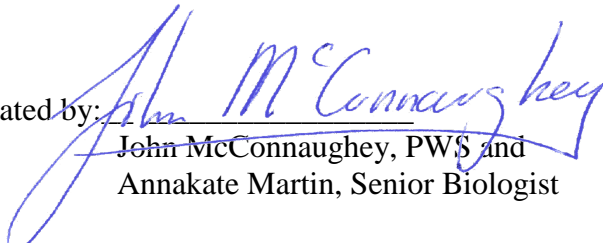


HCA MITIGATION PROPOSAL AND ALTERNATIVES ANALYSIS
FOR ELK ROCK ESTATES
City of Milwaukie ID #: 18-004PA



Evaluated by: 
John McConnaughey, PWS and
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ETC Job EVA18007

June 22, 2019

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MITIGATION PROPOSAL AND ALTERNATIVE ANALYSIS

For Elk Rock Estates

City of Milwaukie ID #: 18-004PA

Matthew Gillis

REVISED: June 17, 2019. This revision responds to comments from the city and is modified for changes with the revised site plan dated June 14, 2019.

There is 38,500 SQFT of HCA that will be impacted by the development. A proportion of the island that is a stone's throw across the slough from the development site, and part of the applicant's lots, will host the majority of the mitigation.

Additional areas adjacent to the development, basically between the walking path and the Top-of-Bank, (4,959 SQFT, and between the walking path and the storm water pond, (2,023 SQFT), could provide up to 6,982 SQFT of HCA mitigation area, for a total of 48,690 SQFT that is potentially available to offset the 38,500 SQFT of impact. Thus it is feasible to mitigate the entire HCA disturbance onsite, with an estimated 10,190 sqft to spare.

LIDAR data was used to estimate the area above OHWM (20ft elevation). The data was supplied by Harper, Houf, Peterson Righellis Inc. The LIDAR data has checked out to be within ODOT protocols.

A geotechnical investigation was conducted by Daniel M. Redmond, P.E., G.E. of Redmond Geotechnical Services, LLC. It showed the island area above 20ft elevation has a sandy loam soil from 1.5ft to more than 3ft deep. Other areas below the 20ft contour were not investigated. Please see Appendix 5.

A wetland determination survey was conducted by Annakate Martin, Senior Biologist, Environmental Technology Consultants. This was a wetland determination only, not to be confused with a wetland delineation. She concluded that the areas above the 20ft elevation contour were upland. Ms. Martin also conducted a vegetation survey and found the island infested with blackberry and Tree-of-Heaven, along with a smattering of native species. Other areas below the 20ft contour were not investigated. Please see Appendix 4.

The vegetation, soil, and wetland determination surveys are presented as appendices to this report.

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:

I. 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 a “permanent disturbance”. The plan does not show any temporary disturbances as discussed below. The mitigation area east of TOB will now be planted with grass and fenced in for recreational use.

Some of this area, the 5,134 SQFT discussed above, potentially could be replanted with native species and satisfying Title 19 MMC. In this proposal that 5,134 will be planted with native species, but maintained as a landscape area, and not as an HCA mitigation area.

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 and in the fenced in grass area behind the residences. 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 plan includes 38,500 SQFT of disturbed HCA areas per the engineer's estimate. The area of the Top-of-Bank of the slough will have horticultural grass and potentially Red Flowering Currant or a similar shrub that could be part of the mitigation area. The client would like to plant Vine Maple and Snowberry on the property line along the Sparrow Street Row to remove the invasive blackberry and degraded habitat.

The permanently disturbed area will be mitigated as follows:

38,500 SQFT permanent disturbed HCA area

38,500 SQFT mitigation area needed on the island, with 41,935 SQFT available that are above ordinary high water and non-wetland.

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.

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 Milwaukee Native Plant List. Revegetation shall occur during the next planting season following the site disturbance.

Response: A native grass seed mix (recommend “Disturbed Ground/Late Seed” be used) will be used in some areas of bare ground that will not be planted with horticultural lawn grasses. 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.9. 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 land use 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.

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 19.402.11.C and the standards established in Subsection 19.402.11.B.

Subsection 19.402.11.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 19.402.1, 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 19.402.11.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.

Table 19.402.11.D.2.a Tree Replacement	
Size of Tree to be Removed (inches in diameter)	Number of Trees and Shrubs to be Planted
6 to 12	2 trees and 3 shrubs
13 to 18	3 trees and 6 shrubs
19 to 24	5 trees and 12 shrubs
25 to 30	7 trees and 18 shrubs
over 30	10 trees and 30 shrubs

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 19.402.11.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.

