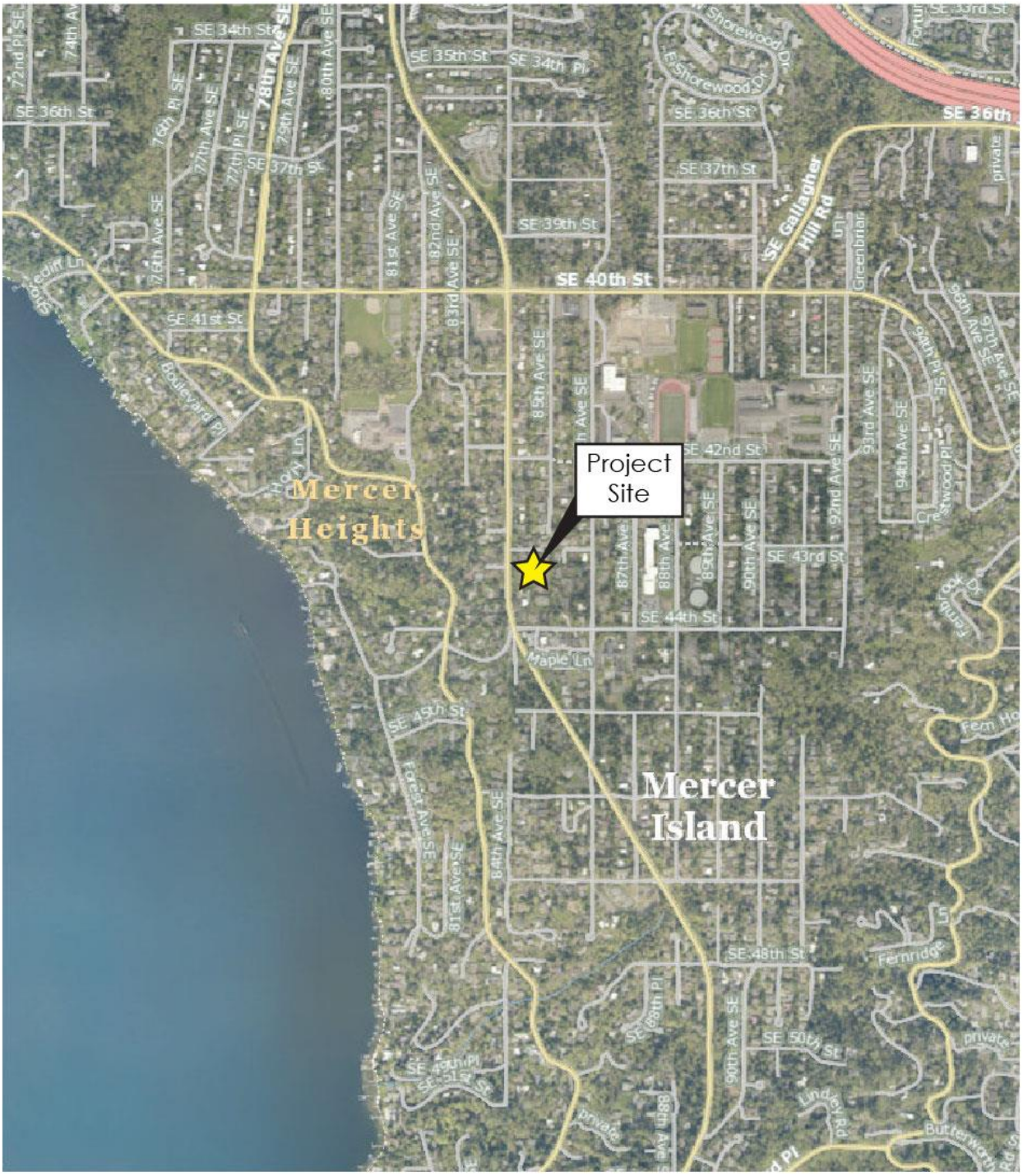
2. Intersection sight distance is acceptable at both site access locations assuming clearing and regrading is conducted within the right-of-way to achieve clear sight lines looking north and south of the proposed access points.

If you have any questions regarding the information presented in this memo, please call me at 206-498-5897 or email at forster@tenw.com.

cc: Jayson Taylor
Alan Chiu

Attachments

A. Vicinity Map
B. Preliminary Site Plan
C. Trip Generation Estimate
D. Preliminary ISD Sight Line Diagrams – North Access
E. Preliminary ISD Sight Line Diagrams – South Access



Attachment A: Vicinity Map

ATTACHMENT B

Preliminary Site Plan

ATTACHMENT C
Trip Generation Estimate

Weekday Daily

Land Use	Units [1]	ITE LUC [2]	Directional Split In	Directional Split Out	Trip Rate Total	Trips Generated In	Trips Generated Out	Trips Generated Total
Proposed Use								
Single-Family	6 DU	210	50%	50%	9.52	28	29	57
Less Existing Use								
Single-Family	2 DU	210	50%	50%	9.52	-9	-10	-19
Total Net New Weekday Daily Trips Generated =						**19**	**19**	**38**

AM Peak Hour Trip Generation

Land Use	Units	ITE LUC [1]	Directional Split In	Directional Split Out	Trip Rate Total	Trips Generated In	Trips Generated Out	Trips Generated Total
Proposed Use								
Single-Family	6 DU	210	25%	75%	0.75	1	4	5
Less Existing Use								
Single-Family	2 DU	210	25%	75%	0.75	0	-2	-2
Total Net New AM Peak Hour Trips Generated =						**1**	**2**	**3**

PM Peak Hour Trip Generation

Land Use	Units	ITE LUC [1]	Directional Split In	Directional Split Out	Trip Rate Total	Trips Generated In	Trips Generated Out	Trips Generated Total
Proposed Use								
Single-Family	6 DU	210	63%	37%	1.00	4	2	6
Less Existing Use								
Single-Family	2 DU	210	63%	37%	1.00	-1	-1	-2
Total Net New PM Peak Hour Trips Generated =						**3**	**1**	**4**

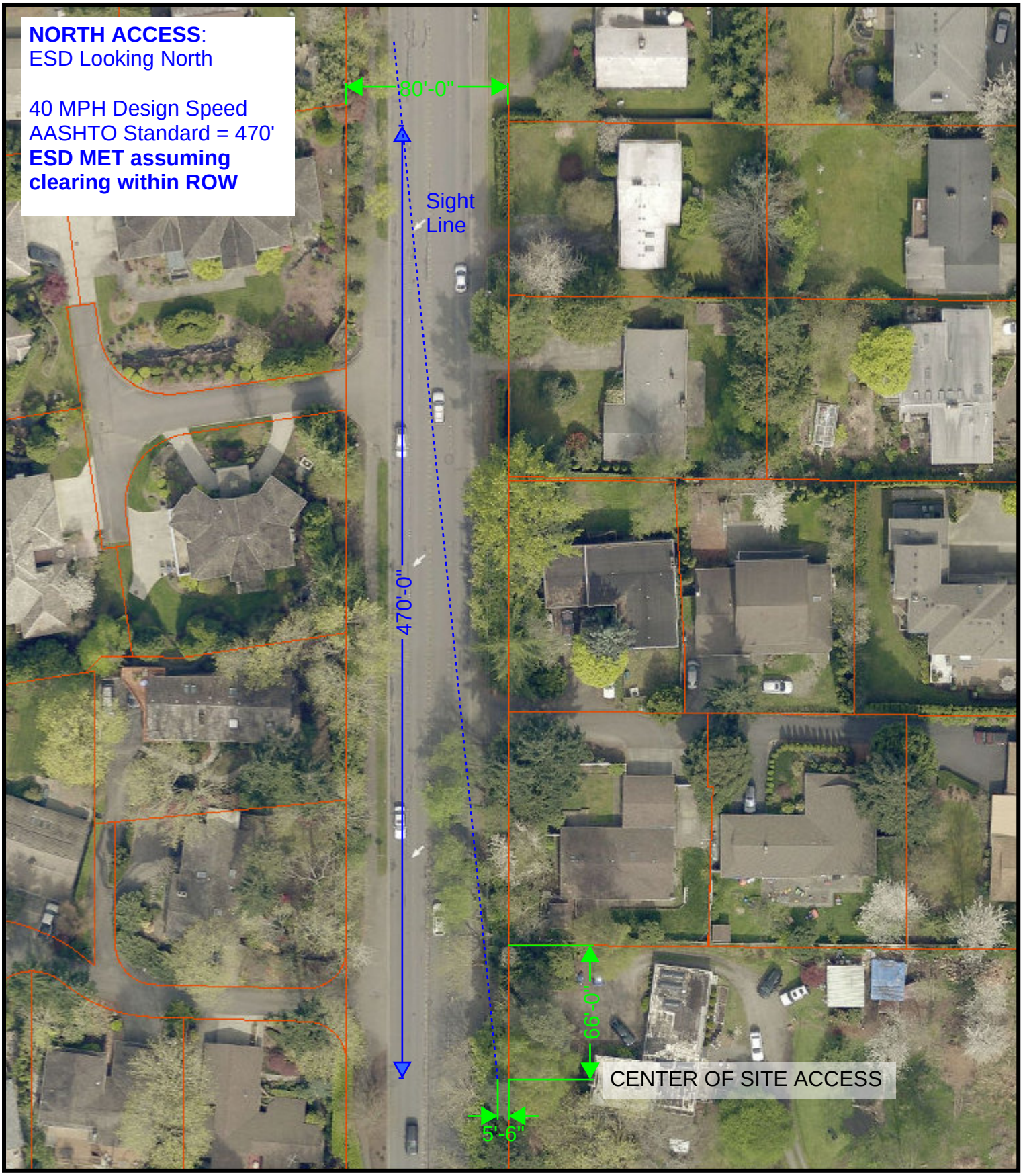
Notes:

[1] DU = Dwelling Units.

[2] Institute of Transportation Engineers, Trip Generation Manual, 9th edition Land Use Code.

ATTACHMENT D

North Access
ISD Sight Line Diagrams


NORTH ACCESS:
ESD Looking North
40 MPH Design Speed
AASHTO Standard = 470'
ESD MET assuming clearing within ROW
30'-0"
Sight Line
470'-0"
66'-0"
CENTER OF SITE ACCESS
5'-6"

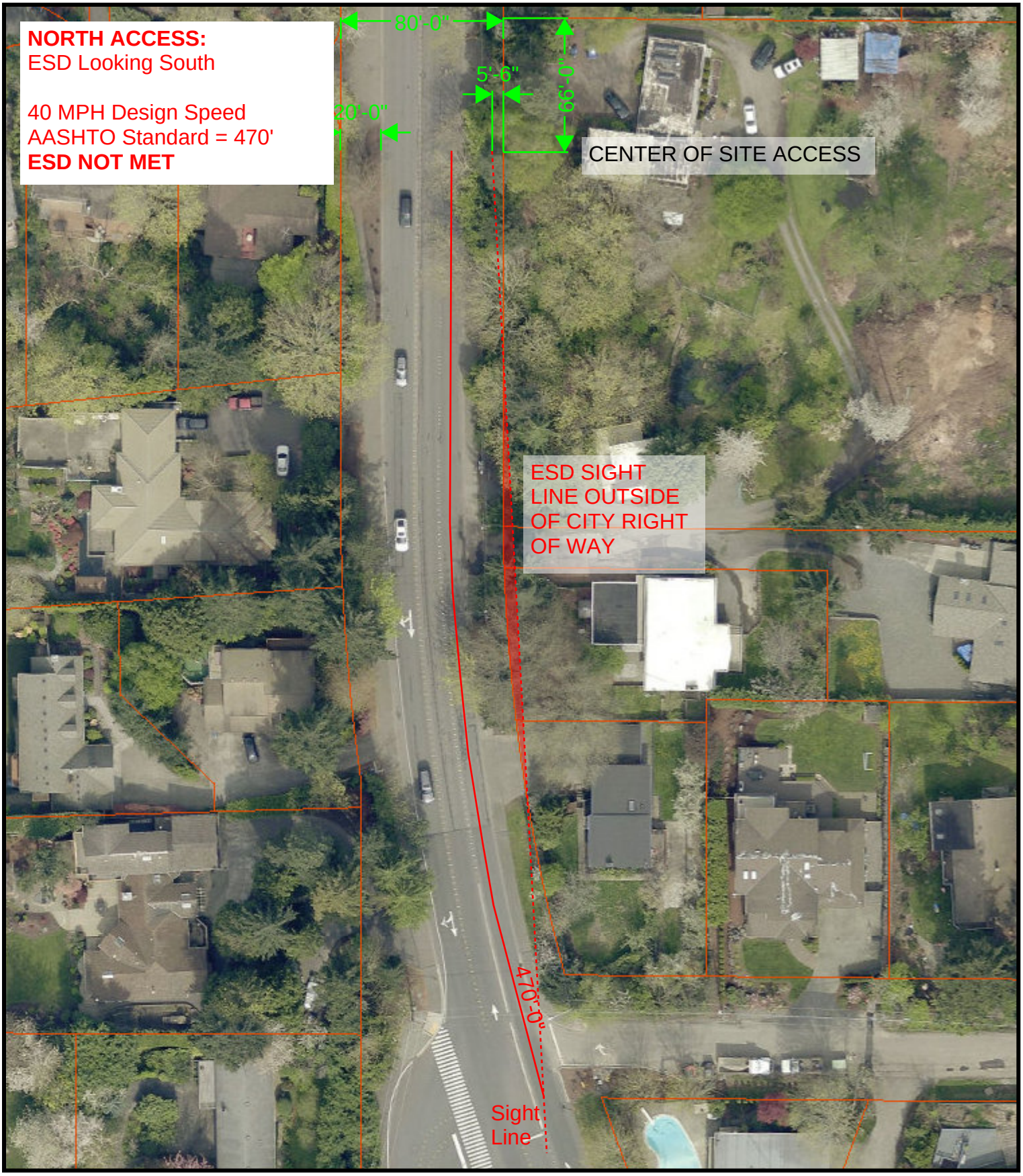

NORTH ACCESS:
ESD Looking South
40 MPH Design Speed
AASHTO Standard = 470'
ESD NOT MET
80'-0"
5'-6"
66'-0"
20'-0"
CENTER OF SITE ACCESS
ESD SIGHT LINE OUTSIDE OF CITY RIGHT OF WAY
470'-0"
Sight Line

Exhibit 5e

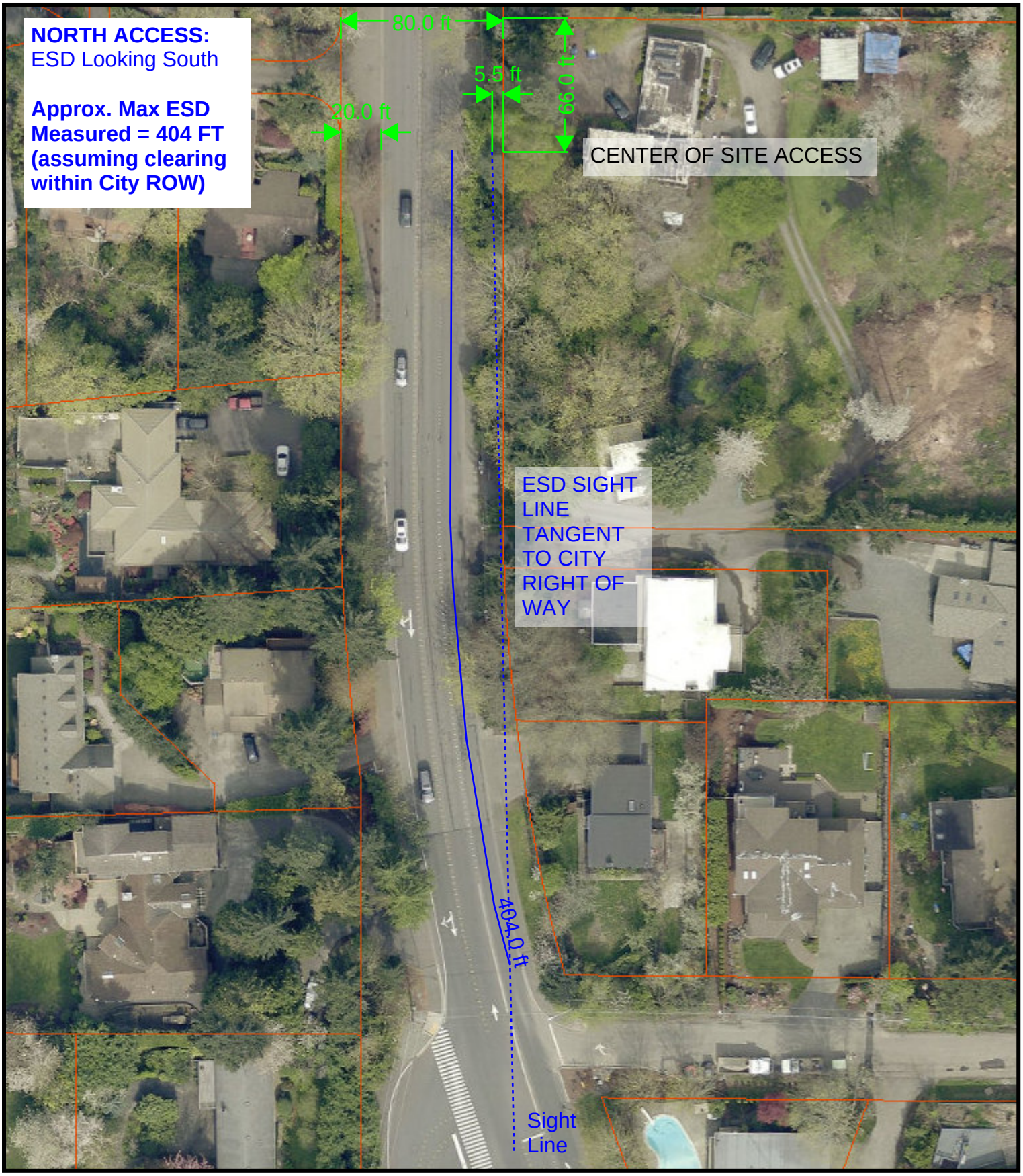

NORTH ACCESS:
ESD Looking South
Approx. Max ESD Measured = 404 FT (assuming clearing within City ROW)
80.0 ft
5.5 ft
66.0 ft
20.0 ft
CENTER OF SITE ACCESS
ESD SIGHT LINE TANGENT TO CITY RIGHT OF WAY
404.0 ft
Sight Line

