

NEW INFORMATION RECEIVED BY  
MILWAUKIE PLANNING DEPARTMENT  
April 30, 2019

WREN STREET

**PROJECT INFORMATION**

PROJECT DESCRIPTION	RESIDENTIAL CLUSTER DEVELOPMENT W/ 12 DETACHED SINGLE FAMILY HOMES (10 NEW AND 2 EXISTING)
PROPERTY LOCATION	TAX LOTS 3200/ 3300 TAX MAP 1 1E, 35DD)
ADDRESS	12205/ 12225 SE 19TH AVE MILWAUKIE, OR 97206
ZONE	R-5
SITE AREA	3.66 ACRES
COMMON AREA	1.58 ACRES
NET BUILDABLE AREA	2.08 ACRES
MAXIMUM DENSITY	90,605/ 5,000 = 18.12
PROPOSED DEVELOPMENT	DWELLINGS 12 DWELLING UNITS
BUILDING COVERAGE	8.1%
VEGETATIVE COVERAGE	83.66%
PARKING REQUIRED	12 SPACES
PROVIDED	37 SPACES (19 IN PRIVATE GARAGES, 15 AT DRIVEWAYS, 3 VISITOR SPACES)

COMMON OPEN SPACE (1.58 ACRES)

PROPERTY EXTENDS 246.5' FROM EDGE OF SLOUGH

PROPERTY EXTENDS 312' FROM EDGE OF SLOUGH

SLOUGH

SLOUGH

DOCK

BENCH  
INTERPRETATIVE SIGN  
30' WIDE PATH

30' SETBACK TO T/ BANK (W/ OR BOUNDARY PER ETC)

BENCH

(3) VISITOR PARKING SPACES

VIEW CORRIDOR

BUILDING 6  
NEW SINGLE FAMILY HOME (C)  
28' FL. WIDE

BUILDING 5  
NEW SINGLE FAMILY HOME (A)  
24' FL. WIDE

BUILDING 4  
NEW SINGLE FAMILY HOME (A)  
24' FL. WIDE

BUILDING 3  
NEW SINGLE FAMILY HOME (B)  
18' FL. WIDE

BUILDING 2  
NEW SINGLE FAMILY HOME (A)  
24' FL. WIDE

BUILDING 1  
NEW SINGLE FAMILY HOME (A)  
24' FL. WIDE

BUILDING 7  
NEW SINGLE FAMILY HOME (C)

BUILDING 8  
NEW SINGLE FAMILY HOME (B)

BUILDING 11  
NEW SINGLE FAMILY HOME (G)

PRIVATE DRIVE

FIRE DEPT TURNAROUND

EXIST'G GARAGE TO BE DEMOLISHED

100 YR FLOOD ELEVATION

BUILDING 10  
EXISTING HOUSE TO REMAIN  
12225 SE 19TH AVENUE

BUILDING 12  
EXISTING HOUSE TO REMAIN  
12205 SE 19TH AVENUE

SE 19TH AVENUE

VIEW CORRIDOR

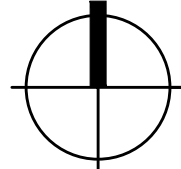
EXIST'G STAIR AND DECK TO BE DEMOLISHED

SHARED DRIVEWAY

VIEW CORRIDOR

VIEW CORRIDOR

SPARROW STREET



**PRELIMINARY SITE PLAN**

1" = 40'0"

**Elk Rock Estates**  
1738 - Site Plan

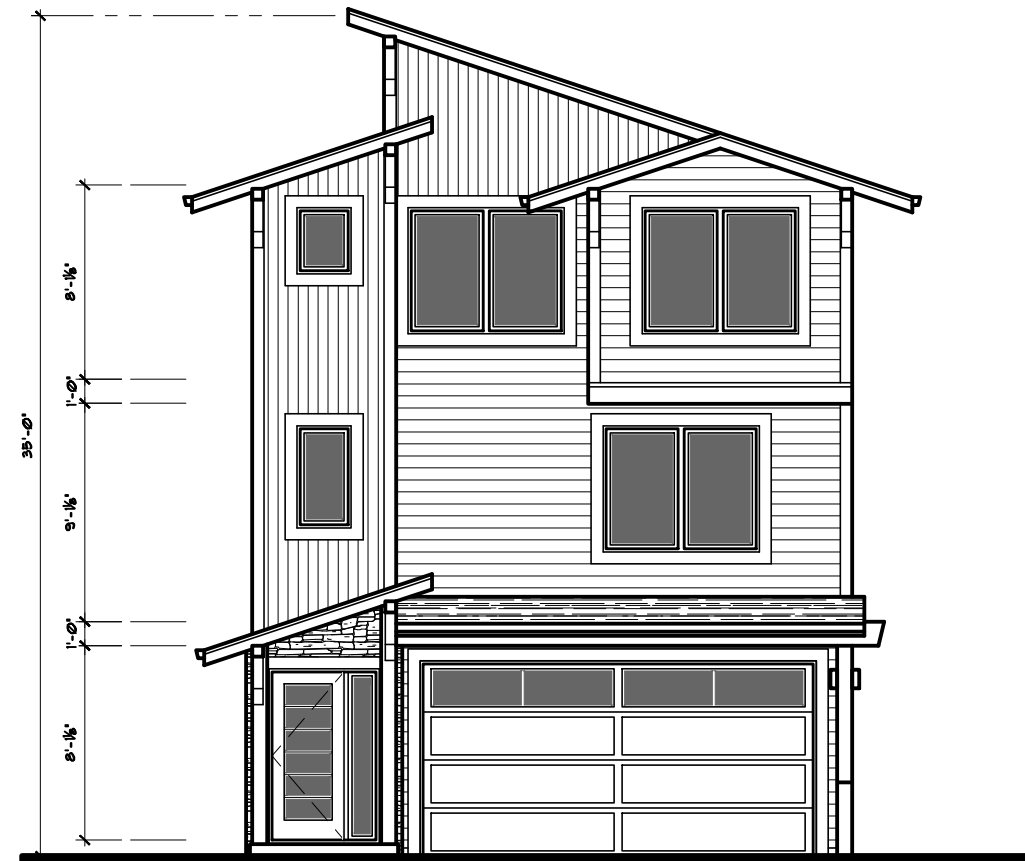
**ISELIN**  
ARCHITECTS, P.C.  
1307 7th Street - Oregon City, Oregon 97045  
503.656.1942 - f. 503.656.0658 - www.iselinarchitects.com

1" = 40'-0"  
4/22/2019

**A0**

**DETAILED DESIGN FEATURES PROPOSED:***(Minimum of 5 features required)*

- a. COVERED PORCH AT LEAST 5 Ft. DEEP AND AT LEAST 5 Ft. WIDE.
- c. OFFSET ON THE BUILDING FACE AT LEAST 16 In. FROM ONE EXTERIOR WALL SURFACE TO OTHER.
- e. ROOF EAVES WITH MIN. PROJECTION OF 12 Inches.
- f. ROOF LINE OFFSETS OF AT LEAST 2 Ft. FROM TOP OF SURFACE TO TOP OF OTHER SURFACE.
- h. HORIZONTAL LAP SIDING BETWEEN 3 TO 1 In. WIDE. WOOD OR FIBER-CEMENT MATERIAL.
- k. WINDOW TRIM AROUND ALL WINDOWS AT LEAST 3 In. WIDE AND 5/8 In. DEEP.

**BUILDING 6 - TYPE 'C'**

1/8" = 1'-0"

**Elk Rock Estates**

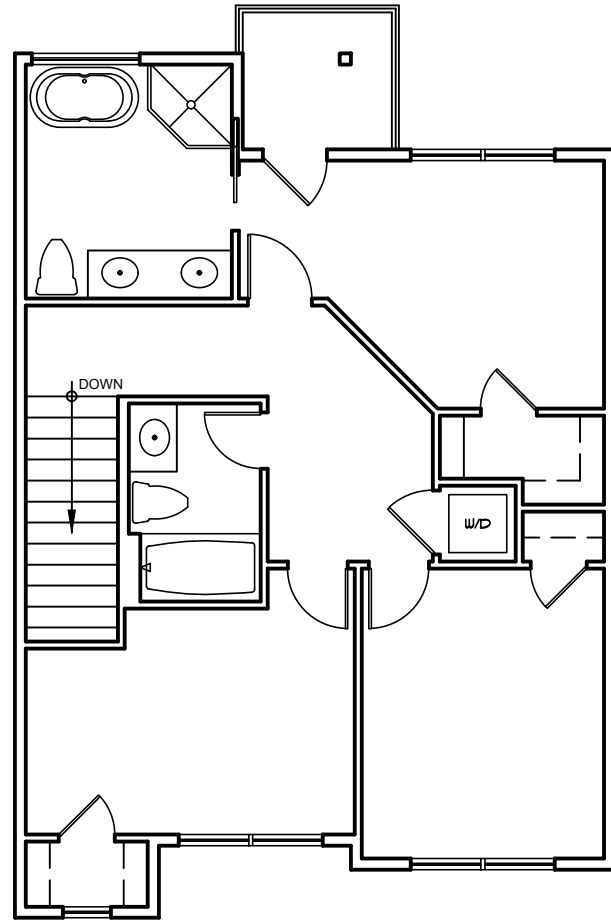
SE 19TH STREET MILWAUKIE, OR



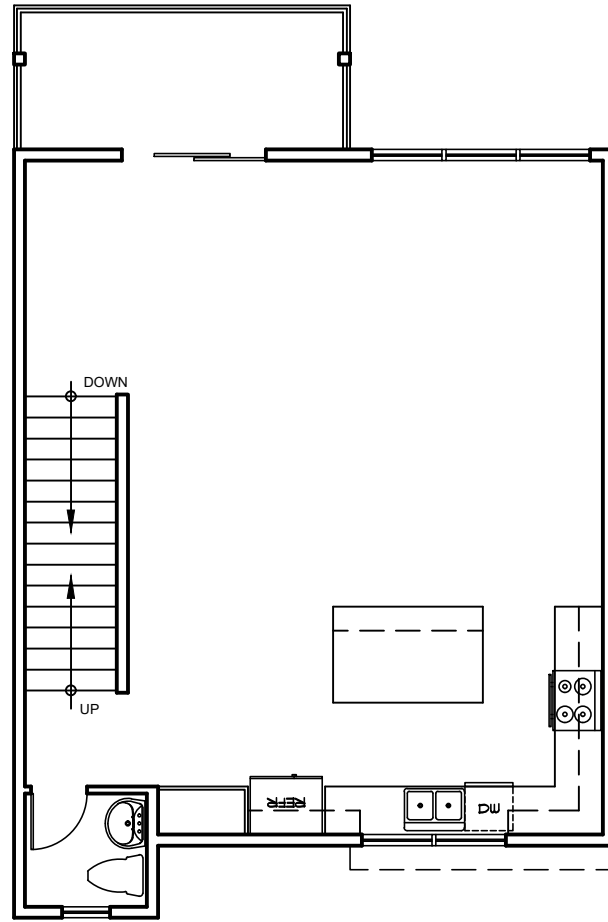
1307 7th Street - Oregon City, Oregon 97045  
 503.656.1942 - f. 503.656.0658 - www.iselinarchitects.com