The disturbed HCA area, including buildings, roads, stormwater swale, and flood elevation mitigation areas is 38,500 SQFT

$$38,500 / 500 \times 5 \text{ Trees} = 385 \text{ Trees}$$

$$38,500 / 500 \times 25 \text{ Shrubs} = 1,925 \text{ Shrubs}$$

c. Adjustments to HCA Mitigation Requirements

Proposals to vary the number or size of trees and shrubs required as mitigation in Subsection 19.402.11.D.2 shall be subject to the Type II review process and the requirements of Subsection 19.402.12.C.2.

Response: No variance from subsection 19.402.11.D.2 is requested.

19.402.12 General Discretionary Review

6. 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 meet flood plain and storm water requirements, an additional 16,543 SQFT of area will be dug down up to 5 feet, but replanted with native species per stormwater and HCA requirements. 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 19.402.11.C for WQRs and Subsection 19.402.11.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 native seed mix, trees and shrubs installed per section 19.402.1.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.

This island mitigation area is described in more detail in appendixes 4 and 5.

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 repair to an existing 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.

19.402.12.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 19.402.11.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. The plant list in Appendix 3 is actually adapted from a native plant list from Clark County Washington, however that list too is derived from the Portland native plant list as Clark County uses the Portland list.

(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.

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 M1), 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.

Three alternative designs, (Figures M3, M4 and M5) are presented here, both providing more housing units, but creating greater impacts to the resource. M3 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.

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 following this page

- M1 Proposed development plan with HCA, WQR, and Wetlands shown
- M2 HCA mapping per City of Milwaukie
- M3 Rejected Alternative #2
- M4 Rejected Alternative #3
- M5 Rejected Alternative #4
- M6 Aerial Photo of the Site

APPENDICES:

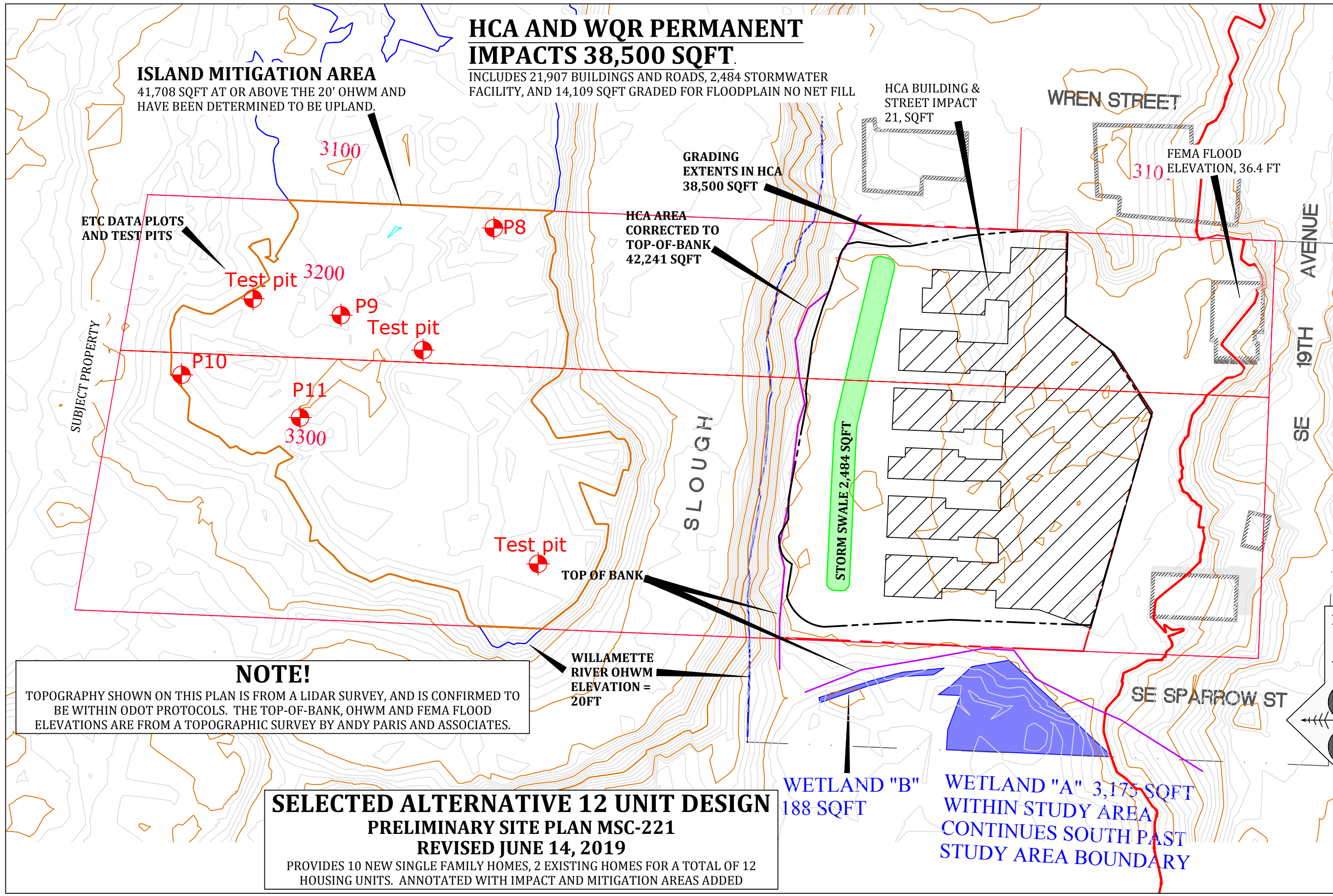
- Appendix 1 - Mitigation Monitoring and Maintenance Plan
- Appendix 2 - Annual Mitigation Monitoring Report Template
- Appendix 3 - Planting Plan
- Appendix 4 - Mitigation Area Current Conditions and Suitability
- Appendix 5 - Geotechnical Investigation of the Proposed Mitigation Area