Exhibit 5e

ATTACHMENT E

South Access
ISD Sight Line Diagrams

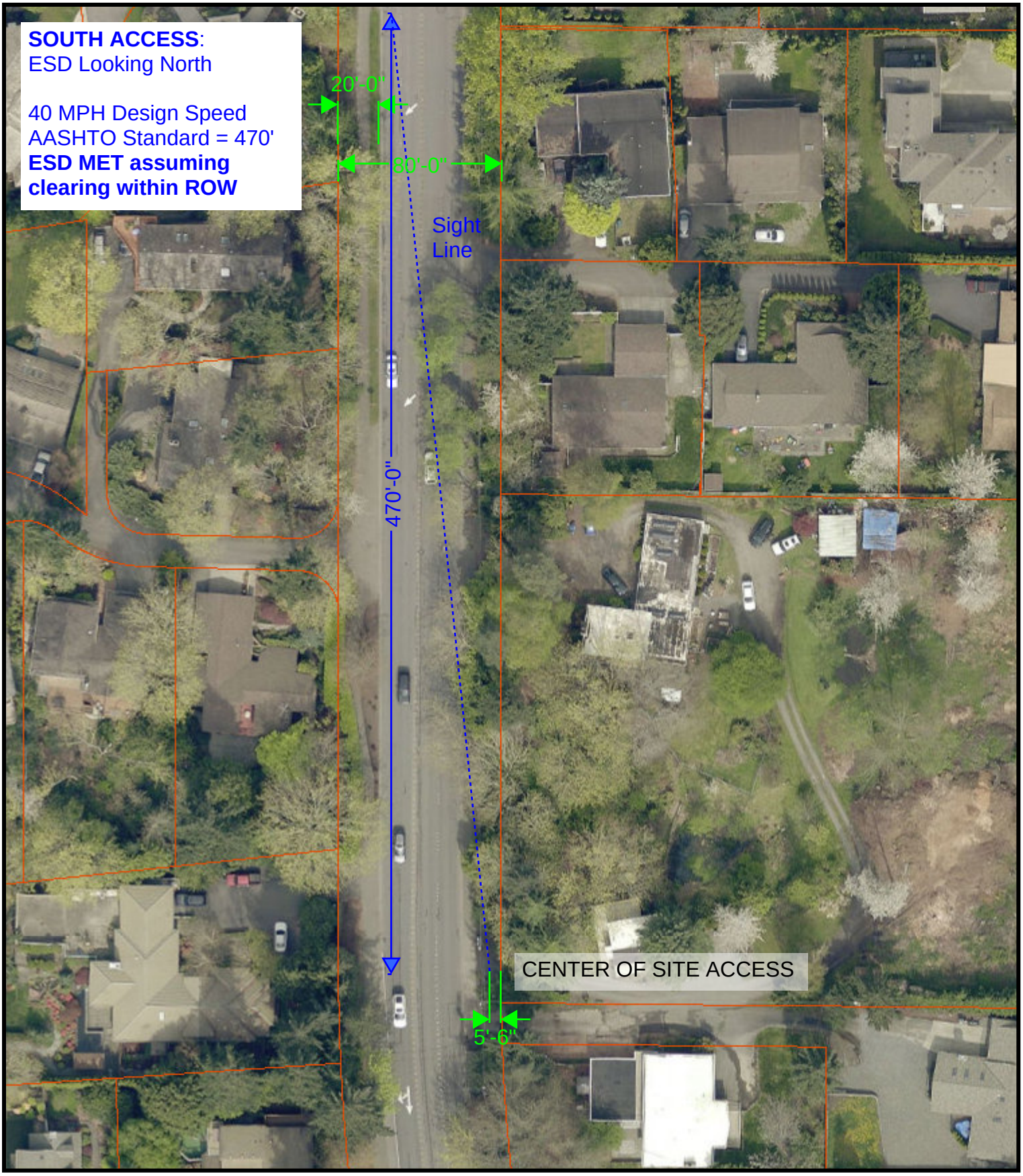

SOUTH ACCESS:
ESD Looking North
40 MPH Design Speed
AASHTO Standard = 470'
ESD MET assuming clearing within ROW
20'-0"
80'-0"
Sight Line
470'-0"
CENTER OF SITE ACCESS
5'-6"

Exhibit 5e

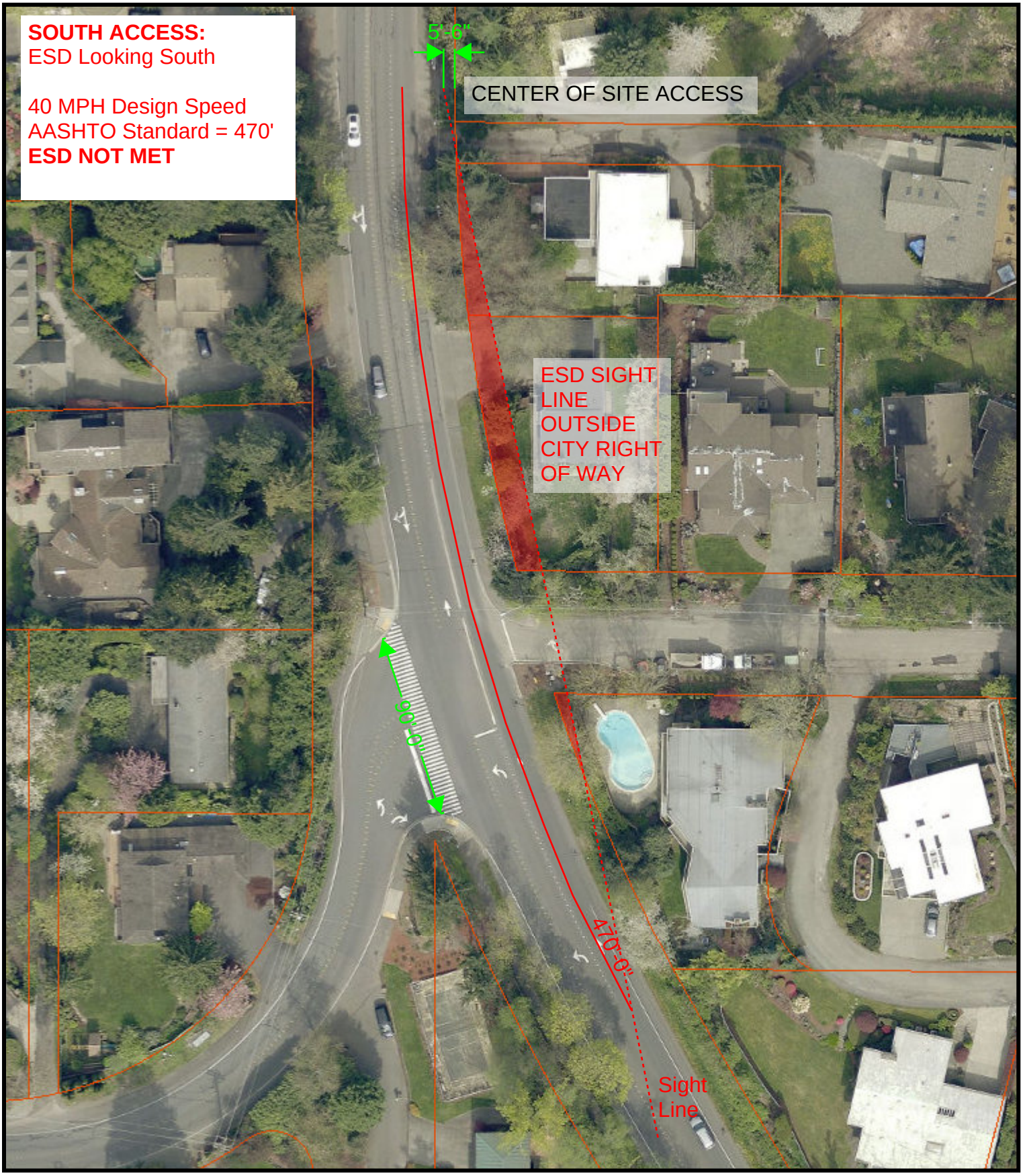

SOUTH ACCESS:
ESD Looking South
40 MPH Design Speed
AASHTO Standard = 470'
ESD NOT MET
5'-6"
CENTER OF SITE ACCESS
ESD SIGHT LINE OUTSIDE CITY RIGHT OF WAY
90'-0"
470'-0"
Sight Line

Exhibit 5e

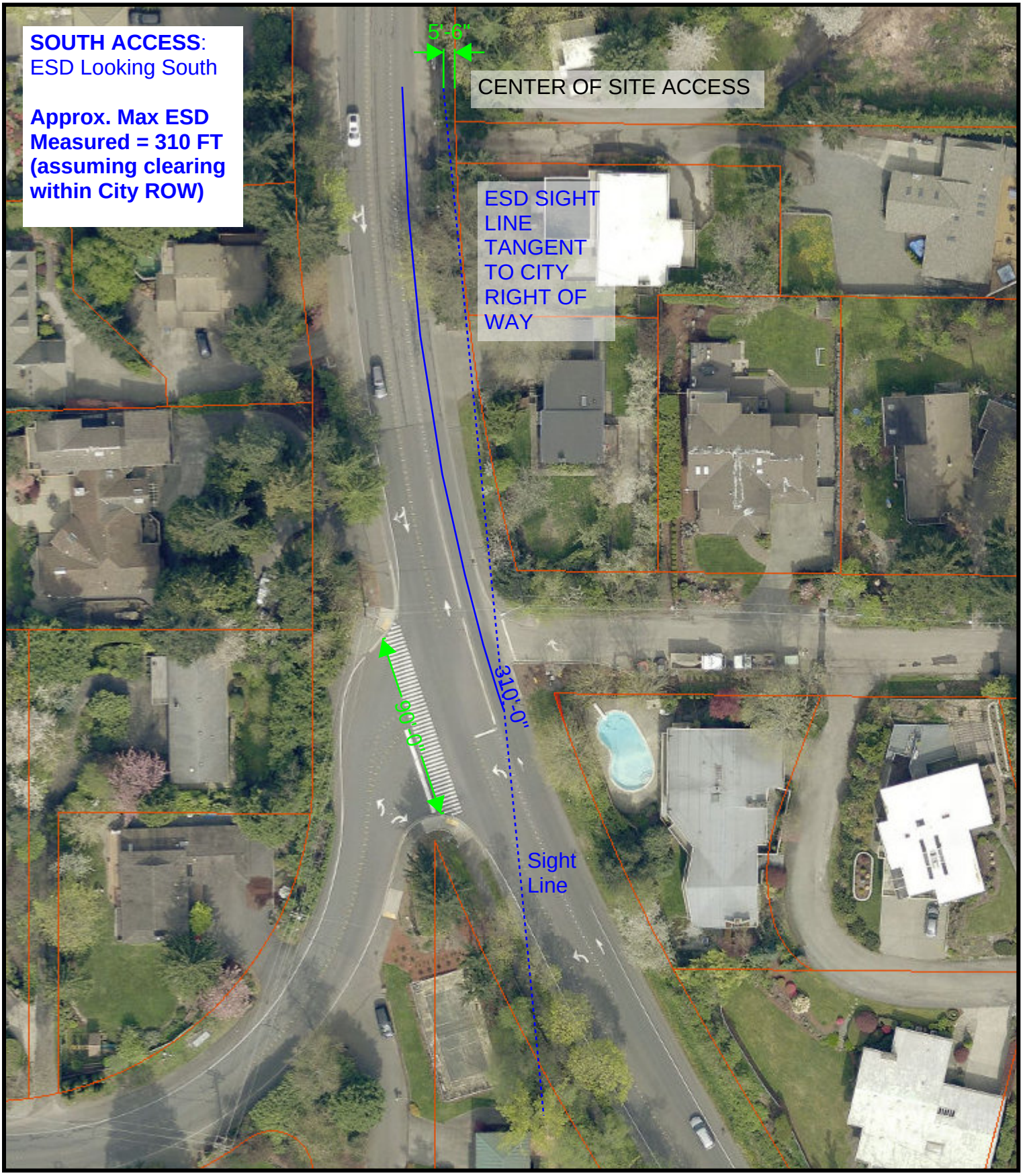

SOUTH ACCESS:
ESD Looking South
Approx. Max ESD Measured = 310 FT (assuming clearing within City ROW)
5'-6"
CENTER OF SITE ACCESS
ESD SIGHT LINE TANGENT TO CITY RIGHT OF WAY
310'-0"
90'-0"
Sight Line

Exhibit 5e

Earth Solutions NW LLC

- Geotechnical Engineering
- Construction Monitoring
- Environmental Sciences

April 19, 2018
ES-5332.01

Mercertech International, LLC
4320 Island Crest Way
Mercer Island, Washington 98040

Attention: Mr. Alan Chiu

Subject: Geotechnical Consultation
Geological Hazardous Areas
Proposed Mercer Island Long Plat
4320 and 4332 Island Crest Way
Mercer Island, Washington

Reference: ESNW, LLC
Geotechnical Engineering Study
ES-5332, dated July 10, 2017

ESNW, LLC
Geotechnical Addendum
ES-5332, dated October 16, 2017

CHS Engineers
Composite Site Plan
Dated March 13, 2018

Dear Mr. Chiu:

As requested by Bahaar Taylor and based on an email excerpt of a City of Mercer Island review comment, Earth Solutions NW, LLC (ESNW) has prepared this consultation letter addressing the geological hazardous areas.

Project Description

The site will be redeveloped with five residential lots and associated improvements. Based on review of the current layout depicted on the referenced Composite Site Plan, the lots will be clustered north of the stream drainage in an area that is essentially level. The lots are not labeled; however, two southern lots are proposed near the stream bank and within an area mapped as potential landslide and erosion hazard overlay.

Review Comment

The City of Mercer Island comment states, "The geotechnical information states that mapped geologic hazard areas are located off-site. This is inconsistent with City of Mercer Island GIS information, which show erosion and landslide hazard areas on the subject site. Please verify whether any portion of the site meets the definition of a geologic hazard area. If it is determined that portions of the site meet the definition of a geologic hazard area, then please address the standards in Mercer Island City Code (MICC) 19.07.060."

ESNW Response

We have included a copy of the City erosion and landslide hazard mapping overlay (Exhibit 1) along with proposed site layout that illustrates the relation of the hazards to the proposed site layout. This map resource denotes erosion and landslide hazards along the east side of West Mercer Way, in an area that is within the grading limits of right-of-way improvements. The hazard overlay then continues south-southeast into the site. This drainage feature is fed by a spring further to the east; however, to the best of our knowledge no springs are present on the subject site.

We reviewed Section 19.07.060 – Geologic Hazardous Areas of the MICC. We also reviewed the Mercer Island Seismic, Landslide, and Erosion Hazard Maps, as well as, the City of Mercer Island online GIS portal. Based on our review of the referenced composite site plan, geologic hazardous areas are within the proposed development envelope of the site. The geological hazardous areas assessment is expanded as follows:

- Review of the City of Mercer Island online GIS portal indicates that portions of the proposed development area is located within a potential landslide hazard area. The City of Mercer Island defines a landslide hazard area as the following:

    1. Areas of historic failures;
    2. Areas with all three of the following characteristics:
        a. Slopes steeper than 15 percent;
        b. Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock, and;
        c. Springs or groundwater seepage.
    3. Areas that have shown evidence of past movement or that are underlain or covered by mass wastage debris from past movements;
    4. Areas potentially unstable because of rapid stream incision and stream bank erosion, or;
    5. Steep Slope. Any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.

Below are itemized responses to the indicators listed above:

1. We did not identify signs of past failure on or adjacent to the proposed development areas.

2. All indicators in this item are not present on the subject site; therefore, do not apply. There is a slope that descends to a natural drainage (stream) that contains slopes inclined about 30 percent and is about 12 feet in total height. While there are slopes that are inclined above 15 percent, there are no other indicators in this list present on the site.