GILLIS PROPERTIES - 1738

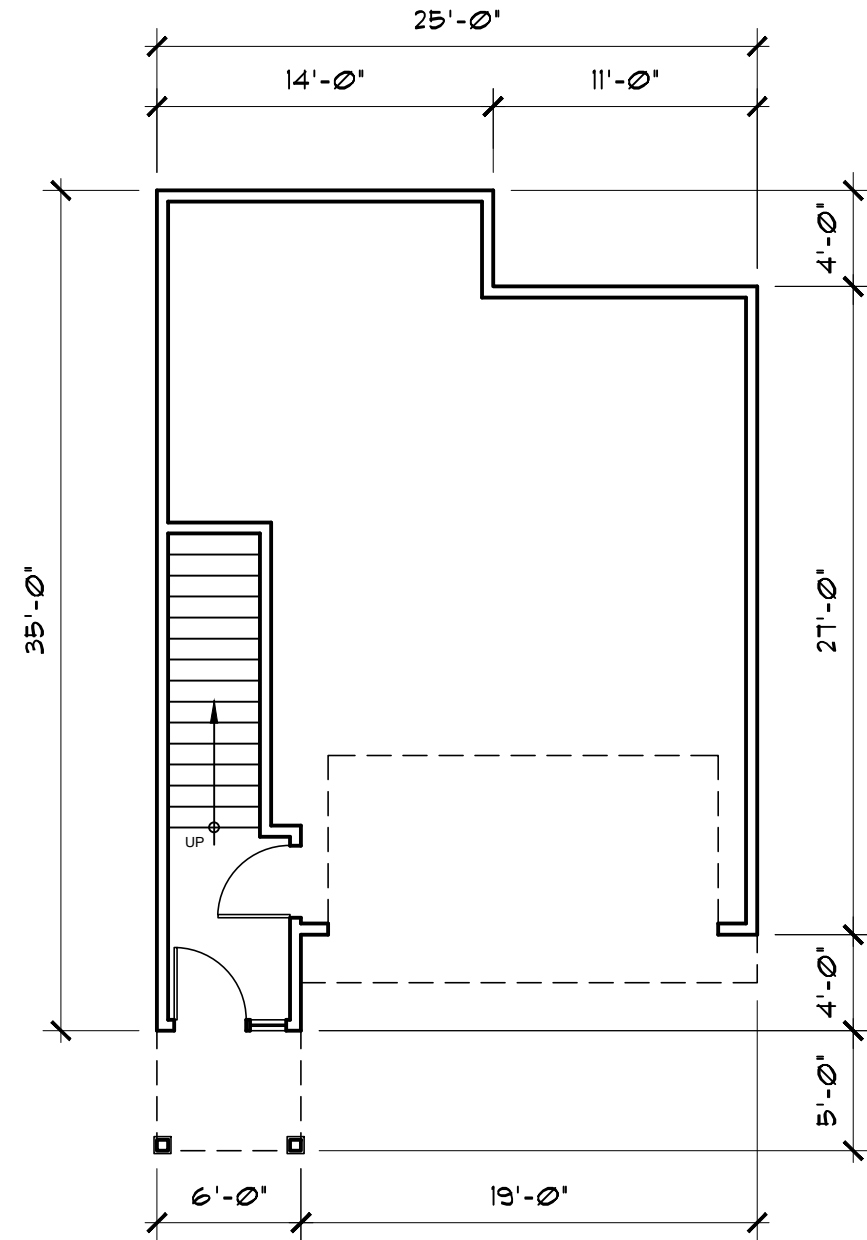
4/22/2019




**THIRD LEVEL FLOOR PLAN**  
 716 Sq.Ft. 1/8" = 1'-0"




**SECOND LEVEL FLOOR PLAN**  
 766 Sq.Ft. 1/8" = 1'-0"




**FIRST LEVEL FLOOR PLAN**  
 781 Sq.Ft. (FOOTPRINT) 1/8" = 1'-0"

**Elk Rock Estates**  
SE 19TH STREET MILWAUKIE, OR


**ISELIN**  
 ARCHITECTS, P.C.  
 1307 7th Street - Oregon City, Oregon 97045  
 503.656.1942 - f. 503.656.0658 - www.iselinarchitects.com

GILLIS PROPERTIES - 1738  
4/22/2019



## Memorandum

**To:** Vera Kolas, Associate Planner  
**Through:** Kelly Brooks, Engineering Director  
**From:** Dalton U. Vodden, Associate Engineer  
**RE:** NR-2018-005 Engineering Comments  
**Date:** March 25, 2019

---

### **Proposed natural resources cluster development at 12205 and 12225 SE 19<sup>th</sup> St.**

The engineering department has been reviewing the application materials. A need for more information has been found. A significant revision will also be required to private drives 1 & 2 before approval of this application can be recommended.

#### **Revision Required:**

- The proposed development must be revised to meet requirements of Milwaukie Municipal Code 19.400. Policy number 3 of Chapter 3 Objective 1 of subsection 1.6, which requires streets to be at a minimum of 1.0 foot above the 100-year flood elevation. Portions of Private Drive 1 and the entirety of Private Drive 2 are below the 100-year flood elevation. Private Drive 1 and Private Drive 2 are proposed to serve as private streets open to public travel, providing public and emergency service access to the development. Plans indicate nine of twelve residences on this site are served by this network at elevations below the 100-year flood elevation. This must be revised prior to a recommendation for approval.

**Response:** See Michael Robinson letter dated April 29, 2019.

#### **Missing Information:**

- The applicant has identified the ordinary high water and the 100-year flood elevations on site plans. The applicant has not identified the designated regulatory floodway that exists on site. The floodway must be mapped on the grading and site plan for full review.

**Response:** The floodway has been identified based on the Flood Insurance Rate Map Number 41005C0017D.

- The applicant proposes a dock and walkway in the floodway. A more detailed

description of what is proposed is required, specifically related to the volume that will be introduced to the floodway, is needed for full review.

Response: The dock is intended to be a floating dock and would no impact on the floodway. The dock will be anchored with several round piles but would have no impact on the floodway.

- A remodeling of existing structures on site has been proposed. Details were not provided to determine the extent of remodel. The cost of improvements and the market value of each structure is needed for full review.

Response: The house remodels are minimal and only cosmetic in nature. The south house basement is above the floodplain the other improvements do meet the cost threshold to require FEMA upgrades to the northern home.

- Water quality planters or drywells were noted for each new home on the grading and site plan. Their proposed locations are necessary for full review.

Response: Drywells will be sized according to the published City of Milwaukie Drywells Requirments document. The planters will be designed using the City of Portland PAC calculator. The planter's will be placed between the proposed buildings. The average impervious surface for one of the buildings is approximately 2000-square feet. The PAC calculator indicates 150 square foot planter with 18" of growing medium is adequate for each. The planters and drywell locations have been shown on the site plan. Planter details

- Significant street slopes are proposed up hill of drive-down garages. Drive-down garages for buildings number 2, 3, and 4 are directly below the steepest street slope. Please provide more driveway drainage details for a full review.

Response: The preliminary grading was intended to show the road grading only. Detailed grading for the individual homes and driveways will be included in the construction documents and /or the individual building permits. Our intent is to provide gently slopes driveways and minimize flood plain disturbance.

- The proposed earthwork is to yield a 17 cubic yard cut for the site. Please provide more description of disturbance and general locations of cut with approximate volumes for a full review.

Response: The earthwork numbers are based on the roadway grading within the floodplain. The roadway cut/fill within the floodplain was calculated by overlaying the finish grade roadway over the existing grade surface in Autocad Civil 3d and calculating the net change.

The additional information and revision listed above is required for further review of the application.

Job No.: MSC0000  
Date: April 000000  
To: Vera Koliass AICP  
City of Milwaukie  
From: Ken Valentine P



Harper  
Houf Peterson  
Righellis Inc.

ENGINEERS ♦ PLANNERS  
LANDSCAPE ARCHITECTS ♦ SURVEYORS

**Project/Subject: Elk Rock Estates – Floodplain Impacts**

Vera

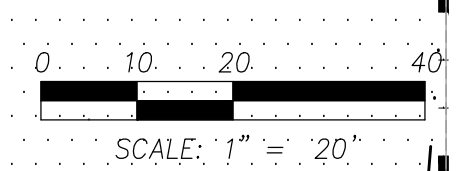
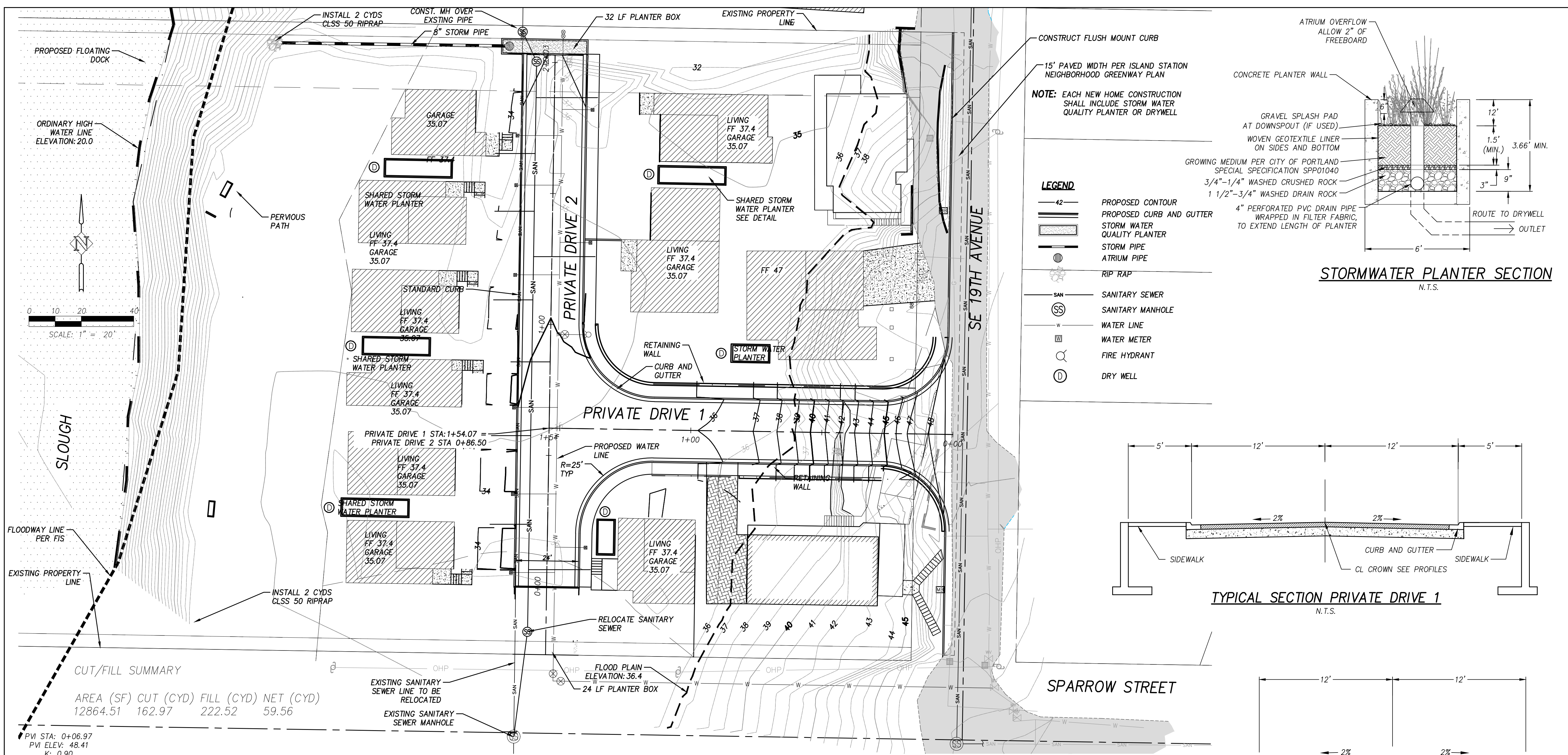
During our meeting on Thursday the question came up regarding the new building foundation impacts to the floodplain. I want to address that issue and how the project intends to deal with it. Generally the main issue with development in the floodplain is adding fill and thereby reducing the flood capacity of the site. Our goal in this project is to balance the cut and fill and to have no impact on the water surface elevation during the 100-year flood event. The proposed homes will play a key role in how the floodplain is managed on the site.

The typical process for a residential foundation is to excavate out a minimum of 12 inches for the entire lower floor and construct a stem wall foundation. The building code requires that the stem wall be constructed 12 inches below the finished existing grade for frost heave. The entire area within the foundation walls is excavated and remains at the excavated grade. The typical first floor area for the proposed residences is approximately 1000 square feet. If you multiply the area by the 12 inches of digout we get approximately 12000 cubic feet of cut or 440 cubic yards per building. The foundation will also be designed to allow flood waters to flow through the foundation during peak events. So the foundations will not wall off flood waters creating a fill situation. Therefore we anticipate that on average each new structure will provide about 440 cubic yards of cut within the floodplain. Some structures will provide more cut and some will provide less cut but each structure will provide a net cut. Those cuts will be offset by fill somewhere else on the site to achieve the desired balanced cut:fill ratio.