3. There was no evidence of past movement other than minor slope creep that is not indicative of impending failure or extremely weak soils.

4. The soils in the vicinity of the stream area consist primarily of firm silt deposits. In terms of slope stability, the relative densities of the soils and well vegetated stream banks indicate that there is a low potential for instability due to rapid stream incision or stream bank erosion.

5. There is a natural drainage ravine that has side slopes of 30 percent and is about 12 feet in height or less and does not meet this criterion.

In our opinion, site susceptibility to landslide hazards may be considered low due to gently sloping topography and relatively dense native soil conditions encountered at the test pit locations.

- Review of the City of Mercer Island online GIS portal indicates that the development area lies within a potential erosion hazard area. The City of Mercer Island defines an erosion hazard area as the following:

    1. Those areas greater than 15 percent slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a "severe" or "very severe" rill and inter-rill erosion hazard.

Potential erosion hazardous areas, due to topographic conditions, are indicated within the development area. A stream divides 4320 and 4332 Island Crest Way. The development area contains isolated slopes associated with the stream of approximately 30 percent. The majority of the proposed development area is very gently sloping, with gradients less than 15 percent.

In our opinion, site susceptibility to erosion hazards may be considered low due to gently sloping topography and relatively dense native soil conditions encountered at the test pit locations. Standard development Best Management Practices (BMPs), such as silt fences, will provide adequate measures to protect the site and adjacent properties from erosion during construction. Temporary erosion control requires active monitoring to ensure measures are performing as intended and modified, where necessary to maintain stability.

Permanent landscaping will provide adequate protection from erosion but should be assessed by the homeowner periodically to ensure erosion is mitigated and repaired where necessary.

Additional Recommendations

Based on the composite site plan, the development area lies within a mapped potential erosion hazard area. ESNW recommends avoiding placement of fill along the descending slope in order to reduce the erosion potential near the on-site stream to the extent practical. Additionally, ESNW recommends that each of the single-family residences be constructed on foundations that follow the natural contours to the extent practical and which bear on competent native soil, recompacted native soil, or new structural fill placed directly on competent native soils. This will likely require overexcavation in some areas; however, the extent depends greatly on the site grading plans and conditions exposed at the time of excavation. ESNW should be retained to observe foundation excavation conditions at the time of construction to confirm conditions are as anticipated and to provide additional recommendations.

We reviewed MIC section 19.09.090 – Building Pad to evaluate the proposed site layout plans. This section provides guidance relating to developing within geologic hazard areas. The subject site contains an erosion hazard for two of the southernmost lots. There are no buffers required for this hazard; and in our opinion, provided the recommendations detailed in this letter and the referenced geotechnical report are followed, no additional setbacks or buffers need be applied to lots on this site.

The referenced geotechnical report provides temporary erosion control recommendations that remain applicable to this project. ESNW should have an opportunity to review final project plans with respect to the geotechnical recommendations provided in this study. ESNW should also be retained to provide testing and consultation services during construction.

Conclusion

Review of MICC 19.07.060, Geologic Hazard Maps of Mercer Island, and our on-site observations indicate there are erosion hazardous areas within the proposed development envelope of the site. We do not anticipate extensive grading will occur on this site with the exception of minor cuts and fills to establish foundation subgrade. On this basis, standard development BMPs will provide an adequate level of safety from potential geologic hazardous areas.

Statement of Risk

Based on our review of the applicable MIC sections, construction may occur within an erosion hazard area. In our opinion, this is acceptable provided the recommendations detailed in this letter and the referenced report are followed. On this basis, construction practices are proposed for the alteration that would render the development as safe as if it were not located in a geologic hazard area.

Should you have questions, or if additional information is required, please contact us.

Sincerely,

EARTH SOLUTIONS NW, LLC

KYLE R. CAMPBELL
STATE OF WASHINGTON
27674
REGISTERED
PROFESSIONAL ENGINEER

Scott S. Riegel, L.G., L.E.G.
Senior Project Manager

Kyle R. Campbell, P.E.
Principal Engineer

4/19/18

Attachment: Exhibit 1

cc: Mr. Bahaar Taylor (Email only)

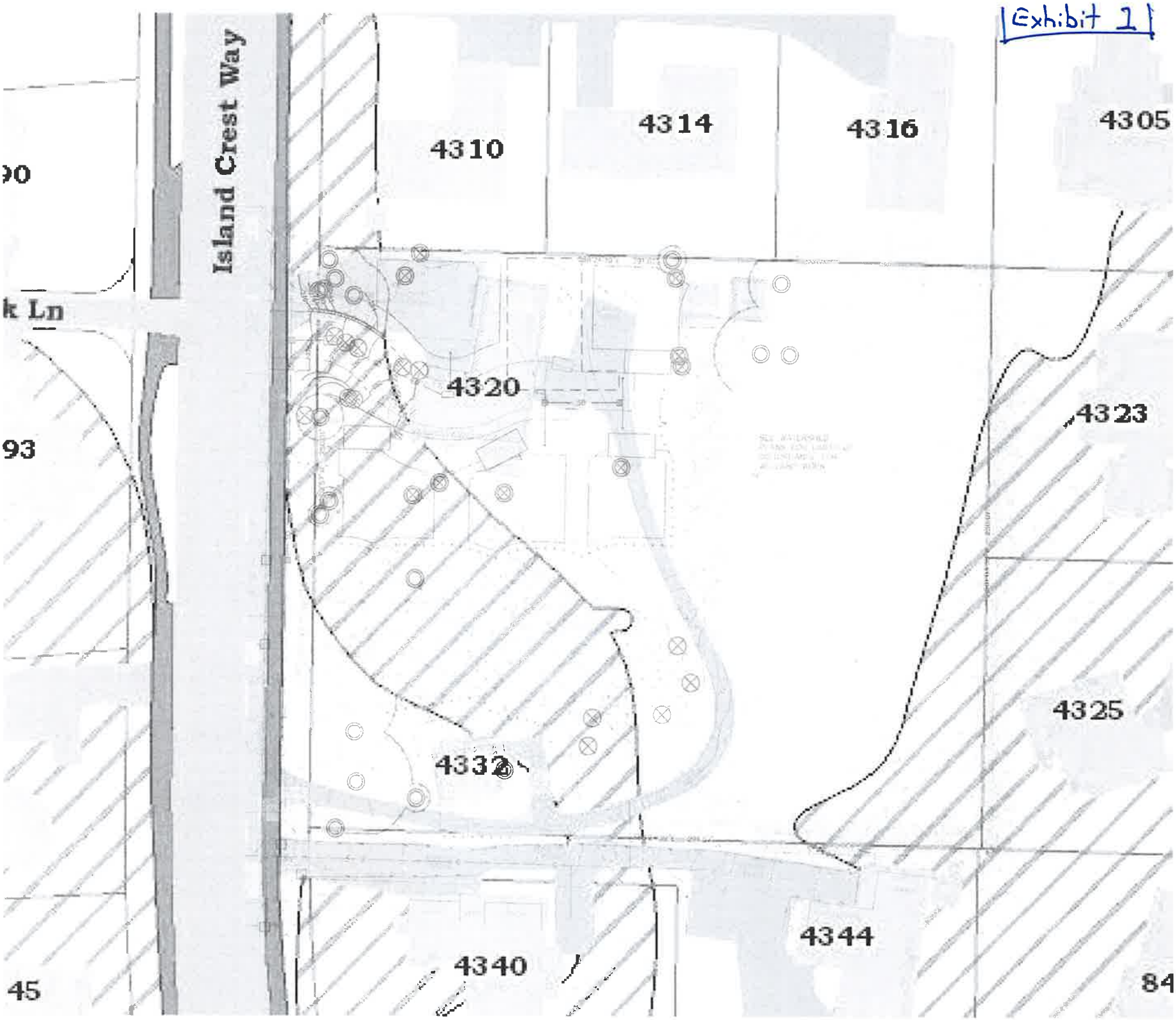


Exhibit 1
Island Crest Way
4310
4314
4316
4305
4320
4323
4325
4332
4344
4340
k Ln
90
93
45
84

Exhibit 5f

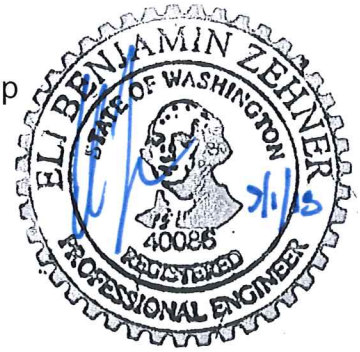
CHS ENGINEERS

MEMORANDUM

To: Ruji Ding, Senior Development Engineer
City of Mercer Island Development Services Group
ruji.ding@mercergov.org

c: Jayson Taylor, Project Manager
jayson.m.taylor@gmail.com

Robin Proebsting, Senior Planner
City of Mercer Island Development Services Group
robin.proebsting@mercergov.org



From: Eli Zehner, PE, Project Manager
CHS Engineers, LLC

Date: September 1, 2018

Subject: Meeting Debrief 08/27/18
Comment Responses
4320 Island Crest Way Long Plat, SUB 17-015 (Project)

The following memo intends to provide a debrief of the meeting held at Mercer Island City Hall on 08/27/18 with representatives of the City of Mercer Island, CHS and the Owner of the subject property and provide written responses to the comments discussed during the meeting. The meeting agenda and responses are below with agenda items in *italics* and resultant action items/responses in red.

Address remaining comments from civil review of preliminary plat submittal:

1. Control structure and detention vault – connection of collection directly to control structure.

"Based on the design, the up portion of the access driveway and Lot 3 driveway are discharging directly into the control structure, not to the detention vault. The control structure is functioning as a detention structure. Please verify and provide calculations to confirm that the control structure has the sufficient storage functioning as the detention system, so the runoff will be controlled at the same released rate, not to the overflow directly."

The construction drawings will be edited such that the pipe in question will discharge to the detention structure rather than the control structure. The stormwater runoff from this pipe is considered in the sizing of the detention vault.

2. *Wetland mitigation area*

"The area not disturbed is not correct. The entire disturbed area of this development project shall be considered. The disturbed area shown on the Wetland Mitigation plan shall be considered as a part of the calculation."

The project's stormwater model has been revised to address the entire disturbed area. The model now includes an additional area of 1.219 acre (the remaining area on the property not to be developed but, rather, mitigated in accordance with the wetland mitigation plans by others) in both the predeveloped and the mitigated conditions. The area for both conditions has been modeled as forested. The predeveloped condition has been modeled as forested per the requirements of the manual to match historical flows; the mitigated condition has been modeled as forested as it will be mitigated with plantings and other wetland mitigation measures resulting in forest-like conditions.

The revised inputs and associated results are shown on pages 3, 5 and 11 through 16 of the enclosed WWHM Project Report. Revised Figures 2.2.7.1a and 2.2.7.1 indicate the revised predeveloped and developed input areas.

The detention vault sizing remains unchanged from prior analysis and adequate when considering the area to be disturbed for wetland mitigation measures. Refer to the model printout attached to this memo.

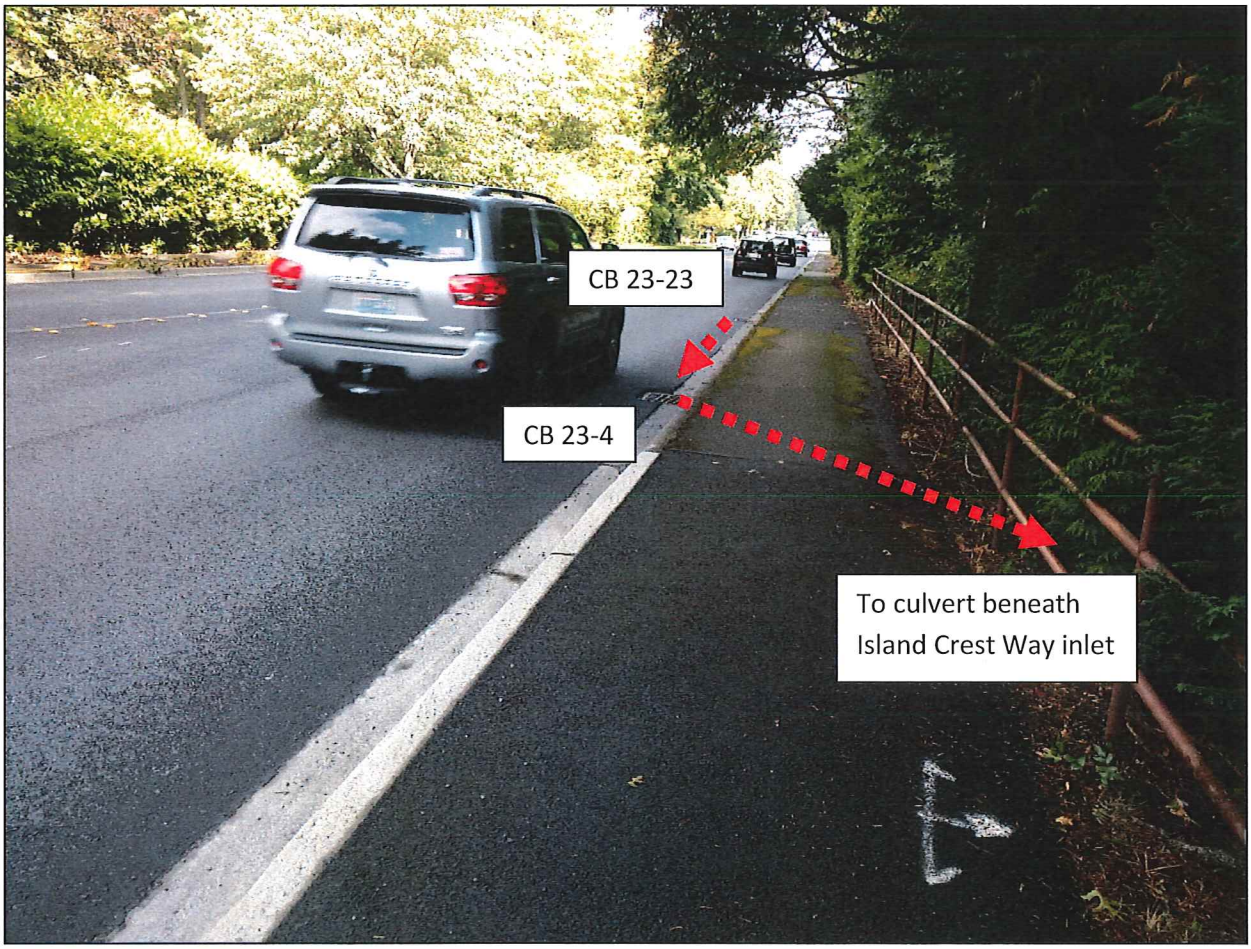
3. *Downstream Analysis*

"Please clearly show the downstream system of the existing CB you are connecting, clarify the downstream drainage path from this point down for at least 1/4 miles. Currently, there are no downstream analysis and maps showing where the existing drainage system goes from this point. Please clearly address and state if there are any adverse impacts to the downstream properties from the storm water standpoint. Please submit an updated report to address all issues."

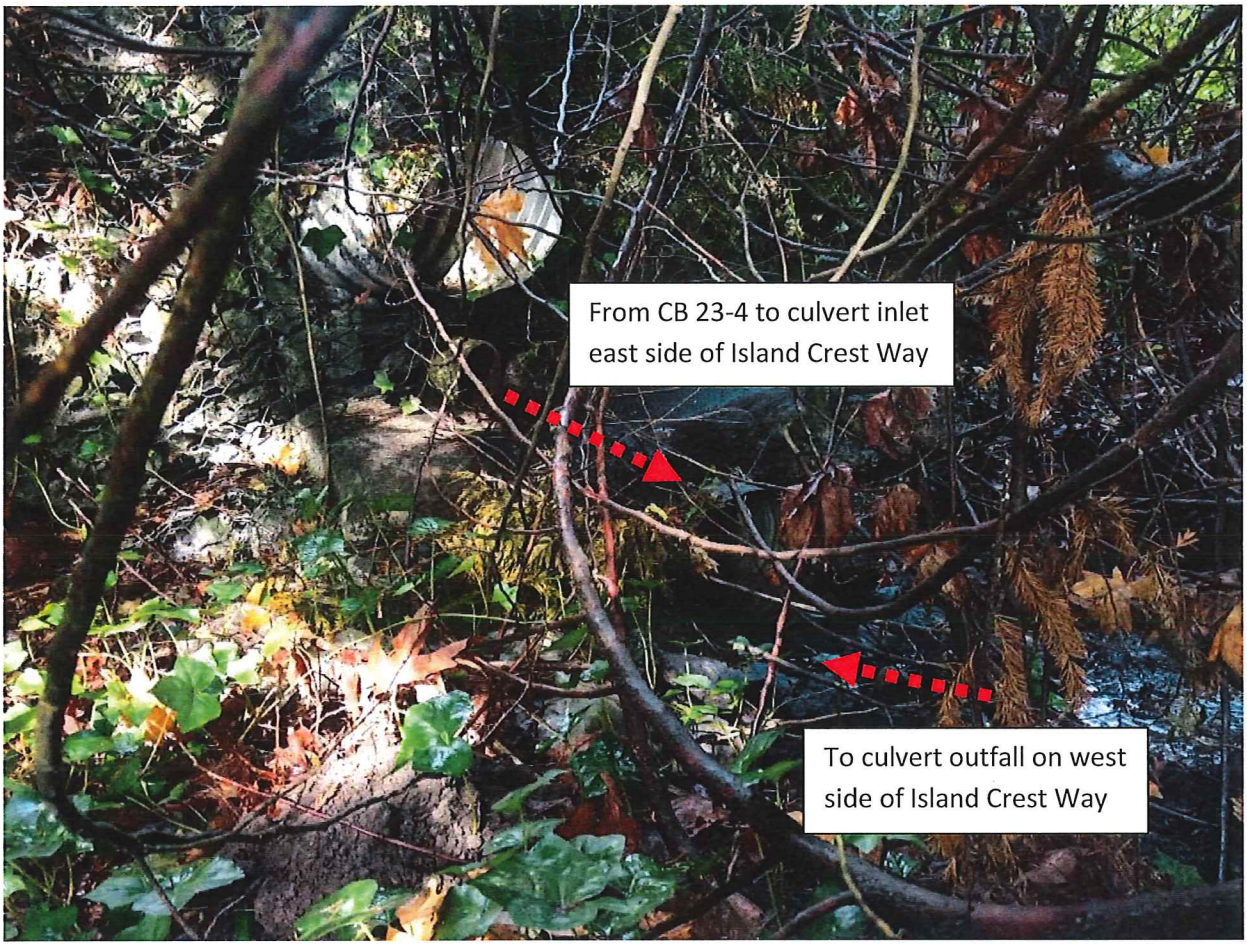
CHS performed site visits on 08/27/18 after the meeting and on 08/30/2018 to investigate the downstream drainage course. (Pictures were taken during times that private property was accessible and supplied to CHS by project team members.)