Sincerely

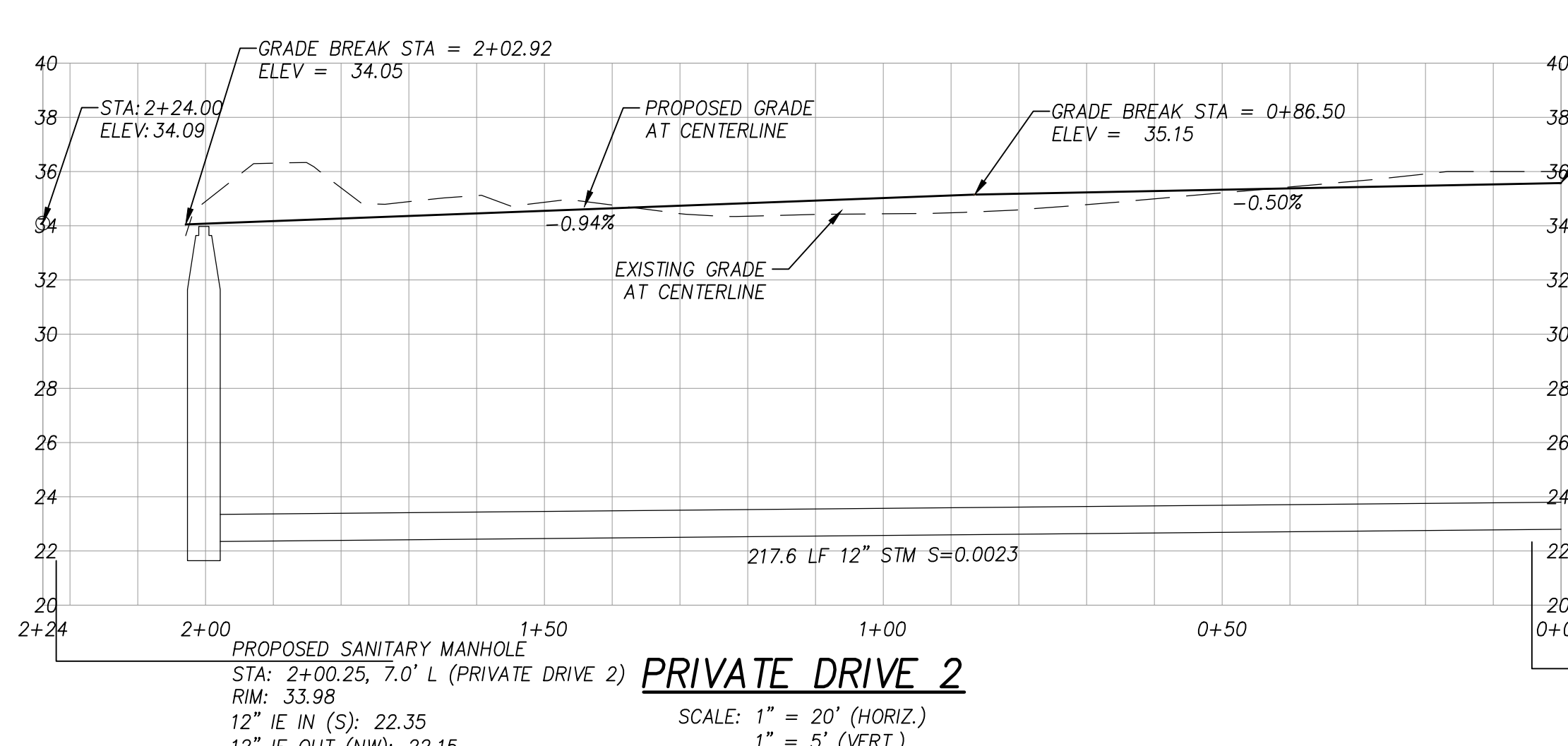
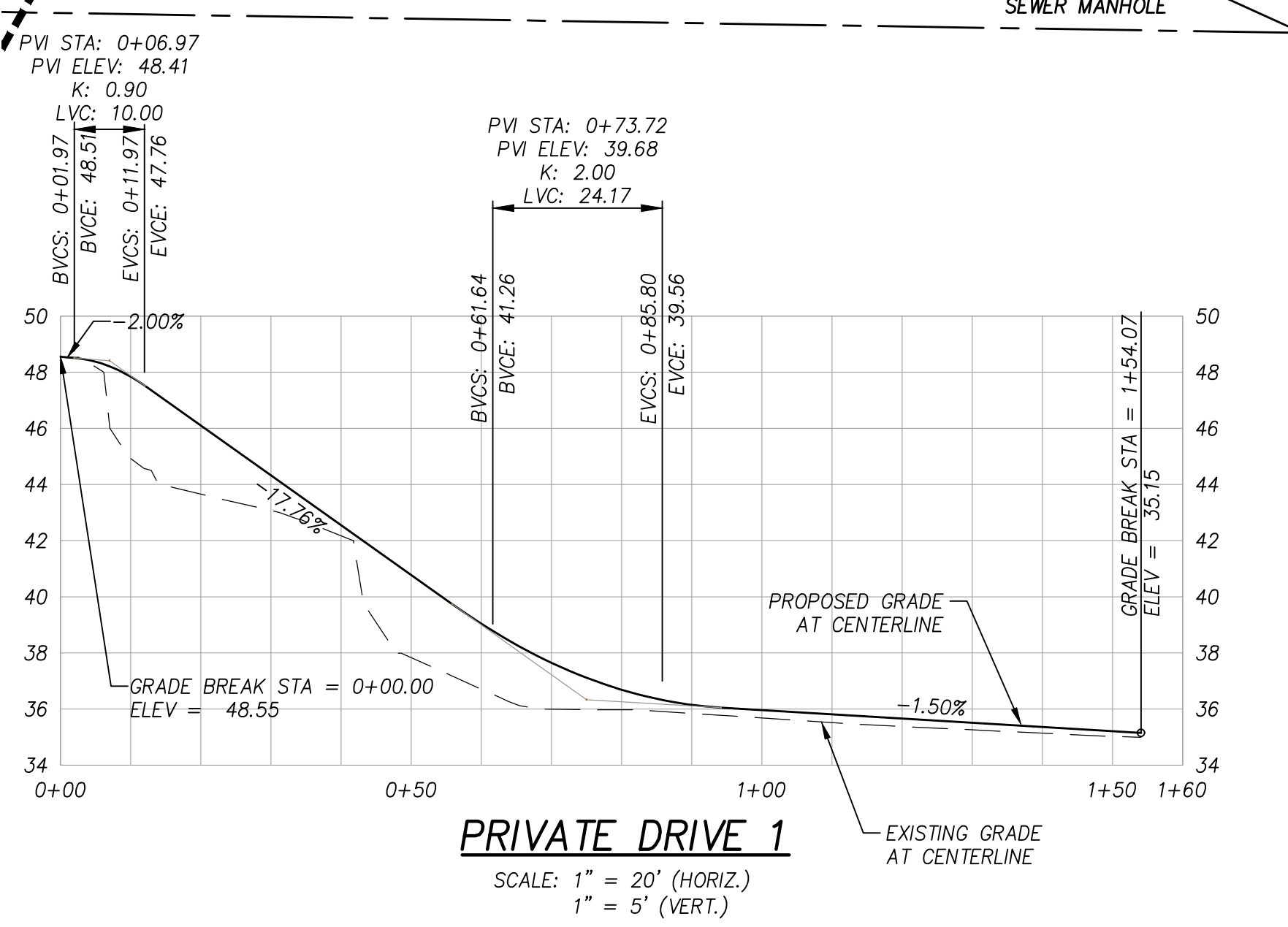
*Ken Valentine*  
Ken Valentine P



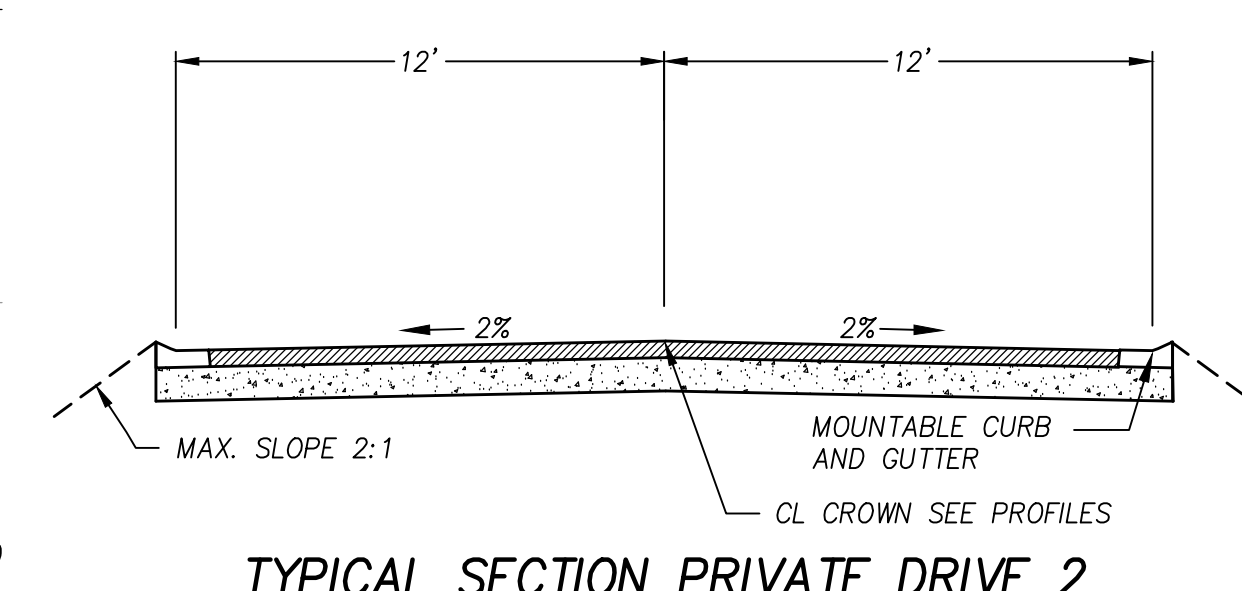
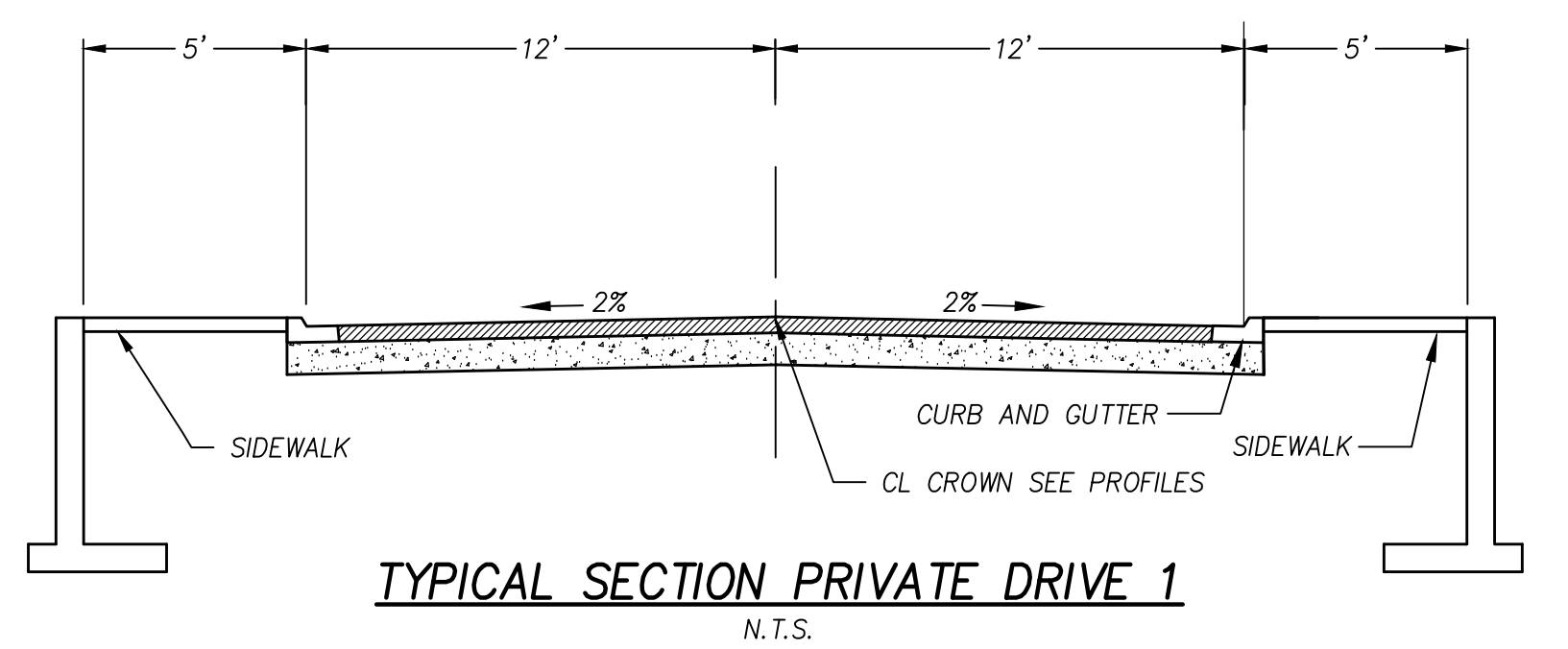
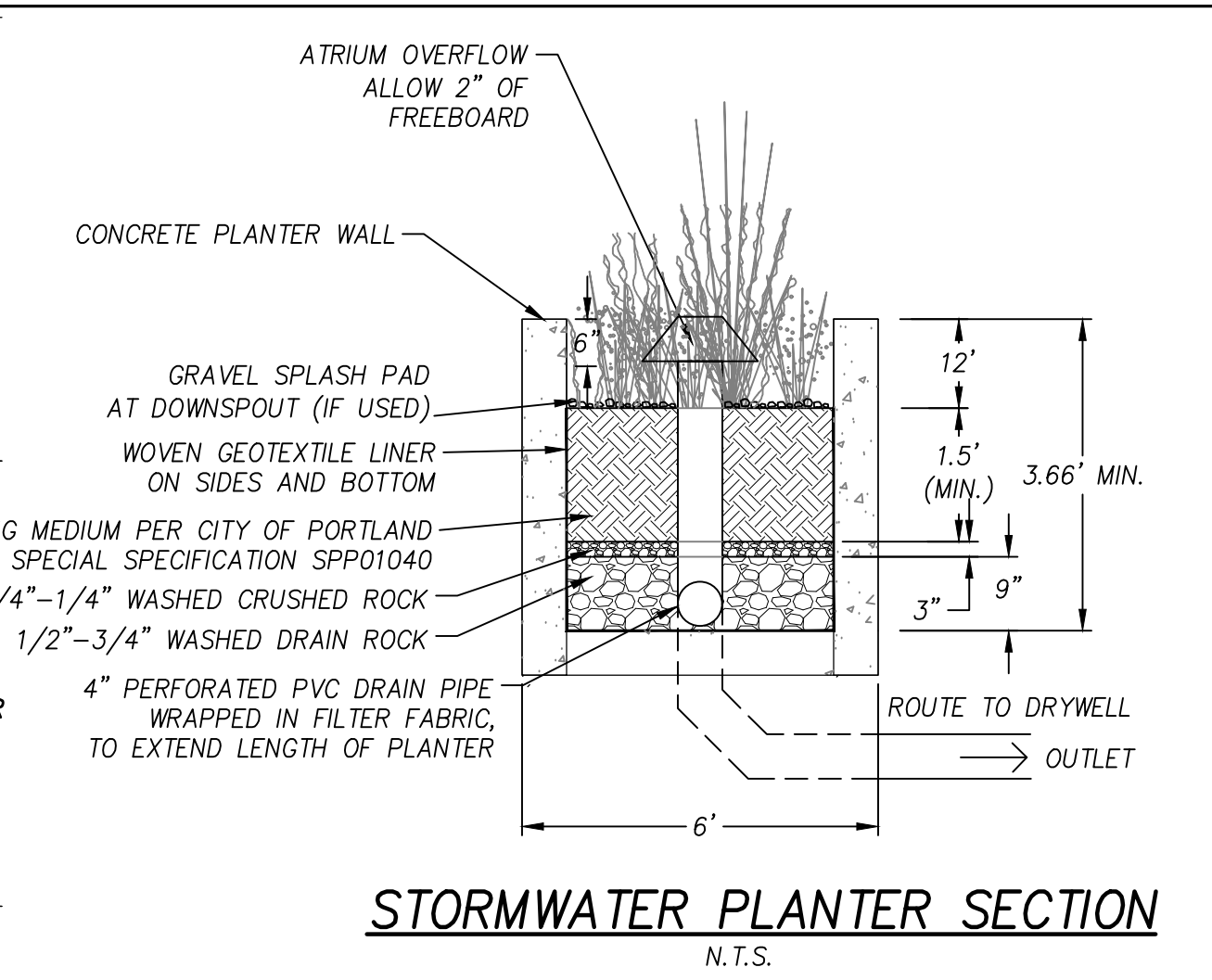