As previously reported in the Project's TIR and correspondence with the City, the site's stormwater runoff will be conveyed beneath Island Crest Way from east to west in an existing culvert. The culvert beneath Island Crest Way discharges to a natural, open-channel drainage course on the west side of Island Crest Way. The culvert and outfall appear to be in good condition. The outfall and the natural drainage course to which it discharges each have the same invert/streambed elevation and there is a smooth transition between the two. No erosion or adverse effects to the natural drainage course or the properties that they traverse are anticipated as a result of the development.

The following pictures and accompanying maps show the flowpath from the existing catch basin to which the development will connect (CB 23-23) the inlet of the existing culvert (Picture A), inlet (Picture B) and outfall (Pictures C-D) of the 18" culvert that conveys stormwater beneath Island Crest Way. The culvert's outfall is on private property.



Picture A – Northbound Island Crest Way



Picture B – Culver Inlet East Side of Island Crest Way (0.02 miles)

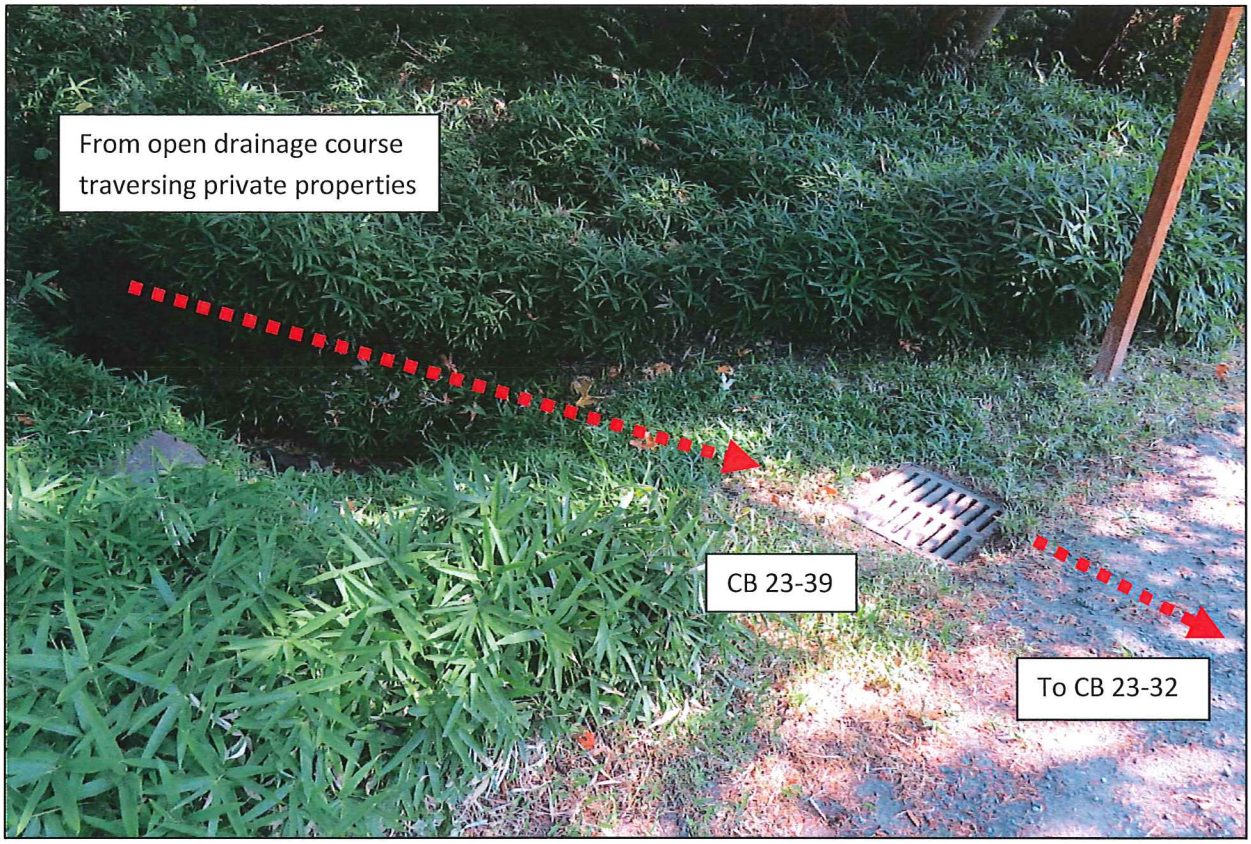


Picture C – Culvert Outfall West Side of Island Crest Way (0.04 miles)



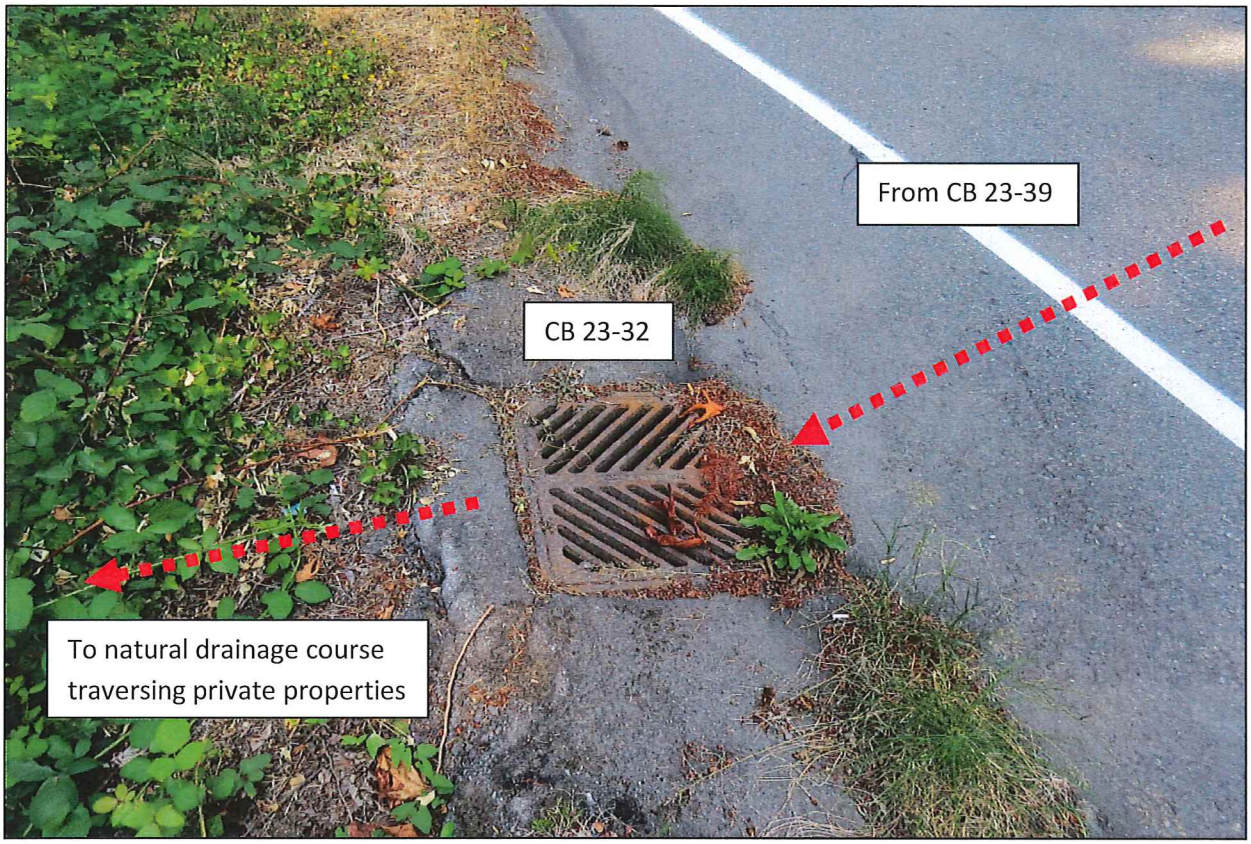
Picture D – Culvert Outfall West Side of Island Crest Way (0.04 miles)

The natural drainage course then traverses private property in an open channel until West Mercer Way where it enters a catch basin within the ROW labeled in the City's system as CB 23-39.



Picture E – Natural Drainage Course to CB 23-39 (0.11 miles)

Stormwater is then conveyed from CB 23-39 to CB 23-32 within the ROW beneath West Mercer Way in 18" storm drain pipe. Stormwater is then routed from the West Mercer Way ROW to a natural drainage course that traverses private properties.

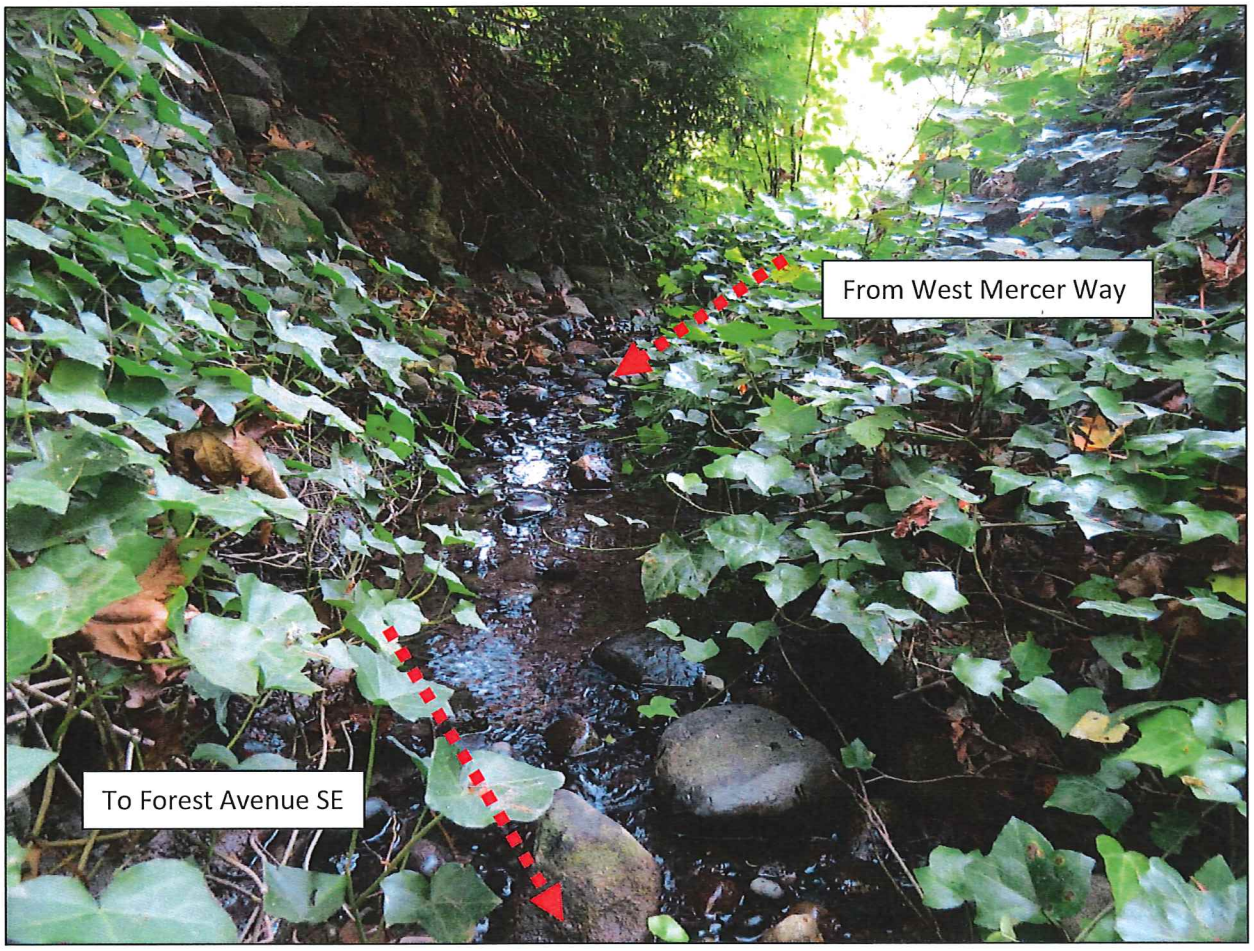


Picture F – West Mercer Way and CB 23-32 (0.13 miles)

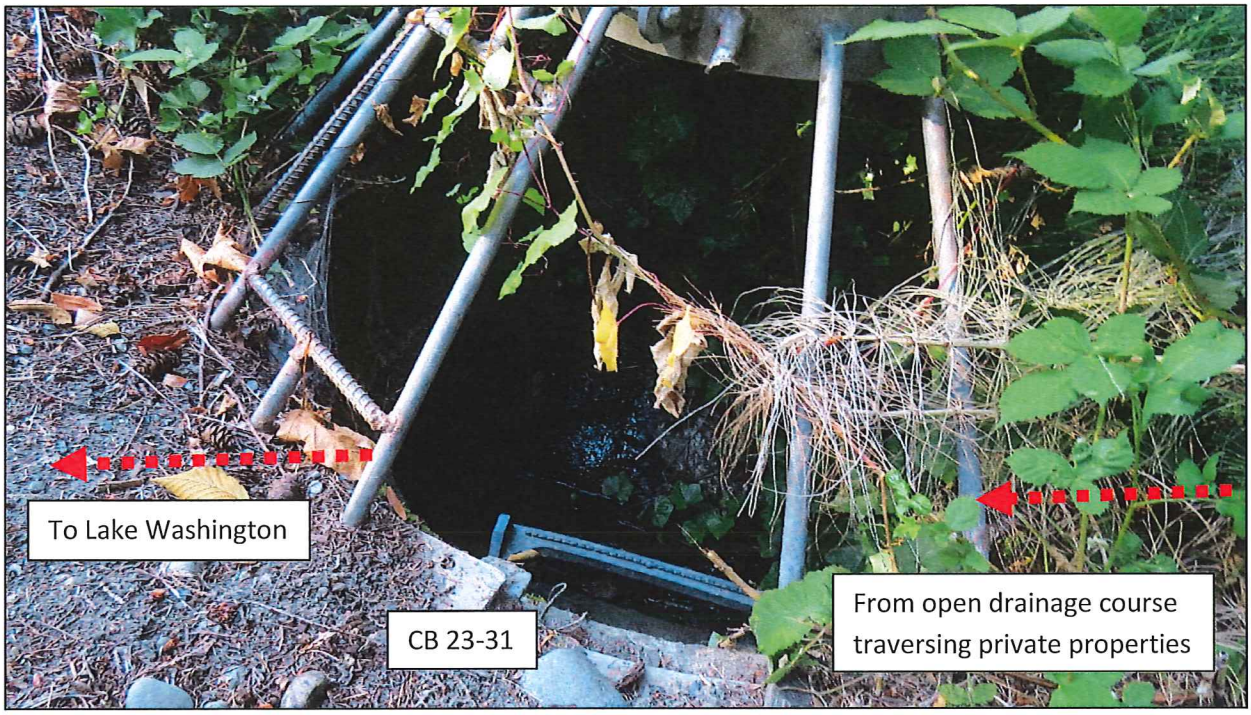


Picture G – Outfall West of West Mercer Way (0.14 miles)

The natural drainage course then traverses private property in an open channel until Forest Avenue SE where it enters a catch basin with trash rack labeled in the City's system as CB 23-31. The location of CB 23-31 is over the required minimum of 0.25 miles downstream of the development and is the termination location of this downstream analysis.

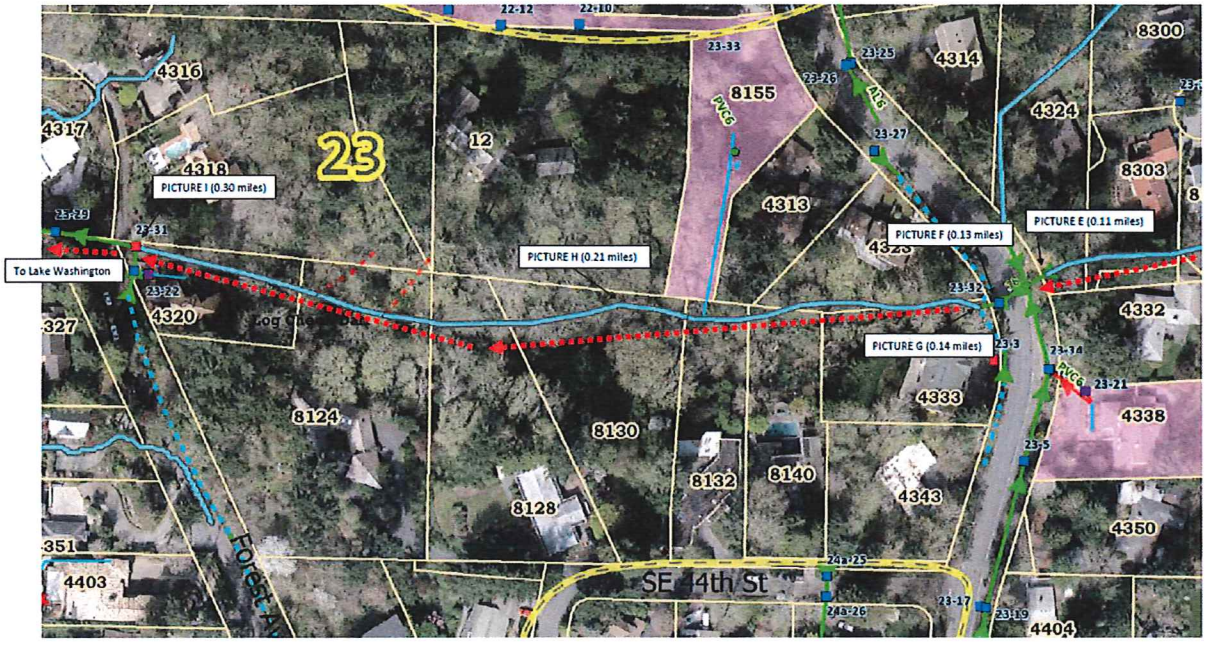


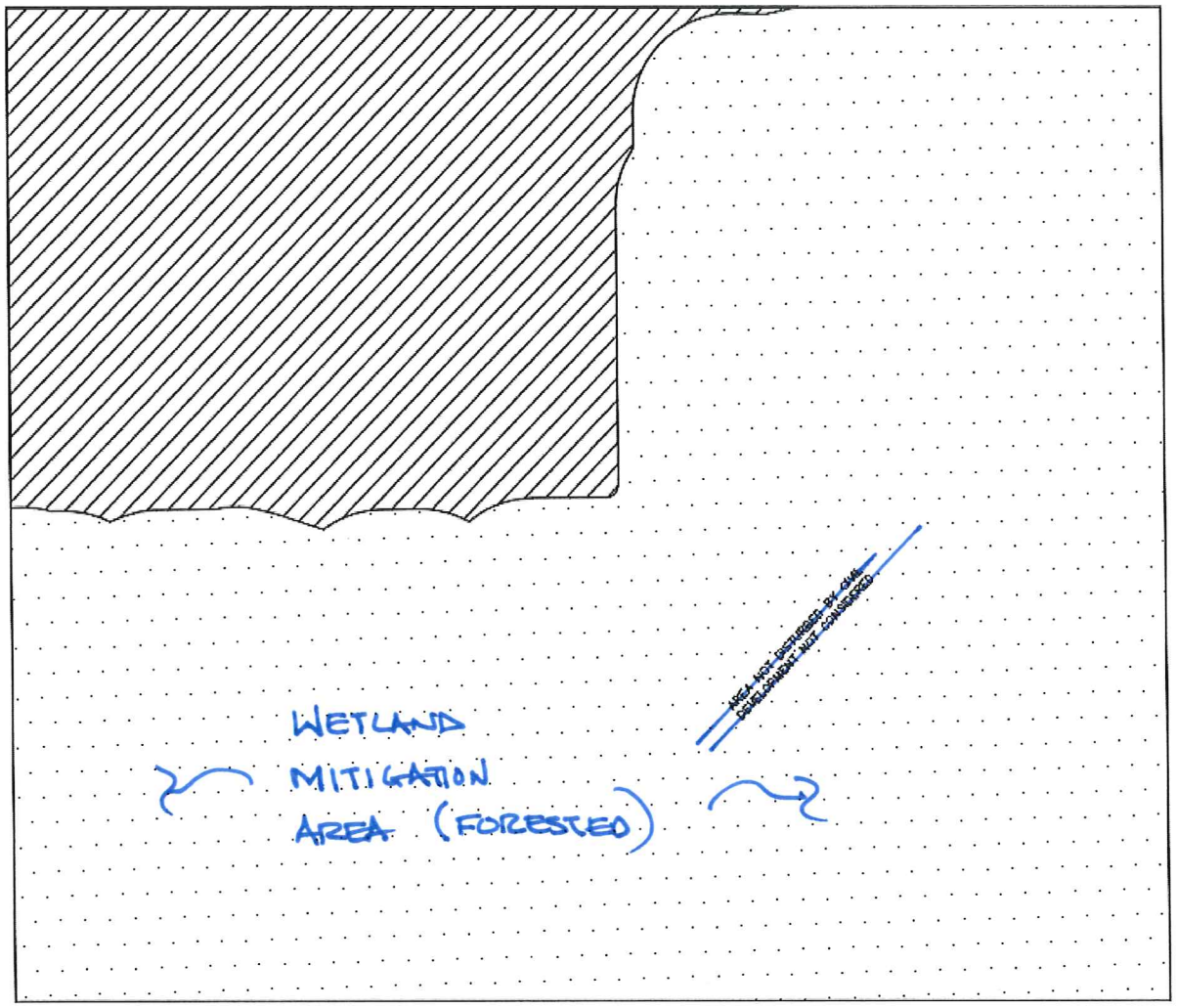
Picture H – Natural Drainage Course Between West Mercer Way and Forest Ave SE (0.21 miles)



Picture I – Natural Drainage Course to CB 23-31 (0.30 miles)


8340
8390
22-14
4310
4314
4316
4305
23-1
24
8303
8363
8393
8333
4320
4323
PICTURE A
PICTURE C – D (0.04 miles)
23-23
23-4
23-24
PICTURE B (0.02 miles)
To CB 23-39
4332
4335
4325
4332
23-34
PVC6
23-21
4338
23-10
23-11
23-12
23-13
4340
4344
24a-102
24a-103
4345
4341

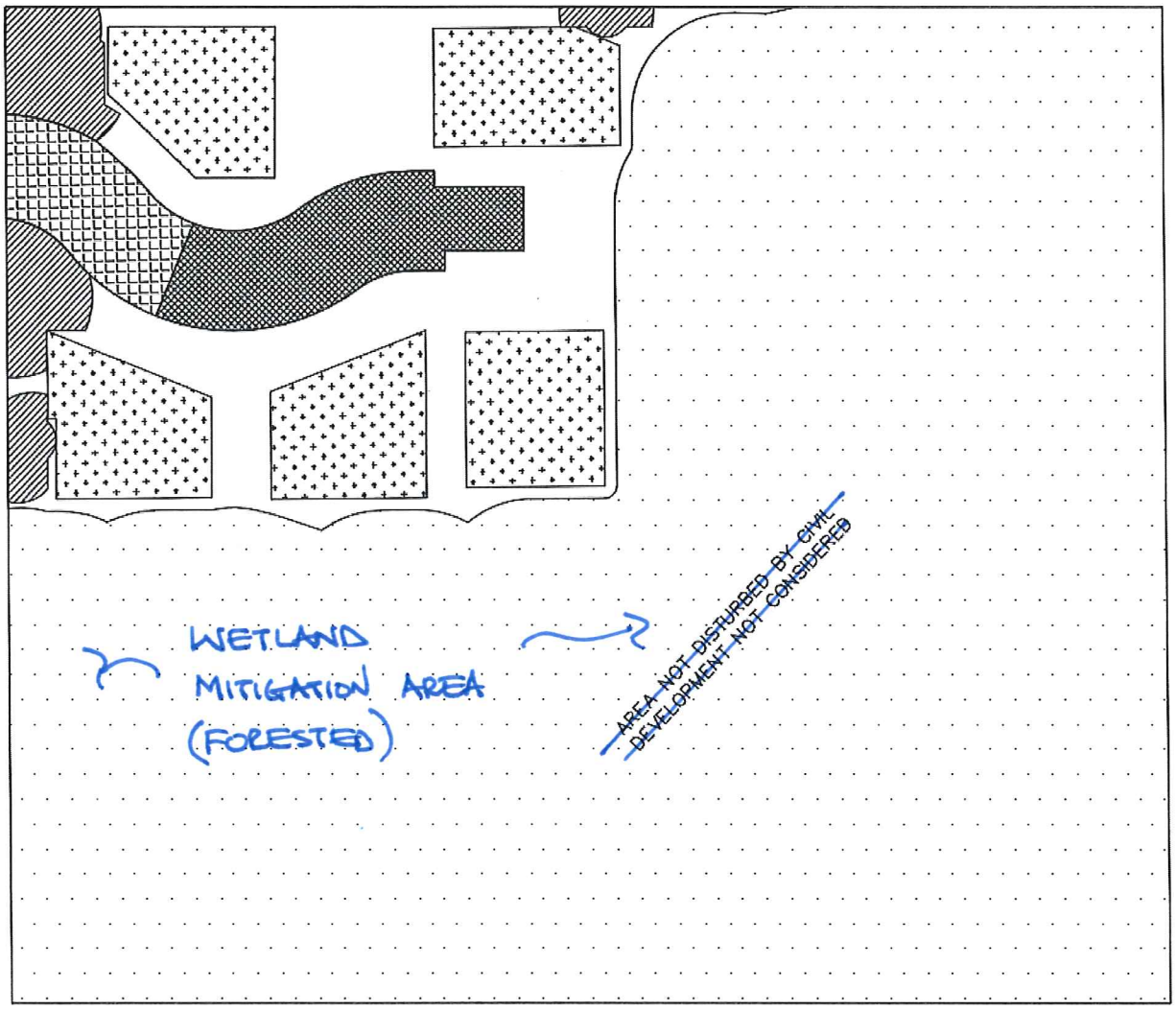

22-12
22+10
8300
4316
23-33
23-25
4314
8155
4324
4317
23
12
4318
PICTURE I (0.30 miles)
4313
8303
PICTURE F (0.13 miles)
PICTURE E (0.11 miles)
PICTURE H (0.21 miles)
To Lake Washington
23-31
23-22
4320
4332
PICTURE G (0.14 miles)
4333
23-21
4338
8124
8130
8132
8140
4343
4350
8128
4403
SE 44th St
4404
LEGEND
DRAINAGE PATH



FORESTED = 19,780.07 SF/0.454 ACRE

FORESTED = 1.219 ACRE

Figure 2.2.7.1a – Predeveloped Areas Modeled



YARD AND DRIVES FOR LOTS 1,2,4,5 = 7,318.31 SF
DRIVES FOR LOTS 1,2,4,5 = 2,000 SF/.046 ACRE
YARDS = 5,318.31 SF/0.122 ACRE

TOTAL SITE AREA = 19,780.07 SF/0.454 ACRE

FORESTED = 1,767.75 SF/0.041 ACRE

FORESTED = 1.219 ACRE

DIRECT TO WQ/BYPASS DETENTION + 500 SF (LOT 3 DRIVE)
1,295.85 SF + 500 SF (LOT 3 DRIVE) = 1,795.85 SF/ 0.041 ACRE

UPPER ACCESS = 2,103.35 SF/0.048 ACRE
TO LARGE DETENTION

ROOF = 6,794.81 SF/0.156 ACRE
TO LARGE DETENTION

YARDS AND DRIVES = 7,318.31 SF/0.168 ACRE
TO LARGE DETENTION

Figure 2.2.7.1 – Developed Areas Modeled

WWHM2012

PROJECT REPORT

Exhibit 5g

General Model Information

Project Name: TC Edit Post 082718 Meeting
Site Name:
Site Address:
City:
Report Date: 8/27/2018
Gage: Seatac
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 0.000 (adjusted)
Version Date: 2017/04/14
Version: 4.2.13

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Forest, Mod	0.454
Pervious Total	0.454
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.454

Element Flows To:

Surface	Interflow	Groundwater

Area to be Mitigated

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Forest, Mod	1.219
Pervious Total	1.219
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.219

← Wetland Mitigation Area

Element Flows To:
Surface Interflow Groundwater

Exhibit 5g

Mitigated Land Use

Roofs, TopRoad, Driveway, Lawn, Forest

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Forest, Mod	0.041
C, Lawn, Flat	0.122
Pervious Total	0.163

Impervious Land Use	acre
ROADS MOD	0.048
ROOF TOPS FLAT	0.156
DRIVEWAYS MOD	0.046
Impervious Total	0.25
Basin Total	0.413

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Lower Road

Bypass:	Yes
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROADS STEEP	0.041
Impervious Total	0.041
Basin Total	0.041

Element Flows To:

Surface	Interflow	Groundwater

Area to be Mitigated

Bypass:	Yes
GroundWater:	No
Pervious Land Use	acre
C, Forest, Mod	1.219
Pervious Total	1.219
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.219

Wetland Mitigation Area

Element Flows To:

Surface	Interflow	Groundwater

Exhibit 5g

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

Width: 55 ft.
Length: 40 ft.
Depth: 8 ft.
Discharge Structure
Riser Height: 7 ft.
Riser Diameter: 4 in.
Orifice 1 Diameter: 0.25 in. Elevation:0 ft.
Orifice 2 Diameter: 1 in. Elevation:6 ft.
Element Flows To:
Outlet 1 Outlet 2

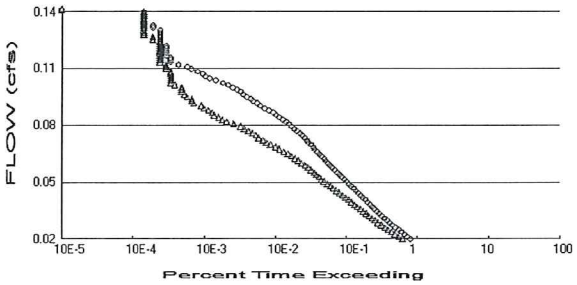
Vault Hydraulic Table

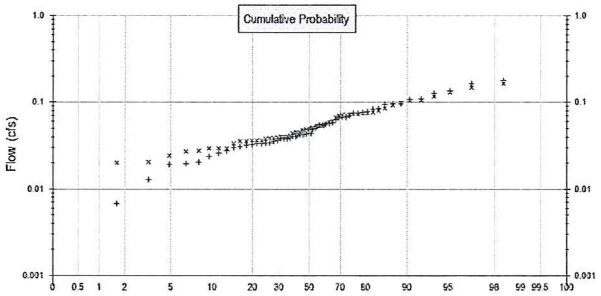
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.050	0.000	0.000	0.000
0.0889	0.050	0.004	0.000	0.000
0.1778	0.050	0.009	0.000	0.000
0.2667	0.050	0.013	0.000	0.000
0.3556	0.050	0.018	0.001	0.000
0.4444	0.050	0.022	0.001	0.000
0.5333	0.050	0.026	0.001	0.000
0.6222	0.050	0.031	0.001	0.000
0.7111	0.050	0.035	0.001	0.000
0.8000	0.050	0.040	0.001	0.000
0.8889	0.050	0.044	0.001	0.000
0.9778	0.050	0.049	0.001	0.000
1.0667	0.050	0.053	0.001	0.000
1.1556	0.050	0.058	0.001	0.000
1.2444	0.050	0.062	0.001	0.000
1.3333	0.050	0.067	0.002	0.000
1.4222	0.050	0.071	0.002	0.000
1.5111	0.050	0.076	0.002	0.000
1.6000	0.050	0.080	0.002	0.000
1.6889	0.050	0.085	0.002	0.000
1.7778	0.050	0.089	0.002	0.000
1.8667	0.050	0.094	0.002	0.000
1.9556	0.050	0.098	0.002	0.000
2.0444	0.050	0.103	0.002	0.000
2.1333	0.050	0.107	0.002	0.000
2.2222	0.050	0.112	0.002	0.000
2.3111	0.050	0.116	0.002	0.000
2.4000	0.050	0.121	0.002	0.000
2.4889	0.050	0.125	0.002	0.000
2.5778	0.050	0.130	0.002	0.000
2.6667	0.050	0.134	0.002	0.000
2.7556	0.050	0.139	0.002	0.000
2.8444	0.050	0.143	0.002	0.000
2.9333	0.050	0.148	0.002	0.000
3.0222	0.050	0.152	0.002	0.000
3.1111	0.050	0.157	0.003	0.000
3.2000	0.050	0.161	0.003	0.000
3.2889	0.050	0.166	0.003	0.000
3.3778	0.050	0.170	0.003	0.000