CUT/FILL SUMMARY

AREA (SF)	CUT (CYD)	FILL (CYD)	NET (CYD)
12864.51	162.97	222.52	59.56



- LEGEND**
- 42 — PROPOSED CONTOUR
  - — — PROPOSED CURB AND GUTTER
  - ▨ STORM WATER QUALITY PLANTER
  - S — STORM PIPE
  - A — ATRIUM PIPE
  - ⊙ RIP RAP
  - ⊙ SAN SANITARY SEWER
  - ⊙ SS SANITARY MANHOLE
  - W — WATER LINE
  - ⊙ W M WATER METER
  - ⊙ F H FIRE HYDRANT
  - ⊙ D DRY WELL



GRADING AND SITE PLAN  
RIVER CLUSTER DEVELOPMENT  
MILWAUKIE, OREGON

Harper Houf Peterson  
Righellis Inc.

ENGINEERS, PLANNERS, ARCHITECTS & SURVEYORS

200 SE Spokane Street, Suite 200, Portland, OR 97202  
Phone: 503.221.1131 www.hhp.com fax: 503.221.1171

REGISTERED PROFESSIONAL ENGINEER  
STATE OF OREGON  
KENNETH K. RIGHELLIS  
EXPIRES: 06/30/20

DESIGNED:	KKV
DRAWN:	HPHR TEAM
CHECKED:	KKV
DATE:	JANUARY 2019

NO.	DESCRIPTION
1	REVISED GRADING

SHEET NO. **1**

JOB NO. MSC-221



# MITIGATION PROPOSAL AND ALTERNATIVE ANALYSIS

## MITIGATION PROPOSAL:

### 19.402.1.B. General Standards for Required Mitigation

Where mitigation is required by Section 19.402 for disturbance to WQRs and/or HCAs, the following general standards shall apply:

1. Disturbance
  - a. Designated natural resources that are affected by temporary disturbances shall be restored, and those affected by permanent disturbances shall be mitigated, in accordance with the standards provided in Subsection 19.402.11.C for WQRs and Subsection 19.402.11.D.2 for HCAs, as applicable.

Response: Within the development area, (everything east of the Top-of-Bank), we are counting everything as either a “permanent disturbance” or as a mitigation area. The plan does not show any temporary disturbances as discussed below.

- b. Landscape plantings are not considered to be disturbances, except for those plantings that are part of a non-exempt stormwater facility; e.g., raingarden or bioswale.

Response: For the purposes of computing the disturbed area we included a 10' buffer on the west side of the buildings. It is anticipated that residents and their activities will create a permanent disturbance near the buildings. Vegetation in these areas will also need to be maintained for fire control, and so this 10' buffer is included as permanently disturbed and to be mitigated for by this plan. Landscape plants may or may not be planted and maintained in this area.

The 10' buffer is commonly considered a temporary disturbance in many plans, however we felt it was more appropriate to consider it a permanent disturbance.

### 2. Required Plants

Unless specified elsewhere in Section 19.402, all trees, shrubs, and ground cover planted as mitigation shall be native plants, as identified on the Milwaukie Native Plant List. Applicants are encouraged to choose particular native species that are appropriately suited for the specific conditions of the planting site; e.g., shade, soil type, moisture, topography, etc..

Response: The 2011 Portland Plant List was used per the instructions found on Milwaukie's website.

### 3. Plant Size

Replacement trees shall average at least a 1/2-in caliper--measured at 6 in above the ground level for field-grown trees or above the soil line for container-grown trees-- unless they are oak or madrone, which may be 1-gallon size. Shrubs shall be at least 1-gallon size and 12 in high.

Response: Landscape plans will include this instruction.

### 4. Plant Spacing

Trees shall be planted between 8 and 12 ft on center. Shrubs shall be planted between 4 and 5 ft on center or clustered in single-species groups of no more than 4 plants, with each cluster planted between 8 and 10 ft on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing measurements.

Response: Landscape plans will include this instruction.

### 5. Plant Diversity

Shrubs shall consist of at least 2 different species. If 10 trees or more are planted, then no more than 50% of the trees shall be of the same genus.

Response: Landscape plans will include this instruction.

### 6. Location of Mitigation Area

#### a. On-Site Mitigation

All mitigation vegetation shall be planted on the applicant's site within the designated natural resource that is disturbed, or in an area contiguous to the resource area; however, if the vegetation is planted outside of the resource area, the applicant shall preserve the contiguous planting area by executing a deed restriction such as a restrictive covenant.

Response: The site includes approximately 13,185 SQFT of HCA area between the permanently disturbed areas and the Top-of-Bank of the slough that will be part of the mitigation area. Additionally we estimate there is up to 41,935 SQFT

of area on the island west of the slough. The area has not been surveyed.

The permanently disturbed area will be mitigated as follows:

- 29,062 SQFT permanent disturbed HCA area
- 13,185 SQFT mitigation area between the buildings and Top of Bank.
- 15,877 SQFT mitigation area needed on the island.

### b. Off-Site Mitigation

- (1) For disturbances allowed within WQRs, off-site mitigation shall not be used to meet the mitigation requirements of Section 19.402.
- (2) For disturbances allowed within HCAs, off-site mitigation vegetation may be planted within an area contiguous to the subject-property HCA, provided there is documentation that the applicant possesses legal authority to conduct and maintain the mitigation, such as having a sufficient ownership interest in the mitigation site. If the off-site mitigation is not within an HCA, the applicant shall document that the mitigation site will be protected after the monitoring period expires, such as through the use of a restrictive covenant.

Response: No off-site mitigation should be required to meet requirements. However the undeveloped SE Sparrow between the site and the park has been mentioned as a possible mitigation area, and actually is a better place for a mitigation for several reasons.

### 7. Invasive Vegetation

Invasive nonnative or noxious vegetation shall be removed within the mitigation area prior to planting, including, but not limited to, species identified as nuisance plants on the Milwaukie Native Plant List.

Response: The HCA areas are currently vegetated with a high percentage of invasive plants, the dominant vegetation is Blackberry, Plantain, and Japanese knotweed. These will be removed except for the steep bank area which will be left alone to avoid erosion issues.

### 8. Ground Cover

Bare or open soil areas remaining after the required tree and shrub plantings shall be planted or seeded to 100% surface coverage with grasses or other ground cover species identified as native on the Milwaukie Native Plant List. Revegetation shall occur during the next planting season following the site disturbance.

Response: A native grass seed mix will be used in some areas between the buildings and slough. Grasses in this area will need to be mowed periodically for fire control as they will be trafficked by tobacco using humans and close enough to buildings that fire prevention is an over-riding priority. A native wildflower seed is specified for the island areas used for mitigation.

## The following standards are required and included here in this mitigation plan:

### 19.402.1.B. Tree and Shrub Survival

A minimum of 80% of the trees and shrubs planted shall remain alive on the second anniversary of the date that the mitigation planting is completed.

#### a. Required Practices

To enhance survival of the mitigation plantings, the following practices are required:

- (1) Mulch new plantings to a minimum of 3-in depth and 18-in diameter to retain moisture and discourage weed growth.
- (2) Remove or control nonnative or noxious vegetation throughout the maintenance period.

#### b. Recommended Practices

To enhance survival of tree replacement and vegetation plantings, the following practices are recommended:

- (1) Plant bare root trees between December 1 and April 15; plant potted plants between October 15 and April 30.
- (2) Use plant sleeves or fencing to protect trees and shrubs against wildlife browsing and the resulting damage to plants.
- (3) Water new plantings at a rate of 1 in per week between June 15 and October 15 for the first 2 years following planting.

#### c. Monitoring and Reporting

Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die shall be replaced in kind as needed to ensure the minimum 80% survival rate. The Planning Director may require a maintenance bond to cover the continued health and survival of all plantings. A maintenance bond shall not be required for landscape applications related to owner-occupied single-family residential projects. An annual report on the survival rate of all plantings shall be submitted for 2 years.

#### 10. Light Impacts

Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

#### C. Mitigation Requirements for Disturbance within WQRs

1. The requirements for mitigation vary depending on the existing condition of the WQR on the project site at the time of application. The existing condition of the WQR shall be assessed in accordance with the categories established in Table 19.402.11.C.

REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES GILLIS PROPERTIES LLC 5965 WEST A STREET WEST LINN, OR 97068	
MITIGATION PLAN AND ALTERNATIVES ANALYSIS FOR HCA AND WOR IMPACTS PER TITLE 19, MILWAUKIE MUNICIPAL CODE	
environmental technology consultants	PO Box 821185 Vancouver, WA 98682 360-696-4403
DATE	Apr 30, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M1



2. When disturbance within a WQR is approved according to the standards of Section 19.402, the disturbance shall be mitigated according to the requirements outlined in Table 19.402.II.C and the standards established in Subsection 19.402.II.B.

**Subsection 19.402.II.D.2 Mitigation Requirements for Disturbance in HCAs**

To achieve the goal of reestablishing forested canopy that meets the ecological values and functions described in Subsection 19.402.I, when development intrudes into an HCA, tree replacement and vegetation planting are required according to the following standards, unless the planting is also subject to wetlands mitigation requirements imposed by state and federal law.

These mitigation options apply to tree removal and/or site disturbance in conjunction with development activities that are otherwise permitted by Section 19.402. They do not apply to situations in which tree removal is exempt per Subsection 19.402.4 or approvable through Type I review.