3.4667	0.050	0.175	0.003	0.000
3.5556	0.050	0.179	0.003	0.000
3.6444	0.050	0.184	0.003	0.000
3.7333	0.050	0.188	0.003	0.000
3.8222	0.050	0.193	0.003	0.000
3.9111	0.050	0.197	0.003	0.000
4.0000	0.050	0.202	0.003	0.000
4.0889	0.050	0.206	0.003	0.000
4.1778	0.050	0.211	0.003	0.000
4.2667	0.050	0.215	0.003	0.000
4.3556	0.050	0.220	0.003	0.000
4.4444	0.050	0.224	0.003	0.000
4.5333	0.050	0.229	0.003	0.000
4.6222	0.050	0.233	0.003	0.000
4.7111	0.050	0.237	0.003	0.000
4.8000	0.050	0.242	0.003	0.000
4.8889	0.050	0.246	0.003	0.000
4.9778	0.050	0.251	0.003	0.000
5.0667	0.050	0.255	0.003	0.000
5.1556	0.050	0.260	0.003	0.000
5.2444	0.050	0.264	0.003	0.000
5.3333	0.050	0.269	0.003	0.000
5.4222	0.050	0.273	0.003	0.000
5.5111	0.050	0.278	0.004	0.000
5.6000	0.050	0.282	0.004	0.000
5.6889	0.050	0.287	0.004	0.000
5.7778	0.050	0.291	0.004	0.000
5.8667	0.050	0.296	0.004	0.000
5.9556	0.050	0.300	0.004	0.000
6.0444	0.050	0.305	0.009	0.000
6.1333	0.050	0.309	0.014	0.000
6.2222	0.050	0.314	0.017	0.000
6.3111	0.050	0.318	0.019	0.000
6.4000	0.050	0.323	0.021	0.000
6.4889	0.050	0.327	0.023	0.000
6.5778	0.050	0.332	0.025	0.000
6.6667	0.050	0.336	0.026	0.000
6.7556	0.050	0.341	0.028	0.000
6.8444	0.050	0.345	0.029	0.000
6.9333	0.050	0.350	0.030	0.000
7.0222	0.050	0.354	0.043	0.000
7.1111	0.050	0.359	0.141	0.000
7.2000	0.050	0.363	0.190	0.000
7.2889	0.050	0.368	0.223	0.000
7.3778	0.050	0.372	0.251	0.000
7.4667	0.050	0.377	0.276	0.000
7.5556	0.050	0.381	0.299	0.000
7.6444	0.050	0.386	0.320	0.000
7.7333	0.050	0.390	0.340	0.000
7.8222	0.050	0.395	0.358	0.000
7.9111	0.050	0.399	0.376	0.000
8.0000	0.050	0.404	0.393	0.000
8.0889	0.050	0.408	0.409	0.000
8.1778	0.000	0.000	0.424	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.673
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 1.382
Total Impervious Area: 0.291

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.049814
5 year	0.081624
10 year	0.102078
25 year	0.126408
50 year	0.143261
100 year	0.159003

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.050589
5 year	0.076679
10 year	0.096183
25 year	0.123343
50 year	0.14541
100 year	0.169057

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.057	0.067
1950	0.068	0.071
1951	0.109	0.092
1952	0.034	0.036
1953	0.028	0.029
1954	0.042	0.039
1955	0.068	0.059
1956	0.055	0.054
1957	0.044	0.051
1958	0.049	0.044

1959	0.042	0.040
1960	0.075	0.074
1961	0.041	0.042
1962	0.026	0.027
1963	0.035	0.040
1964	0.050	0.054
1965	0.033	0.045
1966	0.032	0.035
1967	0.076	0.081
1968	0.043	0.050
1969	0.042	0.047
1970	0.034	0.041
1971	0.038	0.046
1972	0.083	0.074
1973	0.037	0.036
1974	0.041	0.050
1975	0.057	0.061
1976	0.040	0.048
1977	0.006	0.020
1978	0.034	0.039
1979	0.021	0.029
1980	0.097	0.104
1981	0.031	0.035
1982	0.063	0.071
1983	0.054	0.053
1984	0.033	0.034
1985	0.019	0.020
1986	0.085	0.073
1987	0.075	0.071
1988	0.030	0.029
1989	0.020	0.028
1990	0.180	0.163
1991	0.096	0.099
1992	0.039	0.045
1993	0.038	0.037
1994	0.013	0.020
1995	0.055	0.049
1996	0.126	0.117
1997	0.097	0.084
1998	0.024	0.038
1999	0.107	0.106
2000	0.038	0.040
2001	0.007	0.024
2002	0.044	0.051
2003	0.066	0.074
2004	0.070	0.072
2005	0.052	0.054
2006	0.059	0.057
2007	0.136	0.130
2008	0.166	0.149
2009	0.077	0.077

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1804	0.1630
2	0.1662	0.1492
3	0.1363	0.1304

4	0.1263	0.1166
5	0.1088	0.1059
6	0.1069	0.1043
7	0.0975	0.0990
8	0.0973	0.0922
9	0.0957	0.0844
10	0.0854	0.0806
11	0.0826	0.0773
12	0.0775	0.0745
13	0.0765	0.0742
14	0.0753	0.0739
15	0.0751	0.0727
16	0.0702	0.0719
17	0.0681	0.0715
18	0.0677	0.0714
19	0.0657	0.0707
20	0.0631	0.0671
21	0.0586	0.0606
22	0.0573	0.0591
23	0.0565	0.0566
24	0.0546	0.0544
25	0.0545	0.0543
26	0.0540	0.0537
27	0.0521	0.0532
28	0.0500	0.0512
29	0.0489	0.0509
30	0.0440	0.0501
31	0.0440	0.0499
32	0.0431	0.0489
33	0.0424	0.0481
34	0.0419	0.0475
35	0.0419	0.0455
36	0.0413	0.0451
37	0.0406	0.0450
38	0.0404	0.0439
39	0.0391	0.0416
40	0.0381	0.0408
41	0.0380	0.0403
42	0.0380	0.0401
43	0.0366	0.0398
44	0.0353	0.0388
45	0.0342	0.0386
46	0.0341	0.0376
47	0.0336	0.0367
48	0.0333	0.0364
49	0.0325	0.0361
50	0.0320	0.0354
51	0.0305	0.0354
52	0.0297	0.0335
53	0.0276	0.0295
54	0.0257	0.0293
55	0.0239	0.0291
56	0.0207	0.0276
57	0.0197	0.0271
58	0.0193	0.0243
59	0.0128	0.0203
60	0.0068	0.0201
61	0.0059	0.0198

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0249	17085	13131	76	Pass
0.0261	15483	11597	74	Pass
0.0273	14072	10309	73	Pass
0.0285	12799	9180	71	Pass
0.0297	11569	8226	71	Pass
0.0309	10517	7407	70	Pass
0.0321	9569	6624	69	Pass
0.0333	8752	5961	68	Pass
0.0345	8031	5390	67	Pass
0.0357	7347	4887	66	Pass
0.0369	6733	4421	65	Pass
0.0381	6192	4017	64	Pass
0.0393	5726	3662	63	Pass
0.0404	5309	3345	63	Pass
0.0416	4924	3031	61	Pass
0.0428	4569	2746	60	Pass
0.0440	4235	2492	58	Pass
0.0452	3951	2259	57	Pass
0.0464	3645	2042	56	Pass
0.0476	3388	1853	54	Pass
0.0488	3133	1685	53	Pass
0.0500	2915	1515	51	Pass
0.0512	2706	1366	50	Pass
0.0524	2490	1245	50	Pass
0.0536	2314	1121	48	Pass
0.0548	2136	1013	47	Pass
0.0560	1973	933	47	Pass
0.0572	1824	869	47	Pass
0.0584	1702	799	46	Pass
0.0596	1577	741	46	Pass
0.0608	1442	675	46	Pass
0.0620	1325	612	46	Pass
0.0632	1232	555	45	Pass
0.0644	1147	492	42	Pass
0.0656	1083	442	40	Pass
0.0667	1020	398	39	Pass
0.0679	947	354	37	Pass
0.0691	885	315	35	Pass
0.0703	824	280	33	Pass
0.0715	760	244	32	Pass
0.0727	725	213	29	Pass
0.0739	674	182	27	Pass
0.0751	623	158	25	Pass
0.0763	589	143	24	Pass
0.0775	549	124	22	Pass
0.0787	506	113	22	Pass
0.0799	469	100	21	Pass
0.0811	427	88	20	Pass
0.0823	388	77	19	Pass
0.0835	356	69	19	Pass
0.0847	328	55	16	Pass
0.0859	297	44	14	Pass
0.0871	270	38	14	Pass

0.0883	241	34	14	Pass
0.0895	218	29	13	Pass
0.0907	198	27	13	Pass
0.0919	173	24	13	Pass
0.0931	152	21	13	Pass
0.0942	130	19	14	Pass
0.0954	119	15	12	Pass
0.0966	104	14	13	Pass
0.0978	95	14	14	Pass
0.0990	83	12	14	Pass
0.1002	74	11	14	Pass
0.1014	69	10	14	Pass
0.1026	61	10	16	Pass
0.1038	53	10	18	Pass
0.1050	46	8	17	Pass
0.1062	39	7	17	Pass
0.1074	31	7	22	Pass
0.1086	25	7	28	Pass
0.1098	22	7	31	Pass
0.1110	20	7	35	Pass
0.1122	17	7	41	Pass
0.1134	14	6	42	Pass
0.1146	12	6	50	Pass
0.1158	9	6	66	Pass
0.1170	7	5	71	Pass
0.1182	7	5	71	Pass
0.1194	7	5	71	Pass
0.1205	6	5	83	Pass
0.1217	6	5	83	Pass
0.1229	6	5	83	Pass
0.1241	6	5	83	Pass
0.1253	6	5	83	Pass
0.1265	5	5	100	Pass
0.1277	5	5	100	Pass
0.1289	5	4	80	Pass
0.1301	5	4	80	Pass
0.1313	5	3	60	Pass
0.1325	5	3	60	Pass
0.1337	5	3	60	Pass
0.1349	4	3	75	Pass
0.1361	4	3	75	Pass
0.1373	3	3	100	Pass
0.1385	3	3	100	Pass
0.1397	3	3	100	Pass
0.1409	3	3	100	Pass
0.1421	3	3	100	Pass
0.1433	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.0058 acre-feet
On-line facility target flow:	0.0029 cfs.
Adjusted for 15 min:	0.0029 cfs.
Off-line facility target flow:	0.002 cfs.
Adjusted for 15 min:	0.002 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Vault 1 POC	☐	46.29			☐	0.00			
Total Volume Infiltrated		46.29	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

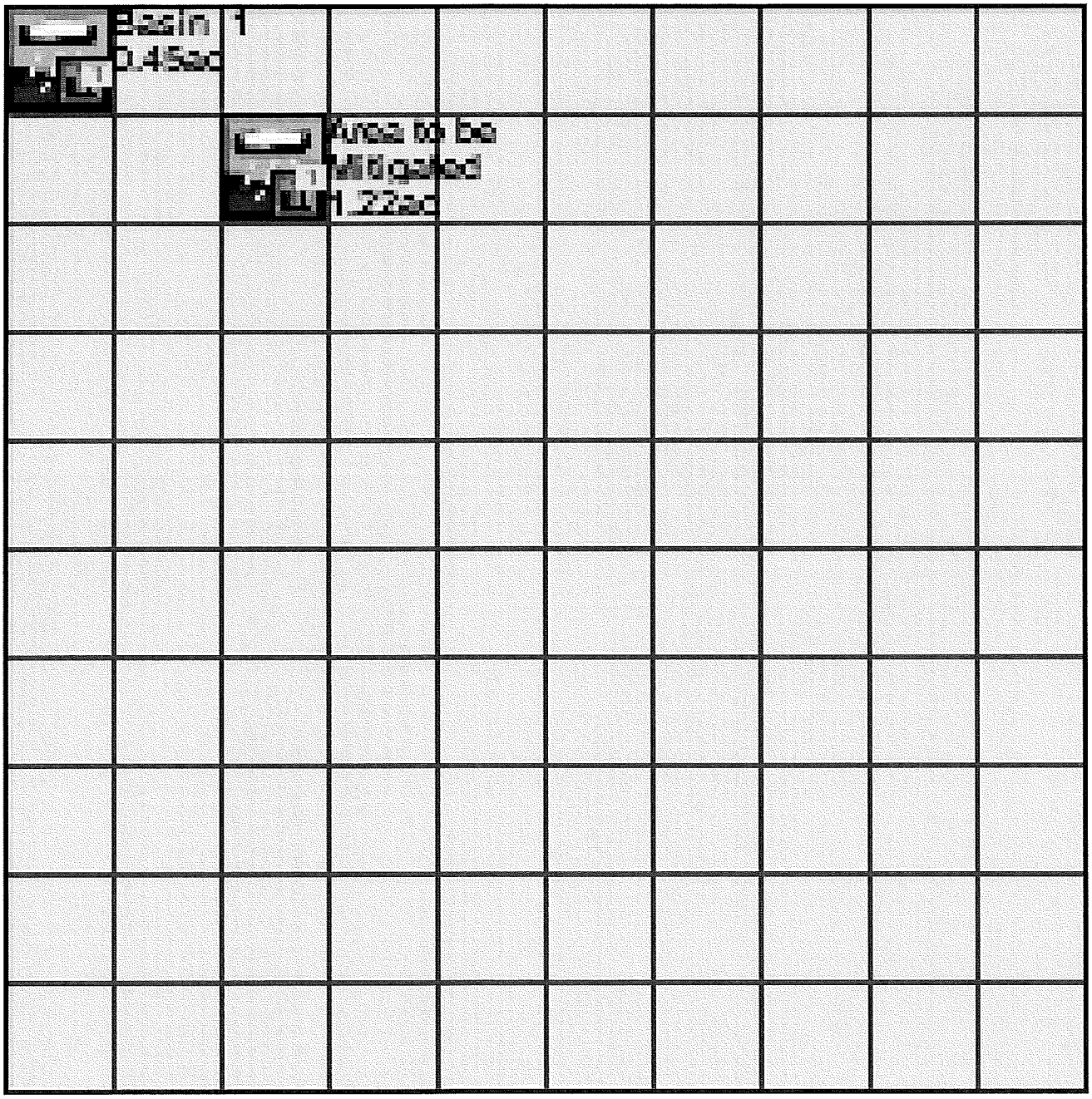
No PERLND changes have been made.

IMPLND Changes

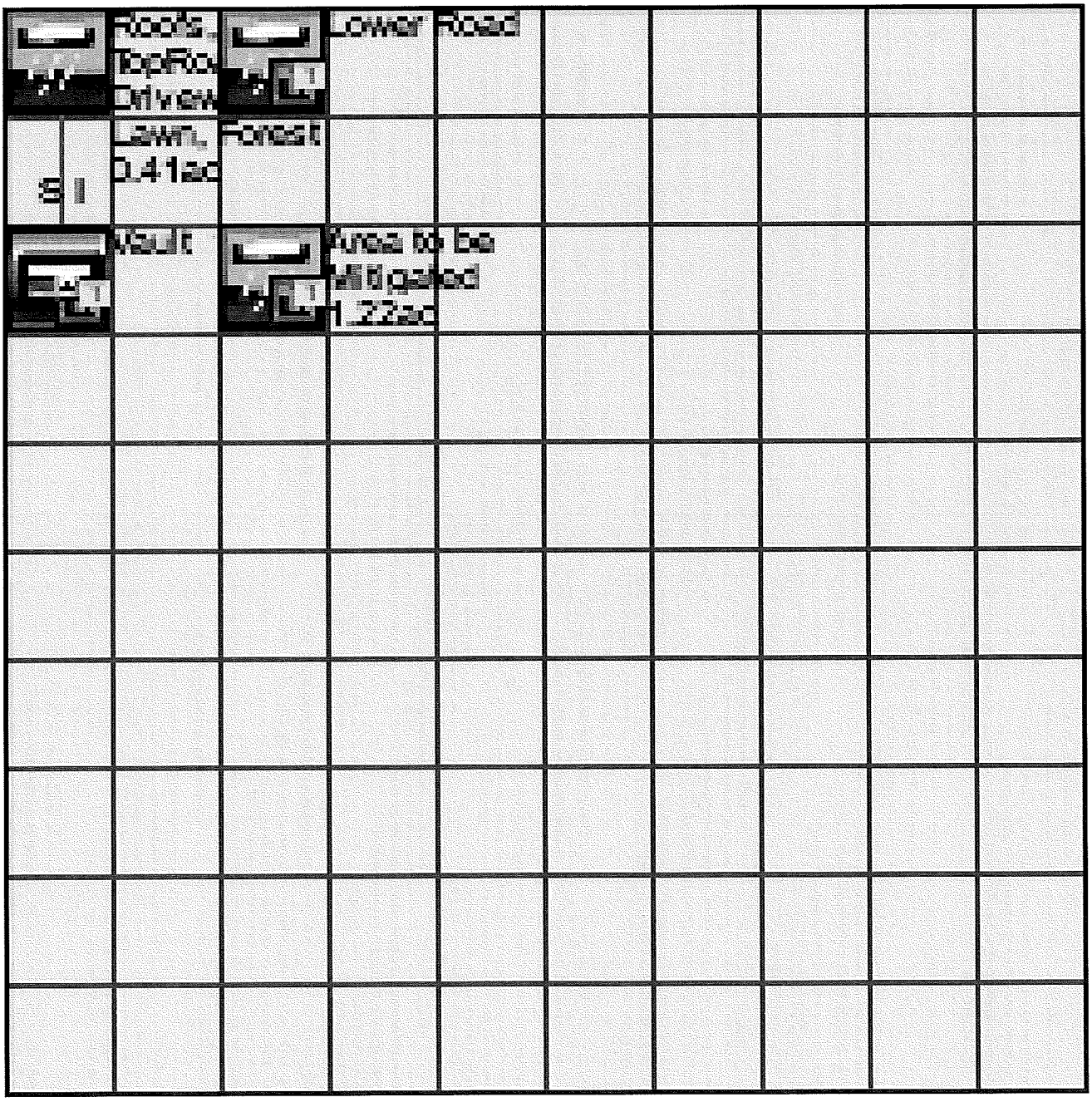
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01         END    2009 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <------------File Name------------------------------>***
<-ID->                                                               ***
WDM         26   TC Edit Post 082718 Meeting.wdm
MESSU       25   PreTC Edit Post 082718 Meeting.MES
            27   PreTC Edit Post 082718 Meeting.L61
            28   PreTC Edit Post 082718 Meeting.L62
            30   POCTC Edit Post 082718 Meeting1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      11
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1          1    1
  501          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                        in  out           ***
   11     C, Forest, Mod          1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   11         0    0    1    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   11         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   11         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   11              0       4.5      0.08       400       0.1       0.5     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   11             0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   11            0.2       0.5      0.35         6       0.5       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS       GWVS
   11             0         0         0         0       2.5         1          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR      SLSUR      NSUR      RETSC
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS       SURS
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  11                       0.454     COPY   501     12
PERLND  11                       0.454     COPY   501     13
Area to be Mitigated***
PERLND  11                       1.219     COPY   501     12
PERLND  11                       1.219     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                       in  out                               ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                   ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><--------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                      ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
```

```
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2009 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   TC Edit Post 082718 Meeting.wdm
MESSU       25   MitTC Edit Post 082718 Meeting.MES
            27   MitTC Edit Post 082718 Meeting.L61
            28   MitTC Edit Post 082718 Meeting.L62
            30   POCTC Edit Post 082718 Meeting1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      11
      PERLND      16
      IMPLND       2
      IMPLND       4
      IMPLND       6
      IMPLND       3
      RCHRES       1
      COPY         1
      COPY       501
      COPY       601
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Vault  1                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1          1    1
  501          1    1
  601          1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #          K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out             ***
   11     C, Forest, Mod          1    1    1    1   27    0
   16     C, Lawn, Flat           1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
```

```
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   11         0    0    1    0    0    0    0    0    0    0    0    0
   16         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   11         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   16         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   11         0    0    0    0    0    0    0    0    0    0    0
   16         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2          ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   11              0       4.5      0.08       400       0.1       0.5     0.996
   16              0       4.5      0.03       400      0.05       0.5     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3          ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   11              0         0         2         2         0         0         0
   16              0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                  ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   11            0.2       0.5      0.35         6       0.5       0.7
   16            0.1      0.25      0.25         6       0.5      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
              ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   11              0         0         0         0       2.5         1         0
   16              0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                      User  t-series Engl Metr ***
                                       in  out           ***
    2      ROADS/MOD              1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    6      DRIVEWAYS/MOD          1    1    1   27    0
    3      ROADS/STEEP            1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    2         0    0    1    0    0    0
    4         0    0    1    0    0    0
    6         0    0    1    0    0    0
    3         0    0    1    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -   # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    2          0    0    4    0    0    0    1    9
    4          0    0    4    0    0    0    1    9
    6          0    0    4    0    0    0    1    9
    3          0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -   # CSNO RTOP  VRS  VNN RTLI     ***
    2          0    0    0    0    0
    4          0    0    0    0    0
    6          0    0    0    0    0
    3          0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >       IWATER input info: Part 2          ***
    # -   # ***  LSUR     SLSUR      NSUR     RETSC
    2             400      0.05       0.1      0.08
    4             400      0.01       0.1       0.1
    6             400      0.05       0.1      0.08
    3             400       0.1       0.1      0.05
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3          ***
    # -   # ***PETMAX    PETMIN
    2               0         0
    4               0         0
    6               0         0
    3               0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -   # ***  RETS      SURS
    2               0         0
    4               0         0
    6               0         0
    3               0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK    ***
<Name>   #                  <-factor->     <Name>   #   Tbl#    ***
Roofs, TopRoad, Driveway, Lawn, Forest***
PERLND  11                      0.041     RCHRES   1      2
PERLND  11                      0.041     RCHRES   1      3
PERLND  16                      0.122     RCHRES   1      2
PERLND  16                      0.122     RCHRES   1      3
IMPLND   2                      0.048     RCHRES   1      5
IMPLND   4                      0.156     RCHRES   1      5
IMPLND   6                      0.046     RCHRES   1      5
Lower Road***
IMPLND   3                      0.041     COPY   501     15
IMPLND   3                      0.041     COPY   601     15
Area to be Mitigated***
PERLND  11                      1.219     COPY   501     12
PERLND  11                      1.219     COPY   601     12
PERLND  11                      1.219     COPY   501     13
PERLND  11                      1.219     COPY   601     13

******Routing******
PERLND  11                      0.041     COPY     1     12
PERLND  16                      0.122     COPY     1     12
```

```
IMPLND   2                          0.048     COPY     1     15
IMPLND   4                          0.156     COPY     1     15
IMPLND   6                          0.046     COPY     1     15
PERLND  11                          0.041     COPY     1     13
PERLND  16                          0.122     COPY     1     13
RCHRES   1                              1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                        in  out                             ***
    1     Vault  1                1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR      KS       DB50       ***
    <------><--------><--------><--------><--------><--------><--------><---***
    1               1      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
    <------><-------->     <---><---><---><---><---> *** <---><---><---><---><---->
    1             0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   92    4
     Depth      Area     Volume  Outflow1 Velocity  Travel Time***
      (ft)    (acres) (acre-ft)    (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.050505  0.000000  0.000000
```

0.088889	0.050505	0.004489	0.000506
0.177778	0.050505	0.008979	0.000715
0.266667	0.050505	0.013468	0.000876
0.355556	0.050505	0.017957	0.001011
0.444444	0.050505	0.022447	0.001131
0.533333	0.050505	0.026936	0.001239
0.622222	0.050505	0.031425	0.001338
0.711111	0.050505	0.035915	0.001430
0.800000	0.050505	0.040404	0.001517
0.888889	0.050505	0.044893	0.001599
0.977778	0.050505	0.049383	0.001677
1.066667	0.050505	0.053872	0.001752
1.155556	0.050505	0.058361	0.001823
1.244444	0.050505	0.062851	0.001892
1.333333	0.050505	0.067340	0.001958
1.422222	0.050505	0.071829	0.002023
1.511111	0.050505	0.076319	0.002085
1.600000	0.050505	0.080808	0.002145
1.688889	0.050505	0.085297	0.002204
1.777778	0.050505	0.089787	0.002261
1.866667	0.050505	0.094276	0.002317
1.955556	0.050505	0.098765	0.002372
2.044444	0.050505	0.103255	0.002425
2.133333	0.050505	0.107744	0.002477
2.222222	0.050505	0.112233	0.002528
2.311111	0.050505	0.116723	0.002578
2.400000	0.050505	0.121212	0.002628
2.488889	0.050505	0.125701	0.002676
2.577778	0.050505	0.130191	0.002723
2.666667	0.050505	0.134680	0.002770
2.755556	0.050505	0.139169	0.002815
2.844444	0.050505	0.143659	0.002860
2.933333	0.050505	0.148148	0.002905
3.022222	0.050505	0.152637	0.002949
3.111111	0.050505	0.157127	0.002992
3.200000	0.050505	0.161616	0.003034
3.288889	0.050505	0.166105	0.003076
3.377778	0.050505	0.170595	0.003117
3.466667	0.050505	0.175084	0.003158
3.555556	0.050505	0.179574	0.003198
3.644444	0.050505	0.184063	0.003238
3.733333	0.050505	0.188552	0.003277
3.822222	0.050505	0.193042	0.003316
3.911111	0.050505	0.197531	0.003354
4.000000	0.050505	0.202020	0.003392
4.088889	0.050505	0.206510	0.003430
4.177778	0.050505	0.210999	0.003467
4.266667	0.050505	0.215488	0.003503
4.355556	0.050505	0.219978	0.003540
4.444444	0.050505	0.224467	0.003576
4.533333	0.050505	0.228956	0.003611
4.622222	0.050505	0.233446	0.003646
4.711111	0.050505	0.237935	0.003681
4.800000	0.050505	0.242424	0.003716
4.888889	0.050505	0.246914	0.003750
4.977778	0.050505	0.251403	0.003784
5.066667	0.050505	0.255892	0.003818
5.155556	0.050505	0.260382	0.003851
5.244444	0.050505	0.264871	0.003884
5.333333	0.050505	0.269360	0.003917
5.422222	0.050505	0.273850	0.003949
5.511111	0.050505	0.278339	0.003982
5.600000	0.050505	0.282828	0.004014
5.688889	0.050505	0.287318	0.004045
5.777778	0.050505	0.291807	0.004077
5.866667	0.050505	0.296296	0.004108
5.955556	0.050505	0.300786	0.004139
6.044444	0.050505	0.305275	0.009891
6.133333	0.050505	0.309764	0.014109
6.222222	0.050505	0.314254	0.017023

```
  6.311111  0.050505  0.318743  0.019397
  6.400000  0.050505  0.323232  0.021454
  6.488889  0.050505  0.327722  0.023295
  6.577778  0.050505  0.332211  0.024977
  6.666667  0.050505  0.336700  0.026536
  6.755556  0.050505  0.341190  0.027996
  6.844444  0.050505  0.345679  0.029374
  6.933333  0.050505  0.350168  0.030683
  7.022222  0.050505  0.354658  0.043621
  7.111111  0.050505  0.359147  0.141122
  7.200000  0.050505  0.363636  0.190784
  7.288889  0.050505  0.368126  0.223484
  7.377778  0.050505  0.372615  0.251557
  7.466667  0.050505  0.377104  0.276566
  7.555556  0.050505  0.381594  0.299351
  7.644444  0.050505  0.386083  0.320426
  7.733333  0.050505  0.390572  0.340131
  7.822222  0.050505  0.395062  0.358706
  7.911111  0.050505  0.399551  0.376328
  8.000000  0.050505  0.404040  0.393133
  8.088889  0.050505  0.408530  0.409226
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL       REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL       REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL       REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL       REPL
COPY   601 OUTPUT MEAN   1 1     48.4      WDM    901 FLOW     ENGL       REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15
```

```
  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT   MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

```
ERROR/WARNING ID:   238   1

The continuity error reported below is greater than 1 part in 1000 and is
therefore considered high.

Did you specify any "special actions"?  If so, they could account for it.

Relevant data are:
DATE/TIME: 2006/ 8/31 24: 0

RCHRES :    1

RELERR       STORS        STOR       MATIN      MATDIF
-2.403E-03     0.00000  4.1359E-10     0.00000  -1.967E-07

Where:

RELERR is the relative error (ERROR/REFVAL).
ERROR  is (STOR-STORS) - MATDIF.
REFVAL is the reference value (STORS+MATIN).
STOR   is the storage of material in the processing unit (land-segment or
reach/reservior) at the end of the present interval.
STORS  is the storage of material in the pu at the start of the present
printout reporting period.
MATIN  is the total inflow of material to the pu during the present printout
reporting period.
MATDIF is the net inflow (inflow-outflow) of material to the pu during the
present printout reporting period.
```

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CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org

Notice of Correction

August 10, 2016

Property Owner(s): Mercertech International LL
Subject Property: 4320 Island Crest Way, Mercer Island, WA 98040
Owners Address: 6955 SE 33rd Street, Mercer Island, WA 98040
Code Compliance Case: CE16-0014 APN: 1824059031

This department has investigated the allegations that you are placing fill material such as wood chips into a water course, the buffer area, and possible wetlands on the subject property.

Based on aerial mapping and a recent site visit with you it is clear that the wood chips fill is abundant and is within a protected environmental area of a water course and possible wetlands. Trees and shrubby vegetation have been cleared over time. You stated that you have removed several alder trees that were declining and hazardous. There have been no critical area studies submitted or approval for any alterations of the critical areas on this subject property.

This letter is to provide notice to you that your property is in violation of Mercer Island City Code and to inform you of the requirements to bring the property into code compliance.

Violations to Mercer Island City Code Chapter 19.07 Environment.

19.07.020 General Provisions (A)
19.07.030 Allowable alterations
19.07.040 Review and construction requirements
19.07.050 Critical area study
19.07.070 Watercourse
19.07.080 Wetlands

***Corrective action required* is to…**

- Do no further damage or repairs to the critical areas until review, determinations, and approval has been granted.
- Provide to the City, along with any applicable fees, a Critical Area Study meeting the requirements of MICC 19.07.050 for review.
- Provide any other information, documents, and fees that may be required through the review process.

The compliance date for submitting the Critical area study is September 19, 2016.

You must resolve the violation(s) as directed in the “Corrective action” for each violation stated above and the corrections are to take place no later than the compliance dates set for each violation.

Please contact me at (206)275-7709 if you would like to discuss resolution. If I am unavailable at the time you call, please leave your name, case number (as referenced above), and a daytime phone number where you can be reached. I will return your call as soon as possible. You may also respond by email at jimmi.serfling@mercergov.org. My position is part-time and much of my work occurs in the field so I am available at my office **by appointment only.** Please do not come into the office without confirming an appointment with me prior to your visit.

Thank you for your prompt attention to resolving these violations,

Jimmi Serfling
MI Code Compliance Officer
Jimmi.serfling@mercergov.org
206-275-7709

DETERMINATION OF NON-SIGNIFICANCE (DNS)

Application Nos.:	**SEP17-026 (SUB17-015/CAO17-015)**
Description of proposal:	**The proposal is a request to subdivide the subject site into five residential lots and one private recreation tract. The proposed subdivision would contain an internal private street serving the five lots, which would range in size from 9,273 to 32,049 square feet. The site is encumbered by three Category III wetlands and Type 3 watercourse, which will be protected by use of a Native Growth Protection Easement. The applicant also proposes to reduce the buffers that apply to the on-site wetlands and watercourse.**
Proponent:	**Jayson Taylor (on behalf of Alan Chiu)**
Location of proposal:	**4320 and 4332 Island Crest Way, Mercer Island WA 98040;** **Identified by King County Assessor tax parcel number 182405-9031**
Lead agency:	**City of Mercer Island**
Project Documents:	**Please follow this file path to access the associated documents for this project:** https://mieplan.mercergov.org/public/SUB17-015/

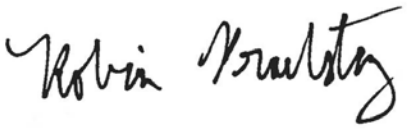
Potential critical area impacts are addressed by Mercer Island City Code Chapter 19.07. Based on review of the proposal and applicable City code sections, the lead agency for this proposal has determined that the proposal does not have a probable significant adverse impact on the environment that is not addressed by the City Code. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist. This information is available to the public on request.

_____ There is no comment period for this DNS.

✓ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

_____ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by N/A at 5:00 pm.

Responsible Official: Robin Proebsting, Senior Planner
City of Mercer Island
9611 SE 36th Street
Mercer Island, WA 98040
Phone: (206) 275-7717
Email: robin.proebsting@mercergov.org

Date: **October 15, 2018** Signature: 

APPEAL INFORMATION

This decision to issue a Determination of Non-significance (DNS) rather than to require an EIS may be appealed pursuant to Section 19.07 of the Mercer Island Unified Land Development Code, Environmental procedures.

✓ Any party of record may appeal this determination to the City Clerk at 9611 SE 36th Street Mercer Island, WA 98040 no later than **5:00 PM on October 29, 2018** by filing a timely and complete appeal application and paying the appeal fee. You should be prepared to make specific factual objections. Contact the City Clerk to read or ask about the procedures for SEPA appeals. To reverse, modify or remand this decision, the appeal hearing body must find that there has been substantial error, the proceedings were materially affected by irregularities in procedure, the decision was unsupported by material and substantial evidence in view of the entire record, or the decision is in conflict with the city's applicable decision criteria.