An applicant shall meet the requirement of Mitigation Option 1 or 2, whichever results in more tree plantings; except that where the disturbance area is 1 acre or more, the applicant shall comply with Mitigation Option 2.

a. Mitigation Option 1

This mitigation requirement is calculated based on the number and size of trees that are removed from the site. Trees that are removed from the site shall be replaced as shown in Table 19.402.II.D.2.a. Conifers shall be replaced with conifers. Bare ground shall be planted or seeded with native grasses or herbs. Nonnative sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

**INSERT Table 19.402.II.D.2.a HERE**

Response: The proposed development removes no trees. There currently are few trees on the lot, and the existing trees are on the margins, or along the Slough, or on the island, and these areas are not impacted. The project will therefore use 19.402.II.D.2.b to compute the number of mitigation trees and shrubs required.

b. Mitigation Option 2

This mitigation requirement is calculated based on the size of the disturbance area within an HCA. Native trees and shrubs are required to be planted at a rate of 5 trees and 25 shrubs per 500 sq ft of disturbance area. This is calculated by dividing the number of square feet of disturbance area by 500, multiplying that result times 5 trees and 25 shrubs, and rounding all fractions to the nearest whole number of trees and shrubs. For example, if there will be 330 sq ft of disturbance area, then 330 divided by 500 equals 0.66, and 0.66 times 5 equals 3.3, so 3 trees must be planted, and 0.66 times 25 equals 16.5, so 17 shrubs must be planted. Bare ground shall be planted or seeded with native grasses or herbs. Nonnative sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Response: The disturbed HCA area including a 10' offset from the buildings is 29,062 SQFT

29,062 / 500 X 5 Trees = 291 Trees  
 29,062 / 500 X 25 Shrubs = 1,453 Shrubs

c. Adjustments to HCA Mitigation Requirements

Proposals to vary the number or size of trees and shrubs required as mitigation in Subsection 19.402.II.D.2 shall be subject to the Type II review process and the requirements of Subsection 19.402.II.C.2.

Response: No variance from subsection 19.402.II.D.2 is requested.

**19.402.II General Discretionary Review**

B. A mitigation plan for the designated natural resource that contains the following information:

a. A description of adverse impacts that will be caused as a result of development.

Response: The primary resource is the Willamette River. The proposed development will build roads, sidewalks and condominiums on approximately 21,907 SQFT of the HCA area. In order to minimize impacts the development is located as far away from the primary resource as possible, in a part of property that has been historically used for farming and then more recently as an equipment storage area and residential area.

b. An explanation of measures that will be taken to avoid, minimize, and/or mitigate adverse impacts to the designated natural resource; in accordance with, but not limited to, Table 19.402.II.C for WQRs and Subsection 19.402.II.D.2 for HCAs.

c. Sufficient description to demonstrate how the following standards will be achieved:

(1) Where existing vegetation has been removed, the site shall be revegetated as soon as practicable.

Response: The area identified as the “Mainland Mitigation Area” in the accompanying figures is presently almost entirely populated by plant species identified as invasive or non-native by the City of Milwaukie. The soils are also

largely fill material and a hard gritty compacted clay mix that is generally poorly suited for growing the type of plants detailed in the mitigation plan. We anticipate the entire area will need to be plowed up and a substantial amount of mulch and compost material be mixed in to prepare the soils. This will of course remove the existing vegetation. The area will need to be covered immediately seeded and covered with hay, and then trees and shrubs installed per section 19.402.I.B.9

(2) Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

Response: Street lighting will not be installed in the mitigation area, and residents will not be allowed to install lights that shine toward the river.

(3) Areas of standing trees, shrubs, and natural vegetation will remain connected or contiguous; particularly along natural drainage courses, except where mitigation is approved; so as to provide a transition between the proposed development and the designated natural resource and to provide opportunity for food, water, and cover for animals located within the WQR.

Response: As described by the HCA Determination Report, the “Mainland” mitigation area is currently devoid of trees and shrubs except for blackberries and other invasive species. It is also flat, and without drainages.

d. A map showing where the specific mitigation activities will occur. Off-site mitigation related to WQRs shall not be used to meet the mitigation requirements of Section 19.402.

Response: Maps are included.

e. An implementation schedule; including a timeline for construction, mitigation, mitigation maintenance, monitoring, and reporting; as well as a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

Response: Except for the construction of a small floating dock, there will be no in-water work as part of this project. The dock is not permitted as part of this first submittal, an application for the dock will be made at a later date.

**19.402.II.B. Approval Criteria**

1. Unless specified elsewhere in Section 19.402, applications subject to the discretionary review process shall demonstrate how the proposed activity complies with the following criteria:

a. Avoid

The proposed activity avoids the intrusion of development into the WQR and/or HCA to the extent practicable. The proposed activity shall have less detrimental impact to the designated natural resource than other practicable alternatives, including significantly different practicable alternatives that propose less development within the resource area.

b. Minimize

If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity within the resource area shall minimize detrimental impacts to the extent practicable.

(1) The proposed activity shall minimize detrimental impacts to ecological functions and loss of habitat, consistent with uses allowed by right under the base zone, to the extent practicable.

(2) To the extent practicable within the designated natural resource, the proposed activity shall be designed, located, and constructed to:

(a) Minimize grading, removal of native vegetation, and disturbance and removal of native soils; by using the approaches described in Subsection 19.402.II.A, reducing building footprints, and using minimal excavation foundation systems (e.g., pier, post, or piling foundation).

(b) Minimize adverse hydrological impacts on water resources.

(c) Minimize impacts on wildlife corridors and fish passage.

(d) Allow for use of other techniques to further minimize the impacts of development in the resource area; such as using native plants throughout the site (not just in the resource area), locating other required landscaping adjacent to the resource area, reducing light spill-off into the resource area from development, preserving and maintaining existing trees and tree canopy coverage, and/or planting trees where appropriate to maximize future tree canopy coverage.

Response: The above criteria are included in this mitigation proposal.

[Continued Next Page].

REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES GILLIS PROPERTIES LLC 5965 WEST A STREET WEST LINN, OR 97068	
MITIGATION PLAN AND ALTERNATIVES ANALYSIS FOR HCA AND WQR IMPACTS PER TITLE 19, MILWAUKIE MUNICIPAL CODE	
environmental technology consultants	 PO Box 821185 Vancouver, WA 98682 360-696-4403
DATE	Apr 30, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	<b>M2</b>

**19.402.12.B. Approval Criteria**

20. Unless specified elsewhere in Section 19.402, applications subject to the discretionary review process shall demonstrate how the proposed activity complies with the following criteria:

a. Avoid

The proposed activity avoids the intrusion of development into the WQR and/or HCA to the extent practicable. The proposed activity shall have less detrimental impact to the designated natural resource than other practicable alternatives, including significantly different practicable alternatives that propose less development within the resource area.

b. Minimize

If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity within the resource area shall minimize detrimental impacts to the extent practicable.

(1) The proposed activity shall minimize detrimental impacts to ecological functions and loss of habitat, consistent with uses allowed by right under the base zone, to the extent practicable.

(2) To the extent practicable within the designated natural resource, the proposed activity shall be designed, located, and constructed to:

(a) Minimize grading, removal of native vegetation, and disturbance and removal of native soils; by using the approaches described in Subsection 19.402.11.A, reducing building footprints, and using minimal excavation foundation systems (e.g., pier, post, or piling foundation).

(b) Minimize adverse hydrological impacts on water resources.

(c) Minimize impacts on wildlife corridors and fish passage.

(d) Allow for use of other techniques to further minimize the impacts of development in the resource area; such as using native plants throughout the site (not just in the resource area), locating other required landscaping adjacent to the resource area, reducing light spill-off into the resource area from development, preserving and maintaining existing trees and tree canopy coverage, and/or planting trees where appropriate to maximize future tree canopy coverage.

Response: The above criteria are included in this mitigation proposal.

c. Mitigate

If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity shall mitigate for adverse impacts to the resource area. All proposed mitigation plans shall meet the following standards:

Response: As shown in the Alternative's Analysis section, it is not possible to develop the site at densities allowed by the R-5 zoning without impacting the WQR and HCA areas.

(1) The mitigation plan shall demonstrate that it compensates for detrimental impacts to the ecological functions of resource areas, after taking into consideration the applicant's efforts to minimize such detrimental impacts.

Response: As shown in the Alternatives Analysis section, the proposed project minimizes impacts by reducing the development size and locating it as far as possible from the resources. The proposed mitigation plan is compliant with the guidelines listed in Title 19, and therefore assumed to be compensation for the detrimental impacts.

(2) Mitigation shall occur on the site of the disturbance, to the extent practicable. Off-site mitigation for disturbance of WQRs shall not be approved. Off-site mitigation for disturbance of HCAs shall be approved if the applicant has demonstrated that it is not practicable to complete the mitigation on-site and if the applicant has documented that they can carry out and ensure the success of the off-site mitigation as outlined in Subsection 19.402.11.B.5.

In addition, if the off-site mitigation area is not within the same subwatershed (6th Field Hydrologic Unit Code) as the related disturbed HCA, the applicant shall demonstrate that it is not practicable to complete the mitigation within the same subwatershed and that, considering the purpose of the mitigation, the mitigation will provide more ecological functional value if implemented outside of the subwatershed.

Response: The proposed mitigation is entirely on-site.

(3) All revegetation plantings shall use native plants listed on the Milwaukie Native Plant List.

Response: The Portland Plant List was used instead of the Milwaukie Native Plant List as per the instructions found on Milwaukie's website.

(4) All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

Response: No in-stream work is proposed.

(5) A mitigation maintenance plan shall be included and shall be sufficient to ensure the success of the planting. Compliance with the plan shall be a condition of development approval.

Response: A monitoring and maintenance plan is attached as "Section M Appendix 1".

C. Limitations and Mitigation for Disturbance of HCAs

1. Discretionary Review to Approve Additional Disturbance within an HCA

An applicant seeking discretionary approval to disturb more of an HCA than is allowed by Subsection 19.402.11.D.1 shall submit an Impact Evaluation and Alternatives Analysis, as outlined in Subsection 19.402.12.A, and shall be subject to the approval criteria provided in Subsection 19.402.12.B.

Response: The disturbed HCA is less than allowed by Subsection 19.402.11.D.1

2. Discretionary Review to Approve Mitigation that Varies the Number and Size of Trees and Shrubs within an HCA

An applicant seeking discretionary approval to proportionally vary the number and size of trees and shrubs required to be planted under Subsection 19.402.11.D.2 (e.g., to plant fewer larger trees and shrubs or to plant more smaller trees and shrubs), but who will comply with all other applicable provisions of Subsection 19.402.11, shall be subject to the following process:

a. The applicant shall submit the following information:

(1) A calculation of the number and size of trees and shrubs the applicant would be required to plant under Subsection 19.402.11.D.2.

(2) The number and size of trees and shrubs that the applicant proposes to plant.

(3) An explanation of how the proposed number and size of trees and shrubs will achieve, at the end of the third year after initial planting, comparable or better mitigation results than would be achieved if the applicant complied with all of the requirements of Subsection 19.402.11.D.2. Such explanation shall be prepared and signed by a knowledgeable and qualified natural resource professional or a certified landscape architect. It shall include discussion of site preparation including soil additives, removal of invasive and noxious vegetation, plant diversity, plant spacing, and planting season; and immediate post-planting care, including mulching, irrigation, wildlife protection, and weed control.

(4) A mitigation, site-monitoring, and site-reporting plan.

b. Approval of the request shall be based on consideration of the following:

(1) Whether the proposed planting will achieve, at the end of the third year after initial planting, comparable or better mitigation results than would be achieved if the applicant complied with all of the requirements of Subsection 19.402.11.D.2.

(2) Whether the proposed mitigation adequately addresses the plant diversity, plant survival, and monitoring practices established in Subsection 19.402.11.B.

Response: A variance from this subsection is not requested.

**ALTERNATIVE ANALYSIS:**

Much of the responses in this section have been previously submitted in the applicants narrative contained in the document " Application for Type III Design Review, Revised February 25, 2019", prepared by Iselin Architects and Harper Houf Peterson Righellis, Inc. ETC has expanded on some of that narrative in this section.

**19.402.1 Intent**

5. Allow and encourage habitat-friendly development while minimizing the impact on water quality and fish and wildlife habitat functions.

Response: The selected alternative promotes minimized impacts to the HCA by combining a cluster development approach with reducing the number of units in the development and keeping the development as far from the river and wetlands as possible.

Development of this site to the density of the underlying zone without modification to the mapped Habitat Conservation Area (HCA) is not possible. Based on the density of the underlying zone 23-29 units are required. After all final calculations were done omitting areas within the WQR and other sensitive areas a range of 12-18 dwelling units is possible. The proposed development seeks approval for a total of twelve units.

A map amendment was initially sought utilizing the Cluster Development allowed by the Milwaukie Municipal Code (MMC) with this application. The City's environmental consultant has determined that all land within the 100 year flood plain must be included within the HCA; contradicting the evidence presented by the Applicant's consultant that the land to the east of the island area has been compromised historically and no longer qualifies as a habitat area requiring conservation.

[Continued Next Page]

REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES GILLIS PROPERTIES LLC 5965 WEST A STREET WEST LINN, OR 97068	
MITIGATION PLAN AND ALTERNATIVES ANALYSIS FOR HCA AND WQR IMPACTS PER TITLE 19, MILWAUKIE MUNICIPAL CODE	
	
PO Box 821185 Vancouver, WA 98682 360-696-4403	
DATE	Apr 30, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	<b>M3</b>

The primary resource is the Willamette River and its habitat are considered the most important to preserve and protect. There is a small functionally isolated wetland in the Sparrow Street Row on the South side, and also a ditch that historically probably drained the wetland area, but is now disconnected but still retains wetland characteristics. These wetland areas are secondary resources.