_____ There is no agency appeal.

_____ Any person aggrieved by the issuance of this decision may seek review from the Shorelines Hearings Board by filing a petition for review within twenty-one days of the date of filing of the decision (**by N/A**) as defined in RCW 90.58.140(6).
Within seven days of the filing of any petition for review with the Board, the petitioner shall serve copies of the petition on the Washington State Department of Ecology, the Office of the Attorney General, and the City of Mercer Island.
More information on this process can be found on the Shoreline Hearing Board's website: http://www.eho.wa.gov/Boards_SHB.aspx or by calling (360)664-9160.

Exhibit 7

4323 - 86th Ave. SE
Mercer Island, WA 98040
December 8, 2017

Robin Proebsting, Sr. Planner
Development Services Group
City of Mercer Island
9611 SE 36th St.
Mercer Island WA 98040

RECEIVED
DEC 12 2017
CITY OF MERCER ISLAND
DEVELOPMENT SERVICE GROUP

Dear Ms. Proebsting: Re: **Mitigation Plan 10.31.2017**

Thank you for your December 4, 2017 notice, "Public Notice of Application," File Nos. SUB17-015, CAO17-015, and SEP17-026. I have a concern that the entirety of the watercourses on Parcel 9031 has not been adequately recognized. There is a possibility that my own parcel's watercourses may be inadvertently interrupted by Parcel 9031 mitigation. I hereby request that Mitigation Plan 10.31.2017 be appended to remedy this oversight. Details follow.

History

The description of off-site drainage to on-site watercourses is incomplete. My wife and I own Parcel 9147 (4323 86th Ave SE, listed officially by King County as 4323 Carol Lane). Our house was built in 1966; its basement slab covers two natural springs that the builder ducted underground to join the roof downspout ducting. The northern duct outlet surfaced near the midpoint of our property's north boundary; the southern outlet surfaced about 30 feet north of the midpoint of our southern boundary. Each of these outlets fed into open, well-defined races through our property, forming two separate streams that merged inside Parcel 9031 and flowed into the northern watercourse arm in Wetland A, shown in Mitigation Plan 10.31.2017.

We bought the property in 1971 and had it professionally landscaped in 1974. Before our final land contour was created, I dug a ditch in each watercourse and laid four-inch non-perforated corrugated plastic conduit to within a foot of our property line, then covered each conduit with soil. The outflow characteristics to Parcel 9031 remained unchanged, other than the fact that the water no longer carried any mud.

Dorothy Woodcock, the owner of Parcel 9031 at the time, always maintained her wetland in a natural state. Ducks were a common sight in her pond, which was fed by my streams.

Current Status

The northern flow leaves my property adjacent to Tree No. 116 in Arborist's Report 10.31.2017; the southern one exits adjacent to Tree No. 991 in the same Arborist's Report. To this day, there is flow in each of these streams, even in the summer months.

When Mr. Chiu bought the property, he filled in the northern watercourse with vegetative waste, turning a stream with a boggy border into a sodden morass. Mr. Chiu would also periodically plug my northern outlet with logs or stones to stop the flow. Fortunately, I discovered these in time to remove them so as not to cause my basement to suffer from any backup. I put a stop to this vandalism by cutting our outlet duct back two feet from the property line in order to place it inside my fence.

When Mr. Chiu began filling the violation area, I visited Mercer Island City Hall to express my concern that the continued filling would eventually dam up the outflow from my southern duct. A City employee came by shortly thereafter to examine my situation and verify my assertion. Later, a nice woman (you?) called to assure me that the City would contact the owner of Parcel 9031 and begin mitigation planning. Since then, the filling and clearing has stopped.

Proposed Resolution

I would like to see the original branches of Parcel 9031's streams appear, and be slated for restoration, in Mitigation Plan 10.31.2017, thus assuring that Parcel 9147's two springs will continue to have functioning outlets.

Yours truly.



Richard N. Karnes
Owner, Parcel 9147
206-232-7281

From: Sumit Singh
To: Robin Proebsting; Sumit Singh
Subject: Appeal Public Notice Application; File No SUB17-015, CAO17-015 & SEP17-026
Date: Wednesday, January 3, 2018 2:28:07 PM

Hi Ms. Proebsting - I left you a voicemail and wanted to follow up via e-mail. My name is Sumit Singh and I am the owner of property address 4344 Island Crest Way, Mercer Island, WA, 98040. Parcel # 182405-9139, which is within 300-feet of this proposal. I am responding to a public notice of application on File No SUB17-015, CAO17-015 & SEP17-026, which I have received, and which is an application to sub-divide one existing lot (with house numbers 4320, and 4332 Island crest way) into 5 lots.

The driveway on property address 4332 Island Crest Way is adjacent and connected to my property driveway at 4344 island crest way. It is not clear to me from the submitted proposal as to how this sub-division may impact my existing driveway on 4344 Island crest way. I am concerned by this lack of clarity within the submitted documents, and any loss of use, or of land value this may cause. I am requesting this clarity to be provided immediately, and until this clarity is provided, I am not onboard with this proposal. Please also note that I have not provided any permission to use my driveway for any purpose.

I can be reached at this email, or via phone at 512-415-9235,

regards,
-Sumit Singh

From: Scott Olmsted
To: Robin Proebsting
Subject: RE: CAO17-015 memo
Date: Wednesday, May 16, 2018 1:03:26 PM

Robin,

Thanks for checking in and apologies for the delay. Believe it or not, Brooke wrapped up the memo on Monday and it went through senior review yesterday. Please see Brooke's assessment and recommendations below.

As I previously mentioned, the remaining TO budget was $338.43, which equates to a little more than 3 hours of Brooke's time billed at $110. Brooke used up this time. Are you able to approve an additional $180 to cover some time for senior review and a little time I spent on the TO? If not, that is fine. I typically try to request additional funds before we begin work, but I did not get to it this time.

Thanks,
Scott

In December 2017, the City requested that ESA provide a peer review of the Critical Area Study (CAS) for the restoration and development proposal at 4320 Island Crest Way. The project (City permit number CAO17-015) proposes mitigation addressing: 1) remediation for the code violation outlined in the August 10, 2016 Notice of Correction, and 2) wetland and watercourse buffer impacts associated with the development proposal. Following a site visit on December 28, 2017 with City planner Robin Proebsting, ESA submitted review comments to the City on January 18, 2018. Our comments included recommendations for updates to project plans and submittals to ensure compliance with critical areas standards of the Mercer Island City Code (MICC).

The Watershed Company (the applicant's consultant) submitted a Response Memo and revised CAS to the City dated April 20, 2018, and Wetland Delineation Report Addendum dated March 22, 2018, that addressed our comments and recommendations. The response memo addressed each recommendation from our initial review, and referred to corresponding updates in the CAS. ESA reviewed the updated materials and identified a few outstanding considerations, noted below.

Summary and Recommendations:

- Based on our observations during the December 2017 field visit, and findings presented in the Wetland Delineation Report Addendum, we agree with the reclassification of Wetland A from Depressional to Slope, for purposes of rating the wetland. We also agree that the wetland meets the criteria of a Category III wetland using the 2004 state wetland rating system as specified by local code.

- In response to our previous review comments, the planting plan was revised to reduce the total number of proposed plantings, including reducing the number of trees to be planted in the wetland creation area to 3 red alders, 3 Sitka spruce, and 4 western red cedars. Subsequently, the *Diversity* performance standard "Establish at least two native tree species…within the wetland creation area" can no longer be met based on the provided definition of establishment as "five or more individual plants of the same

species alive and healthy". We recommend establishment be redefined as appropriate to the wetland creation area conditions so that success in meeting the performance standard is achievable.

- The proposed emergent cover performance standards of 10% by Year 3 and 30% by Year 5 are quite low. We recommend revising these standards to require 30% cover of emergent plants by Year 3 and 60% cover by Year 5. These higher numbers are more in line with what we typically see for wetland creation and restoration projects, and in our experience are reasonable, achievable goals. This could require increasing the emergent plant quantities for the wetland creation area.

- The updated materials clarify that Tract A, in the southwest corner of the property, is proposed as a shared-use recreation tract, with picnic and outdoor grilling areas to be located outside of all critical areas and buffers. No trail is proposed to connect the residences to the recreation tract and split-rail fencing is proposed to delineate the critical area boundaries. We therefore assume that the recreation tract will be accessed via the sidewalk on Island Crest Way. No new trails or pathways through the mitigation plan are recommended or allowed.

- We agree that the revised proposal will achieve "no net loss" of watercourse, wetland, and associated buffer functions. The revised project plans show enhancement throughout all of Wetland A and all buffer areas. Enhancement activities include:

    - Removal of invasive species;

    - Removal of all impervious surfaces from the critical areas and their buffers including the gravel drive, the house located in the southwest corner of the property, and other various structures;

    - Restoration to a more natural site hydrology by removing the two onsite culverts, creating wetland area between Wetlands A and B, and constructing a new stream channel between Wetlands B and C;

    - Planting with native trees, shrubs, and herbaceous species; and

    - Five years of mitigation monitoring.

From: Robin Proebsting [mailto:robin.proebsting@mercergov.org]
Sent: Wednesday, May 16, 2018 11:42 AM
To: Scott Olmsted <SOlmsted@esassoc.com>
Subject: RE: CAO17-015 memo

Hi Scott,

Just checking in—was it possible to get confirmation that the original review comments were addressed by the applicant? Let me know if there is anything I can help with.

Memorandum

To: Robin Proebsting

From: Ruji Ding

Re: Mercertech International LLC long plat SUB17-015

Date: November 3, 2018

I've reviewed the following documents submitted by the applicant:

1. Trip Generation and Sight Distance Analysis by Transportation Engineering North West, dated August 22,2017.
2. Drainage Report Preliminary Plat Submittal by CHS Engineer, LLC, dated October 2017.
3. Response to January 25, 2018 staff comments, prepared by CHS Engineers, LLC, dated April 18, 2018.
4. Technical Information Report Stormwater Drainage by CHS Engineers, LLC, dated April 23, 2018.
5. Responses to June 12 and July 9, 2018 staff comments regarding stormwater utility design, dated July 23, 2018.
6. Meeting Debrief August 27, 2018 Comment Responses by CHS Engineer, LLC, dated September 1, 2018.

I've reviewed the submittal package and recommend approval provided the following conditions are included in your recommendation::

1. Easements for shared access, utilities, and storm drainage facilities shall be depicted on the face of the final plat. Language which indicates joint rights and responsibilities of each lot with respect to all utilities and roadways shall be shown along with individual lot Joint Maintenance Easement Agreements (where applicable) for all shared usage and filed with the King County Recorder and noted on the final plat. The easement shall indicate whether it is public or private, existing or proposed.

2. Damage to adjacent properties or public rights-of-way resulting from construction (e.g. siltation, mud, runoff, roadway damage caused by construction equipment or hauling) shall be expeditiously mitigated and repaired by the contractor, at no expense to the City. Failure to mitigate and repair said damage, or to comply with the approved construction plans, the

permits issued by the City, or the City requirement for corrective action may be cause for the issuance of a "Stop Work" order, foreclosure on the plat bond/security, and/or other measures deemed appropriate by the City Engineer or Code Official to ensure construction consistent with the approved plans and protection of public safety.

3. The final plat shall be prepared in conformance with Title 58 RCW and Surveys shall comply with Chapter 332-130 WAC. Submit using Mercer Island's datum and tie the plat to at least two City monuments.

4. A City of Mercer Island title block for approval signatures (City Engineer and the Mayor) shall be provided on the final plat along with the designated Long Plat number.

5. A final traffic memorandum documenting the trip generation and sight distance evaluation shall be submitted as a part of the Site Development Permit submittal package. All mitigation measures recommended in the memorandum shall be incorporated into the Site Development Permit.

6. Construction of all improvements for access, utilities, storm drainage, and site work shall comply with current City ordinances and the requirements of the City Engineer.

7. All utilities serving the plat shall be under grounded (MICC 19.08.040) and shall be designed and constructed in accordance with City of Mercer Island Ordinances.

8. Plat improvement plans prepared by a Washington State licensed engineer shall be submitted for review and approval by the City Engineer. The improvement plans shall include the following:

a. Plat access road - Comply with the Fire Code requirements and standards contained in MICC 19.09.040. Site distance mitigation measures recommended by in the site distance evaluation.
b. Temporary Erosion Control measurements.
c. Grading Plan.
d. Water main, water meters, and appurtenances
    i. Provide water services for each lot. Locate water meters outside of the future driveway areas and any paved areas.
    ii. Abandon all existing water services currently serving the existing lot at the City water main.
e. Sanitary sewer and appurtenances
    i. Provide sewer connections for each ot. Show the sanitary sewer stub outs.
    ii. Abandon all existing side sewers at the City sewer main.
    iii. The sanitary sewer system serving all lots will be a private sewer system.
f. Stormwater
    i. Provide drainage improvements in compliance with MICC 15.09.
    ii. Show the storm drainage stub outs for all lots.
    iii. A Department of Ecology Construction General Permit is required for this project.
g. Dry utilities
    i. Show the proposed dry (power, gas, etc.) utility corridor on the plan.

9. Right of Way Restoration
   a. The existing driveway apron in the City Right of Way located at the south end of the property frontage must be remove.
   b. Roadway, sidewalk, and curb replacement limits shall be determined by the City Engineer and will likely include afull lane width grind and overlay of the existing roadway section on Island Crest Way and replacement of curb/gutter/sidewalk along the entire frontage of the property.
   c. Clearing and grading within the City Right of Way to achieve clear sight lines for the proposed driveway must be reviewed as a part of the Site Development Permit. Trimming of tree branches shall only be performed under the direction of a certified arborist.

10. All plat improvements shall be completed prior to final plat approval or bonded and completed prior to issuance of building permits when allowed by the City Engineer. A survey grade as-built drawing in PDF format that shows all utilities and plat improvements shall be submitted to the City Engineer upon completion of the work.

11. The following notes shall be placed on the final plat:
   a. Maintenance and repair of the private sanitary sewer system and joint use side sewers (sewer lines from the building to the private sewer main), shared roads, access easements, public trail, private storm drainage facilities shall be the responsibility of the owners of each lot served (with the exception that owners of any lot which is lower in elevation shall not be responsible for that portion of a private side sewer above their connection). If maintenance and repair of any facilities enumerated above are not performed to the satisfaction of the City Engineer, after a timely demand has been made for such action, the City or its agent shall have the right to enter upon the premises and perform the necessary maintenance and repair to protect the safety and general welfare of the public and shall have the right to charge the owner of each lot an equal share of the total maintenance and repair costs. The City or the owner of any lot within this plat shall have the right to bring action in Superior Court to require any maintenance or repair and to recover the costs incurred in making or effecting repairs to improvements.
   b. Private stormwater facilities shall be inspected and maintained in conformance with MICC 15.09.070.
   c. All staging for construction shall occur on site and shall not be located in the public right-of-way.
   d. No permanent landscaping, structures, or fences shall be placed on or within public utility, storm drainage, or pedestrian path easements without the written approval of the City Engineer.
   e. If in the opinion of the City Engineer, utilities or storm drainage facilities require maintenance, repair or replacement, the City or its agent shall have the right to enter those lots adjoining the facility for the purpose of maintaining, repairing, relocating or replacing said facilities.
   f. Installation of landscaping and/or structures including trees, shrubs, rocks, berms, walls, gates, and other improvements are not allowed within the public right-of-way without an approved encroachment license agreement from the City prior to the work occurring (MICC 19.06.060).

Hi Robin,

I have reviewed the following documents:

1. Tree Inventory and Retention Plan Report prepared The Watershed Company dated October 27, 2017.
2. Air Excavation Memo prepared by The Watershed Company, dated April 20, 2018
3. Tree Retention Justification Memo prepared by The Watershed Company, dated April 20, 2018
4. Plan Set prepared by CHS Engineers, dated April 18, 2018
5. Mitigation Plan prepared by The Watershed Company, dated April 18, 2018

I have reviewed the resubmittal for project SUB17-015, and have the following findings:

1. The applicant has met the standard in MICC 19.10.040(B)(2) by using reasonable best efforts to locate improvements in a manner consistent with the purposes listed in MICC 19.10.010.
2. The applicant has satisfied the tree replacement requirement in MICC 19.10.060, addressing both the trees removed under CE16-0014 (see sheet W7.1) as well as the trees proposed for removal as part of future construction.
3. The applicant has documented that adequate limits of disturbance have been established by keeping tree protection outside of critical root zones field located using air-excavation. Building pads have been situated to allow retention of the highest quality trees on site (see W4.0).

I recommend including the following conditions of approval in the staff report:

1. Only trees needing to be removed for site development improvements may be removed at Site Development Permit issuance. Tree removal shall be consistent with the Tree Preservation Plan on sheet W4.0 or as otherwise approved in writing by the City Arborist.
2. Only trees needing to be removed for future house construction may be removed at building permit issuance. Tree removal shall be consistent with the Tree Preservation Plan on sheet W4.0 or as otherwise approved in writing by the City Arborist.
3. Prior to Site Development Permit issuance, tree protection fencing shall be installed consistent with Sheet C4.
4. Prior to recording of the final plat, the applicant shall include a sheet showing the locations and tree numbers of trees proposed for retention, consistent with the approved retention plan.

I recommend that the following conditions appear on the face of the final plat:

1. No tree identified for retention may be removed unless otherwise approved by the City arborist.

John