The selected design, (Figure M5), shows a cluster development of providing only 12 housing units that are located away from the primary and secondary resources as much as possible. A number of other designs were considered up to the maximum 32 dwelling units allowed for an R-5 residential development. These designs included constructing units on the island, built on stilts and accessed by a cable suspension bridge. Ultimately these larger development scenarios had to be abandoned due to resource and view impacts.

Two alternative designs, (Figures M7 and M8) are presented here, both providing more housing units, but creating greater impacts to the resource. M8 shows a 16 unit design similar to the selected 12 unit design. By reducing or eliminating the units on the North and South property lines the remaining units can be located further from the resources and property lines, also the Private Drive can be reduced on the South end, reducing the WQR impact from Wetland "A".

Minimizing the impact with the proposed development still dictates disruption of the mapped HCA area. Mitigation per the attached document is therefore proposed on this site as part of the Project. We believe this mitigation plan meets all requirements of the Milwaukie Municipal Code or can be in compliance with Conditions of Approval.

6. Permit residential cluster development to encourage creative and flexible site design that is sensitive to the land's natural features and adapts to the natural topography.

Response: The cluster development standards allow this project to comply with Goal 5 while providing 12 housing units.

A reduced side yard setback from 25' to 20' on the south side of the property. This is proposed to allow for a logical driveway placement and to allow for a reasonable building footprint below the existing home on this side of the site. The 20' proposed setback will also allow the proposed new home to align with the existing home which is set back 20' from south property line. We believe this requested variance also meets the intent of the Code to provide an increased perimeter buffer since this property line abuts a 40' wide unimproved right of way which will likely never be improved due to the identified wetland within the right of way. The property on the opposite side of this right of way will also remain open space since it is a public park.

**19.402.14 Adjustments and Variances**

To encourage applicants to avoid or minimize impacts to WQRs and/or HCAs, several types of adjustments and variances are available for use on any property that includes a WQR or HCA. These include adjustments to specific base zone and lot design standards, discretionary variances, and allowances for residential cluster development.

**A. Adjustments**

The adjustments provided in Subsection 19.402.14.A shall not be used to avoid the requirement to submit a construction management plan, if deemed applicable per Subsection 19.402.3. The following adjustments are allowed by right as part of any Type I, II, or III application:

**1. Adjustments to Base Zone Standards**

**a. Yard Setback (General)**

Yard setback standards may be adjusted by up to 10%. This allowance applies only to the yard requirements established in base zones and does not apply to additional yard requirements for conditional uses or community service uses, yard exceptions established in Subsection 19.501.2, or transition area measures established in Subsection 19.504.6.

Response: Criteria do not apply. No adjustments to the base zone standards are proposed.

**2. Rear Yard Setback (Limited)**

For residential development, if the subject property is adjacent to a separate tract that was established according to the standards of Subsection 19.402.13.J, and the tract is adjacent to the rear yard of the subject property, the minimum rear yard requirement may be reduced to 10 ft.

**2. Adjustments to Lot Design Standards**

When property boundaries are changed and/or land divided per Title 17 Land Division, an applicant may utilize the following adjustments to avoid or minimize impacts to a WQR or HCA:

- a. The minimum base zone standards for lot width and lot depth may be reduced by up to 10%.
- b. The minimum lot frontage required on a public street may be reduced by up to 10%.

Response: Criteria do not apply. No adjustments to the lot design standards are proposed

**B. Variances**

1. Requests to vary any standards beyond the adjustments allowed in Subsections 19.402.14.A or B shall be subject to the review process and approval criteria for variances established in Section 19.911.

2. In granting any variance request related to Section 19.402, the Planning Commission may impose such conditions as are deemed necessary to minimize adverse impacts that may result from granting the variance. Examples of such conditions include, but are not limited to, maintaining a minimum width of the vegetated corridor alongside a primary protected water feature and limiting the amount of WQR for which the adjacent vegetated corridor width can be reduced.

Response: No variances to standards of Subsections 19.402.14.A or B.

**C. Residential Cluster Development**

For residential proposals, development may be clustered so that land can be developed at allowed densities while avoiding or minimizing impacts to WQRs or HCAs. The intent of this section is to encourage creative and flexible site design that enables the allowable density to be transferred elsewhere on a site to protect environmentally sensitive areas and preserve open space and natural features. A residential cluster development may be permitted in any residential or mixed use zoning district, subject to Type III review and approval by the Planning Commission. A cluster development proposal may be considered in conjunction with a proposal for land division or property line adjustment as provided in Subsection 19.402.13.

Response: A residential cluster development is being proposed to minimize impacts to the WQR and HCA.

**1. Calculation of Permitted Number of Dwelling Units**

a. The maximum number of dwelling units proposed for a residential cluster development shall not exceed the number of dwelling units otherwise permitted for the residential zoning district in which the parcel is located. The number of units allowed on a parent lot may be transferred to one or more newly created lots or parcels on the site. The cumulative density for all lots or parcels shall not exceed the density allowed for the parent lot.

Response: The density allowed for the gross property area would be 25-32 dwelling units based on the ratio of 7-8.7 dwelling units per the base R-5 zone. The proposed density of 12 dwellings is 3.28 dwellings per gross acre.

**b. The number of permitted dwelling units on a site shall be calculated in the following manner:**

(1) Measure the gross area of the proposed cluster development site in acres and tenths of an acre.

Response: Gross site area is 3.66 acres per assessor's records.

(2) From the gross area, subtract the area of public streets, other publicly dedicated improvements, and common open space (whether or not it is conveyed pursuant to Subsection 19.402.14.C.2.c), measured in acres and tenths of an acre. The remainder shall be the net buildable area.

Response: Common area consisting of HCA/ WQR and area to the west of the slough is 1.58 acres, leaving 2.08 acres of net buildable area.

(3) Convert the net buildable area from acres to square feet, using the equivalency of 43,560 sq ft = 1 acre.

Response: Net buildable area is 90,605 sq. ft.

(4) Divide the net buildable area by the smallest minimum lot size (in square feet) per unit for a dwelling unit permitted in the zoning district. This figure shall be rounded to the nearest lower number to establish the maximum number of dwelling units permitted in the cluster development.

Response: 90,605 / 5000 = 18.12 dwelling units maximum. 12 units are proposed.

**2. Development Standards**

a. All principal and accessory uses authorized in the underlying zoning district(s) shall be allowed in the cluster development. In addition, single-family attached dwellings, multifamily dwellings, and townhouses may be permitted for a cluster development located in a residential zoning district that does not otherwise allow attached dwelling units.

Response: Single family detached homes are proposed as allowed in the underlying R-5 zone.

b. Maximum lot coverage, building height, and off-street parking requirements for the applicable zoning district shall apply to the cluster development. Maximum lot coverage, floor area ratios, and off-street parking requirements shall be applied to the entire site rather than to any individual lot.

[Continued Next Page]

REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES GILLIS PROPERTIES LLC 5965 WEST A STREET WEST LINN, OR 97068	
MITIGATION PLAN AND ALTERNATIVES ANALYSIS FOR HCA AND WQR IMPACTS PER TITLE 19, MILWAUKIE MUNICIPAL CODE	
environmental technology consultants	PO Box 821185 Vancouver, WA 98682 360-696-4403
DATE	Apr 30, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M4.1



Response: The maximum lot coverage and off street parking for the R-5 zone will be met with the proposed development. The height limit for the home on SE 19th will comply with the underlying zone. All other new homes proposed meet the more restrictive 35' requirement of the Willamette Greenway overlay.

- c. The following provisions shall apply to any residential cluster development, regardless of the general requirements of the applicable residential zoning district:
  - (1) The adjustments allowed by Subsection 19.402.14.A shall be available for cluster development proposals.

Response: No adjustments are being requested per Subsection 19.402.14.A.

- (2) Minimum lot width and lot depth standards shall not apply.

Response: No subdivision is proposed. The overall site exceeds the lot width and depth of the underlying zone.

- (3) A minimum separation of 10 ft shall be provided between all principal buildings and structures.

Response: A minimum of 10' separation is proposed between all buildings on the site.

- (4) A minimum yard or common open space shall be provided, with a minimum depth of 25 ft, as measured from all public streets and from the side and rear lot lines of the entire cluster development.

Response: A minimum 25' yard is proposed from the front, rear and north side yards. A variance is being sought to allow a minimum side setback to the south. This is being sought to match the existing home and since the unimproved right of way along this frontage will likely remain undeveloped due to the wetland area within it. This unimproved 60' right of way provides a buffer that meets the intent of this criteria.

- (5) Each lot shall provide at least 12 ft of frontage on a public street.

Response: The consolidated lot will have 240' of frontage on SE 19th St. Criteria is met.

- (6) More than 1 principal building or structure may be placed on a lot.

Response: Twelve detached single family homes are proposed on a common building site with this application.

- (7) No less than 25% of the site shall be conveyed as common open space.

Response: 1.58 acres (43% of gross site area) is proposed to be conveyed as common open space. The instrument of this conveyance will be as acceptable to the City.

- (8) No less than 50% of the designated natural resources on the site shall be included in calculating the common open space.

Response: 94% of the designated natural resource area on the site is being calculated as common open space. The 4,094 sq. ft. created by the delineated wetland to the south side of the property is not proposed as common open space.

3. Site Plan Requirements

The preliminary and final site plans for a residential cluster development shall include the following information, in addition to the items listed on the City's Site Plan Requirements:

- a. The maximum number and type of dwelling units proposed.
- b. The areas of the site on which the dwelling units are to be constructed or are currently located and their size. This may take the form of the footprint of the dwelling unit or a building envelope showing the general area in which the dwelling unit is to be located.
- c. The calculations for the permitted number of dwelling units, derived pursuant to Subsection 19.402.14.C.2.
- d. The areas of the site on which other principal and accessory uses are proposed to be located and their size.
- e. The areas of the site designated for common open space and their size.

Response: Information from this subsection has been included on the Site Plan.

4. Approval Criteria

- a. Proposals for residential cluster development shall demonstrate compliance with the following criteria:
  - (1) The site plan satisfies the requirements of Subsections 19.402.14.C.1 and 2.

Response: The proposed Site Plan satisfies the requirement of Subsections 19.402.14.C.1 and .2.

- (2) Buildings and structures are adequately grouped so that at least 25% of the total area of the site is set aside as common open space. To the greatest degree practicable, common open space shall be designated as a single tract and not divided into unconnected small parcels located in various parts of the development. Common open space shall be conveyed as allowed by Subsection 19.402.13.J.

Response: A single common space tract is proposed with instrument of conveyance acceptable to the City, ie. Deed restriction, public ownership, common tract or easement.

- (3) Individual lots, buildings, structures, streets, and parking areas are situated to minimize the alteration of natural features, natural vegetation, and topography.

Response: Buildings are proposed to be clustered to minimize impact and alteration of natural features and topography.

- (4) Impacts to WQRs and HCAs are avoided or minimized to the greatest degree practicable.

Response: The proposed cluster development is consistent with the purpose of Subsection 19.402.1. as explained above in that section.

- (5) The cluster development advances the purposes established in Subsection 19.402.1.
  - b. The Planning Commission may apply such conditions or stipulations to its approval as may be required to maintain harmony with neighboring uses and promote the objectives and purposes of the Comprehensive Plan and the Zoning and Land Division Ordinances.
  - c. If the Planning Commission finds that the criteria in Subsection 19.402.14.C.4.a are met, it shall approve the residential cluster development, subject to any conditions established pursuant to Subsection 19.402.14.C.4.b.

## Maps and Tables following this page

- M5 Proposed development plan with HCA, WQR, and Wetlands shown
- M6 HCA mapping per City of Milwaukie
- M7 Rejected Alternative #2
- M8 Rejected Alternative #3
- M9 Recommended Mitigation Plant List

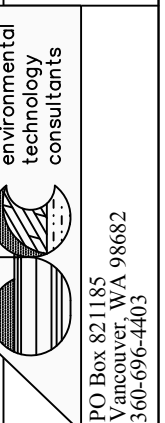
L1 This is a sheet prepared by Darrell Mulch. It describes the plants to be installed in the “Mainland” mitigation area.

Appendix 1 - Mitigation Monitoring and Maintenance Plan

REVISIONS	

MILWAUKIE RIVERFRONT CUSTOM HOMES  
GILLIS PROPERTIES LLC  
5965 WEST A STREET  
WEST LINN, OR 97068

MITIGATION PLAN AND ALTERNATIVES ANALYSIS FOR HCA AND WQR IMPACTS PER TITLE 19, MILWAUKIE MUNICIPAL CODE



environmental technology consultants
PO Box 821185 Vancouver, WA 98682 360-696-4403
DATE Apr 30, 2019
SCALE NOTED
DRAWN JHM
JOB 94-02
SHEET M4.2

# HCA AND WQR PERMANENT IMPACTS 29,062 SQFT.

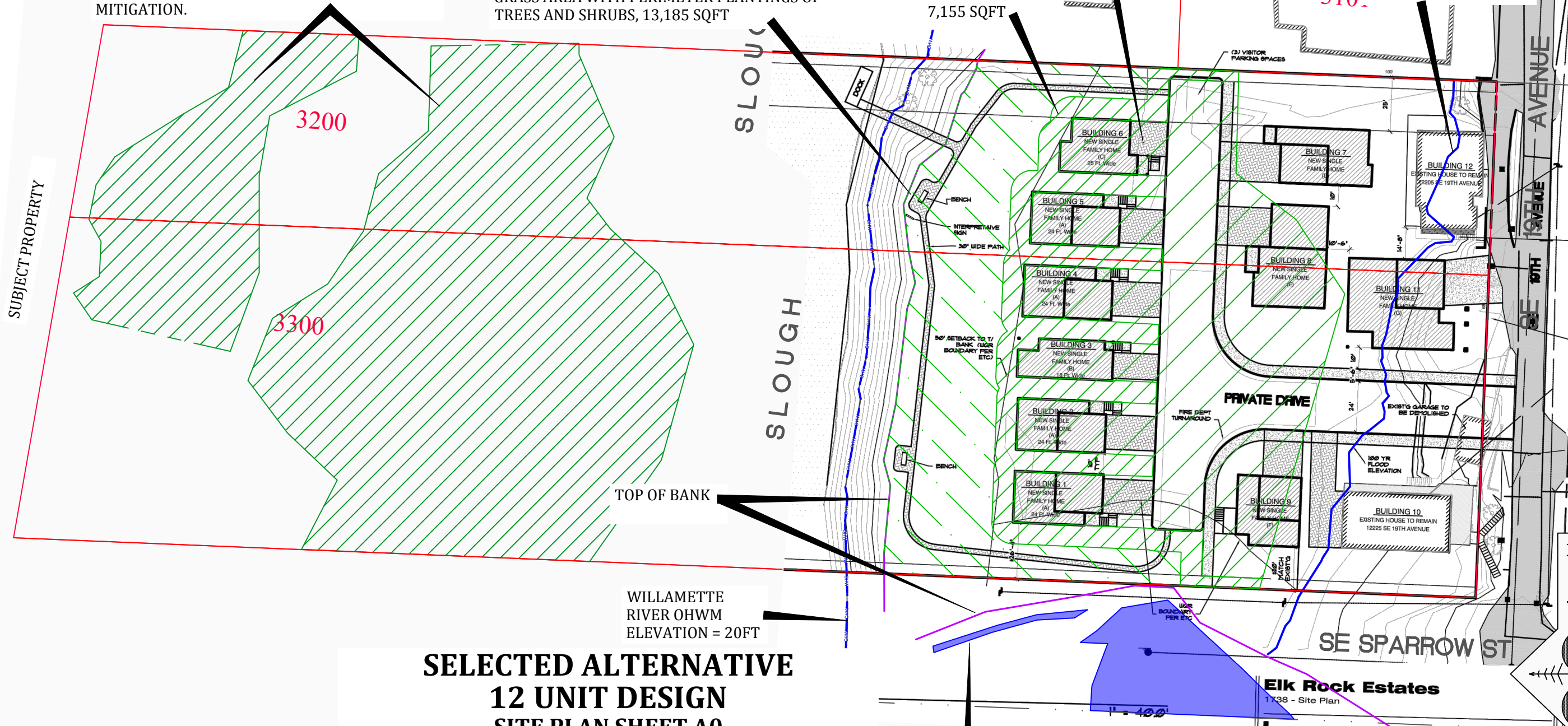
INCLUDES A 10' OFFSET FROM BUILDING FOOTPRINTS. HCA IMPACTS ENTIRELY OVERLAP WQR IMPACTS, AND SO THEY ARE COMBINED. 29,062 SQFT

## MAINLAND MITIGATION AREA

HCA MITIGATION AREA TO BE MAINTAIN AS GRASS AREA WITH PERIMETER PLANTINGS OF TREES AND SHRUBS, 13,185 SQFT

## ISLAND MITIGATION AREA

MAXIMUM AREAS ON ISLAND THAT MAY BE SUITABLE FOR HCA MITIGATION, AS ESTIMATED FROM AN AERIAL PHOTO. A SURVEY OF THESE AREAS IS NEEDED TO DETERMINE SUITABILITY. 41,935 SQFT. ONLY NON WETLAND AREAS ABOVE OHWM CAN BE USED FOR HCA MITIGATION.



## SELECTED ALTERNATIVE 12 UNIT DESIGN SITE PLAN SHEET A0

PROVIDES 10 NEW SINGLE FAMILY HOMES, 2 EXISTING HOMES FOR A TOTAL OF 12 HOUSING UNITS. ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

WETLAND "B" 188 SQFT

WETLAND "A" 3175 SQFT  
CONTINUES SOUTH PAST STUDY AREA BOUNDARY

REVISIONS	

MILWAUKIE RIVERFRONT CUSTOM HOMES GILLIS PROPERTIES LLC 5965 WEST A STREET WEST LINN, OR 97068
<b>SELECTED ALTERNATIVE</b> SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS
environmental technology consultants PO Box 821185 Vancouver, WA 98682 360-696-4403
<b>Elk Rock Estates</b> 1738 - Site Plan ISELIN ARCHITECTS, P.C. 167 7th Street, Oregon City, Oregon 97045 360.656.1942 - 360.656.0658 - www.iselinarchitects.com
DATE Apr 30, 2019 SCALE NOTED DRAWN JHM JOB 94-02 SHEET <b>M5</b>





SUBJECT PROPERTY

### ISLAND MITIGATION AREA

MAXIMUM AREAS ON ISLAND THAT MAY BE SUITABLE FOR HCA MITIGATION, AS ESTIMATED FROM AN AERIAL PHOTO. A SURVEY OF THESE AREAS IS NEEDED TO DETERMINE SUITABILITY. 41,935 SQFT. ONLY NON WETLAND AREAS ABOVE OHWM CAN BE USED FOR HCA MITIGATION.

### HCA AND WQR PERMANENT IMPACTS 29,062 SQFT.

INCLUDES A 10' OFFSET FROM BUILDING FOOTPRINTS. HCA IMPACTS ENTIRELY OVERLAP WQR IMPACTS, AND SO THEY ARE COMBINED. 29,062 SQFT

### MAINLAND MITIGATION AREA

HCA MITIGATION AREA TO BE MAINTAIN AS GRASS AREA WITH PERIMETER PLANTINGS OF TREES AND SHRUBS, 13,185 SQFT

HCA BUILDING & STREET IMPACT 21,907 SQFT

HCA 10' OFFSET FROM BUILDINGS 7,155 SQFT

100' COMPLIANCE LINE

WREN STREET

FEMA FLOOD ELEVATION, 36.4 FT  
310.

SE 19TH AVENUE

SLOUGH

SLOUGH

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

SE SPARROW ST

GREEN REPRESENTS VEGETATED CORRIDOR PER HCA MAPPING

**MILWAUKIE HCA MAP**  
ORANGE REPRESENTS AREAS DEFINED AS HCA BY TITLE 19

WETLAND "B" 188 SQFT

WETLAND "A" 3,175 SQFT WITHIN STUDY AREA. CONTINUES SOUTH PAST STUDY AREA BOUNDARY

REVISIONS

MILWAUKIE RIVERFRONT CUSTOM HOMES  
GILLIS PROPERTIES LLC  
5965 WEST A STREET  
WEST LINN, OR 97068

CITY OF MILWAUKIE HCA MAP WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

environmental  
technology  
consultants



PO Box 821185  
Vancouver, WA 98682  
360-696-4403

DATE	Apr 30, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M6



**ISLAND MITIGATION AREA**

MAXIMUM AREAS ON ISLAND THAT MAY BE SUITABLE FOR HCA MITIGATION, AS ESTIMATED FROM AN AERIAL PHOTO. A SURVEY OF THESE AREAS IS NEEDED TO DETERMINE SUITABILITY. 41,935 SQFT. ONLY NON WETLAND AREAS ABOVE OHWM CAN BE USED FOR HCA MITIGATION.

**REJECTED ALTERNATIVE #2  
23 UNIT DESIGN**

ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

HCA BOUNDARY PER TITLE 19 MAPPING

FEMA FLOOD ELEVATION, 36.4 FT  
310'

SUBJECT PROPERTY

3200

3300

650'

SLOUGH

20'

240'

SE 19TH

**HCA AND WQR PERMANENT IMPACTS, ABOUT 57,213 SQFT.**

INCLUDES HCA & WQR IMPACTS OF:

44,029 SQFT ON THE SUBJECT LOTS

13,184 SQFT IN THE SPARROW STREET ROW

ALSO INCLUDES

3,363 SQFT FILL TO WETLANDS IN THE SPARROW STREET ROW

THIS SCENARIO ALSO MAY FILL A SMALL AREA TO THE OHWM OF THE WILLAMETTE RIVER. IT IS UNLIKELY THAT ENOUGH AREA ON THE ISLAND WILL BE ABLE TO SUPPORT THE MITIGATION REQUIREMENTS OF THIS SCENARIO.

THIS SCENARIO ALSO PRODUCES MORE IMPACTS TO VIEWS.

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

SPARROW ST (AKA 5TH ST)

WETLAND "B"  
188 SQFT

WETLAND "A" 3,175 SQFT  
WITHIN STUDY AREA.  
CONTINUES SOUTH PAST  
STUDY AREA BOUNDARY

REVISIONS

MILWAUKIE RIVERFRONT CUSTOM HOMES  
GILLIS PROPERTIES LLC  
5965 WEST A STREET  
WEST LINN, OR 97068

**REJECTED ALTERNATIVE 2**  
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

environmental  
technology  
consultants



PO Box 821185  
Vancouver, WA 98682  
360-696-4403

DATE Apr 30, 2019

SCALE NOTED

DRAWN JHM

JOB 94-02

SHEET

**M7**

**ISLAND MITIGATION AREA**

MAXIMUM AREAS ON ISLAND THAT MAY BE SUITABLE FOR HCA MITIGATION, AS ESTIMATED FROM AN AERIAL PHOTO. A SURVEY OF THESE AREAS IS NEEDED TO DETERMINE SUITABILITY. 41,935 SQFT. ONLY NON WETLAND AREAS ABOVE OHWM CAN BE USED FOR HCA MITIGATION.

**REJECTED ALTERNATIVE #3  
16 UNIT DESIGN**

PROVIDES 12 SINGLE FAMILY, 2 DUPLEX UNITS, 2 EXISTING HOMES FOR A TOTAL OF 16 HOUSING UNITS ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

HCA BOUNDARY PER TITLE 19 MAPPING

WREN STREET

FEMA FLOOD ELEVATION, 36.4 FT  
310

SUBJECT PROPERTY

3200

3300

**HCA AND WQR PERMANENT IMPACTS, ABOUT 31,053 SQFT.**

INCLUDES HCA & WQR IMPACTS OF:

31,053 SQFT ON THE SUBJECT LOTS

0 SQFT IN THE SPARROW STREET ROW

ALSO INCLUDES

0 SQFT FILL TO WETLANDS IN THE SPARROW STREET ROW

THIS SCENARIO ALSO MAY FILL A SMALL AREA TO THE OHWM OF THE WILLAMETTE RIVER. IT IS UNLIKELY THAT ENOUGH AREA ON THE ISLAND WILL BE ABLE TO SUPPORT THE MITIGATION REQUIREMENTS OF THIS SCENARIO.

THIS SCENARIO ALSO PRODUCES MORE IMPACTS TO VIEWS.

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

GREEN HATCH. 50FT WQR ZONE

WETLAND "B" 188 SQFT

WETLAND "A" 3,175 SQFT WITHIN STUDY AREA. CONTINUES SOUTH PAST STUDY AREA BOUNDARY

REVISIONS

MILWAUKIE RIVERFRONT CUSTOM HOMES  
GILLIS PROPERTIES LLC  
5965 WEST A STREET  
WEST LINN, OR 97068

**REJECTED ALTERNATIVE 3**  
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

environmental technology consultants

PO Box 821185  
Vancouver, WA 98682  
360-696-4403

DATE Apr 30, 2019

SCALE NOTED

DRAWN JHM

JOB 94-02

SHEET

**M7**

# RECOMMENDED MITIGATION PLANT LIST.

SUBSTITUTIONS ALLOWED WITHIN THIS LIST DEPENDING ON AVAILABILITY PROVIDING THE SPECIES DIVERSITY REQUIREMENTS OF TITLE 19 CONTINUE TO BE MET.

**Table 1: Native Tree List**

Common Name	Botanical Name									Height (ft)	Number
		Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Some Shade	Shady		
Vine Maple	Acer circinatum	X	X	X	X	X	X	X	X	25	25
Big Leaf Maple	Acer macrophyllum	X	X	X	X	X	X	X	3	100	
Red Alder	Alnus rubra	X	X	X	X	X	X	X	2	120	50
Apple Serviceberry	Amelanchier grandiflora	X	X	X	X	X	X	X		25	
Oregon Ash	Fraxinus latifolia	X	X	X	X	X	X	X		70	50
Western Larch	Larix occidentalis	X	X	X	X	X	X	X		135	
Pacific Crabapple	Malus fusca	X	X	X	X	X	X	X		40	
Quaking Aspen	Populus tremuloides	X	X	X	X	X	X	X	3	82	
Black Cottonwood	Populus trichocarpa	X	X	X	X	X	X	X	2	160	25
Bitter Cherry	Prunus emarginata	X	X	X	X	X	X	X		30	
Oregon White Oak	Quercus garryana	X	X	X	X	X	X	X	3	75	25
Cascara	Rhamnus purshiana	X	X	X	X	X	X	X		30	50
Pacific Willow	Salix lasiandra	X	X	X	X	X	X	X	0	40	25
Scouler's Willow	Salix scouleriana	X	X	X	X	X	X	X	0	30	25
Grand Fir	Abies grandis	X	X	X	X	X	X	X	2	250	
Noble Fir	Abies procera	X	X	X	X	X	X	X	0	230	
Alaska Yellow Cedar	Callitropis nootkatensis	X	X	X	X	X	X	X	0	120	
Incense cedar	Calocedrus decurrens	X	X	X	X	X	X	X	2	120	
Port Orford cedar	Chamaecyparis lawsoniana	X	X	X	X	X	X	X		200	
Sitka Spruce	Picea sitchensis	X	X	X	X	X	X	X	0	200	
Shore Pine	Pinus contorta	X	X	X	X	X	X	X		50	
Ponderosa pine	Pinus ponderosa	X	X	X	X	X	X	X		235	
Douglas Fir	Pseudotsuga menziesii	X	X	X	X	X	X	X	2	250	
Pacific Yew	Taxus brevifolia	X	X	X	X	X	X	X		25	
Western Red Cedar	Thuja plicata	X	X	X	X	X	X	X	1	200	
Western Hemlock	Tsuga heterophylla	X	X	X	X	X	X	X	2	225	16
Myrtlewood Cal laurel	Umbellularia californica	X	X	X	X	X	X	X	2	135	
<b>TOTAL TREES REQUIRED = 291</b>										<b>291</b>	

**Table 2: Native Shrub List**

Common Name	Botanical Name									Height (ft)	Number
		Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Some Shade	Shady		
Serviceberry	Amelanchier alnifolia	X	X	X	X	X	X	X		20	
Red Osier Dogwood	Cornus stolonifera	X	X	X	X	X	X	X		15	400
Beaked Hazelnut	Corylus cornuta	X	X	X	X	X	X	X	2	20	
Oceanspray	Holodiscus discolor	X	X	X	X	X	X	X	1	15	
Twinberry*	Lonicera involucrata	X	X	X	X	X	X	X	1	10	200
Sweetgale	Myrica gale	X	X	X	X	X	X	X		6	200
Indian Plum	Oemlaria cerasiformis	X	X	X	X	X	X	X	3	15	
Mock Orange	Philadelphina lewisii	X	X	X	X	X	X	X	3	9	
Pacific Ninebark	Physocarpus capitatus	X	X	X	X	X	X	X	0	13	200
Rosa species	R. nutkana, R. pisocarpa	X	X	X	X	X	X	X	1	6	
Rhododendron red or w	Rhododendron sp	X	X	X	X	X	X	X	0	20	200
Rhododendron columbi	Western Labrador-Tea	X	X	X	X	X	X	X	7	200	
Golden currant	Ribes aureum	X	X	X	X	X	X	X		10	
Red-flowering Currant	Ribes sanguineum	X	X	X	X	X	X	X	0	6	
Thimbleberry	Rubus parviflorus	X	X	X	X	X	X	X	0	8	
Salmonberry	Rubus spectabilis	X	X	X	X	X	X	X	0	10	
Blue Elderberry	Sambucus cerulea	X	X	X	X	X	X	X	1	15	
Red Elderberry	Sambucus racemosa	X	X	X	X	X	X	X	1	15	
Spirea	Spirea douglasii	X	X	X	X	X	X	X	0	7	
Snowberry	Symphoricarpos albus	X	X	X	X	X	X	X	1	5	
Red Huckleberry	Vaccinium parvifolium	X	X	X	X	X	X	X	3	10	
Alaskan Blueberry	Vaccinium ovalifolium	X	X	X	X	X	X	X	3	10	
American cranberrybus	Viburnum opulus americana	X	X	X	X	X	X	X	2	10	53
Salal	Gaultheria shallon	X	X	X	X	X	X	X	0	5	
Oregon Grape	Mahonia sp.	X	X	X	X	X	X	X	0	6	
Pacific Wax Myrtle	Myrica californica	X	X	X	X	X	X	X		13	
Evergreen Huckleberry	Vaccinium ovatum	X	X	X	X	X	X	X	0	10	
<b>TOTAL SHRUBS REQUIRED = 1,453</b>										<b>1453</b>	

## Custom "Native Pacific Northwest Mix"

This Sunmark mixture is native to the Pacific Northwest and is commonly found inland as far as Central Washington and Oregon. This mix is formulated for bloom period from spring to fall. The species that are lined-out are determined by Clackamas County to be non-native and should not be included in the mix.

Planting Rate = 8 oz./1000 sq.ft X 3,550 SQFT = 2 Pounds

Scientific Name	Common Name	Color
Cheiranthus allionii	Wallflower	Orange
Clarkia amoena	Dwarf Godetia	Pink/White
Clarkia unguiculata	Clarkia	Pink/Lavender
Eschscholzia californica	California Poppy	Yellow/Orange
Gilia capitata	Globe Gilia	Blue
Gilia tricolor	Bird's Eyes	Lavender/White
Layia platyglossa	Tidy-Tips	Yellow/White
Linanthus grandiflorus	Mountain Phlox	White/Lavender
Linum grandiflorum rubrum	Scarlet Flax	Scarlet
Linum perenne lewisii	Blue Flax	Blue
<del>Lobularia maritime</del>	<del>Sweet Alyssum</del>	<del>White</del>
Lupinus densiflorus aureus	Yellow Lupine	Yellow
Lupinus polyphyllis	Many Leaved Lupine	Mixed
Nemophila maculate	Five-Spot	White/Purple
Nemophila menziesii	Baby Blue-Eyes	Blue
Papaver rhoeas	Corn Poppy	White/Pink/Red
Sisyrinchium bellum	Blue-Eyed Grass	Purple

## SEED MIX

ALL MITIGATION AREAS WHERE BARE GROUND IS EXPOSED FOLLOWING REMOVAL OF INVASIVE PLANTS SHALL BE SEEDED WITH THE NATIVE PACIFIC NW MIX, OR A NATIVE GRASS MIX DEPENDING ON THE INSTRUCTIONS OF SHEET L1.

### Key to Deer Herbivory Rating. Certain trees and shrubs may require fencing to reduce herbivory by deer.

3 = Yes, deer may browse heavily on this plant, protection probably required.

2 = Moderate deer browsing but plant will likely survive

1 = Browsing not likely to be a problems unless deer are really hungry

0 = Deer do not browse on this plant

Blank = not known

REVISIONS

MILWAULKIE RIVERFRONT CUSTOM HOMES  
GILLIS PROPERTIES LLC  
5965 WEST A STREET  
WEST LINN, OR 97068

RECOMMENDED PLANTS TO BE INSTALLED IN MITIGATION AREAS TO MEET MITIGATION REQUIREMENTS OF TITLE 19

environmental  
technology  
consultants



PO Box 821185  
Vancouver, WA 98682  
360-696-4403

DATE Apr 30, 2019

SCALE NOTED

DRAWN JHM

JOB 94-02

SHEET

**M9**



## APPENDIX 1

### MITIGATION MONITORING AND MAINTENANCE PLAN

**IRRIGATION:** Success of the trees and shrubs planted from bare root and potted stock will be much greater if the plants are irrigated in their first three summers. ETC recommends using drip irrigation with one drip emitter supplied to each plant. We prefer the 1/2 gallon/hour emitter as they provide the greatest control and most plants that can be supported by a single zone. A ordinary garden hose should supply about 1,440 gallons/hour and so in theory could supply about 2,800 emitters. ETC recommends not putting more than 500 emitters on a single zone as leaks, line loss, and variations in the emitters will reduce the system's capacity. A timer should be used to supply water 2 to 6 times per day, with a total delivery of about 1 quart of water per plant per day initially, and increased if necessary. 1 quart is 30 minutes using 1/2 gallon/hour emitters. The actual amount of water delivered by drip emitters varies considerably with pressure and manufacturer, so some calibration will be necessary after the system is installed.

ETC does not recommend sprinklers for trees and shrubs, though seed may need some supplemental irrigation by sprinklers in the first year if the spring is abnormally dry.

Irrigation in normal years should be provided from mid June through September, and adjusted as necessary for abnormally dry or wet weather. Irrigation for the first three growing seasons is typically recommended for mitigation plantings.

The mitigation area described in Figures M5 and M9 will be monitored for a period of 5 years following the installation of the prescribed plants. Yearly monitoring reports will be authored and submitted to the City of Oregon City Planning Director on the forms provided in Appendix D.

**WEED CONTROL:** Control of invasive weeds, Blackberry in particular, is both required by the MMC and required to ensure the establishment and growth of the mitigation plantings. ETC recommends a minimum of two or more patrols per year to remove invasive vegetation. ETC recommends the careful application of herbicides if allowed by the City of Milwaukie. In our experience manual efforts to remove invasives is ineffective and prohibitively expensive.

## APPENDIX D) Annual Mitigation Monitoring Report

### For Elk Rock Estates

NOTE: Plant species shown in the tables below may need to be adjusted after a final mitigation plant list is determined.

1) Date Monitoring Survey Conducted \_\_\_\_\_ (Must be during the growing season between May 1 and September 30.

2) This Report is for (Circle 1):  
Year 1 - 2019 As-built  
Year 2 - 2020  
Year 3 - 2021  
Year 4 - 2022  
Year 5 - 2023 Final Report

3) Name of and affiliation of person conducting this survey:

Name	Company	phone or email
------	---------	----------------

4) General Observations and Recommendations: \_\_\_\_\_

---

---

---

5) Notes on Invasive Species and Removal Efforts Performed: \_\_\_\_\_

---

---

---

Invasive Species Observed and Area Covered by Invasive Species:

Species 1 \_\_\_\_\_ % Cover \_\_\_\_\_

Species 2 \_\_\_\_\_ % Cover \_\_\_\_\_

Species 3 \_\_\_\_\_ % Cover \_\_\_\_\_

**MITIGATION MONITORING REPORT PAGE 2**

6) Notes on Irrigation Provided, and Recommendations on Future Irrigation: \_\_\_\_\_

---

---

---

7) List deceased plants and replacements:

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

Species \_\_\_\_\_ Replaced? Y or N date \_\_\_\_\_

8) The minimum survival criteria for trees and shrubs is 80%. Did the mitigation meet the minimum survival criteria? Describe what measures will be taken to improve survival in the next monitoring period.

---

---

---

---

9) Attach photographs taken from the photo stations shown in Figure 4.

**NOTE:** Permittees may use these paper forms or electronic copies of the report and spreadsheets.



**MITIGATION MONITORING REPORT PAGE 3**

<b>Record numbers of live plants for each monitoring year. Natural recruits of new native plants count toward the total survival. Compute % survival for totals trees and total shrubs only.</b>						
<b>Native Trees and Shrubs, recommended and alternates.</b>	<b>Number Planted</b>	<b>AS-BUILT 2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>Trees (291 required)</b>						
Acer macrophyllum - Big-Leaf Maple						
Cornus nuttallii - Western Flowering Dogwood						
Populus tremuloides - Quaking Aspen						
Prunus emarginata - Bitter Cherry						
Quercus garryana - Oregon White Oak						
Rhamnus purshiana - Cascara						
<b>Shrubs (1,453 required)</b>						
Amelanchier alnifolia - Western Serviceberry						
Berberis aquifolium - Tall Oregon Grape						
Corylus corruta - Hazelnut						
Holodiscus discolor - Ocean Spray						
Rhododendron macrophyllum - Western Rhododendron						
Ribes sanguineum - Red Flowering Currant						
Symphoricarpos albus - Common Snowberry						
Viburnum ellipticum - Oval-Leafed Viburnum						
<b>TOTAL NUMBER OF TREES + SHRUBS SURVIVING.</b>						
<b>PERCENT SURVIVING (DIVIDE TOTAL BY 1,744) May be more than 100%</b>						