HCA AND WQR PERMANENT IMPACTS 38,500 SQFT.

INCLUDES 21,907 BUILDINGS AND ROADS, 2,484 STORMWATER FACILITY, AND 14,109 SQFT GRADED FOR FLOODPLAIN NO NET FILL

ISLAND MITIGATION AREA

41,708 SQFT AT OR ABOVE THE 20' OHWM AND HAVE BEEN DETERMINED TO BE UPLAND.



GRADING EXTENTS IN HCA 38,500 SQFT

HCA AREA CORRECTED TO TOP-OF-BANK 42,241 SQFT

HCA BUILDING & STREET IMPACT 21, SQFT

WREN STREET

FEMA FLOOD ELEVATION, 36.4 FT

ETC DATA PLOTS AND TEST PITS

Test pit 3200

P9 Test pit

P10

P11 3300

Test pit

TOP OF BANK

SLOUGH

STORM SWALE 2,484 SQFT

AVENUE

SE 19TH

SE SPARROW ST

WILLAMETTE RIVER OHWM ELEVATION = 20FT

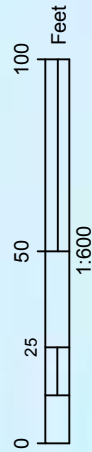
WETLAND "B" 188 SQFT

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

NOTE!
TOPOGRAPHY SHOWN ON THIS PLAN IS FROM A LIDAR SURVEY, AND IS CONFIRMED TO BE WITHIN ODOT PROTOCOLS. THE TOP-OF-BANK, OHWM AND FEMA FLOOD ELEVATIONS ARE FROM A TOPOGRAPHIC SURVEY BY ANDY PARIS AND ASSOCIATES.

SELECTED ALTERNATIVE 12 UNIT DESIGN
PRELIMINARY SITE PLAN MSC-221
REVISED JUNE 14, 2019
PROVIDES 10 NEW SINGLE FAMILY HOMES, 2 EXISTING HOMES FOR A TOTAL OF 12 HOUSING UNITS. ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES	
GILLIS PROPERTIES LLC	
5965 WEST A STREET	
WEST LINN, OR 97068	
SELECTED ALTERNATIVE	
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	Jun 22, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M1



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

ISLAND MITIGATION AREA
APPROXIMATELY 41,708 SQFT

HCA BUILDING & STREET IMPACT 21,907 SQFT

100' COMPLIANCE LINE

WREN STREET

FEMA FLOOD ELEVATION, 36.4 FT

ETC DATA PLOTS AND TEST PITS

HCA AREA ON WEST BAND CORRECTED TO TOP-OF-BANK

GRADING LIMITS

STORM SWALE 2,484 SQFT

AVENUE

19TH

SE

SE

SE SPARROW ST

SLOUGH

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

NOTE!

TOPOGRAPHY SHOWN ON THIS PLAN IS FROM A TOPOGRAPHIC SURVEY BY ANDY PARIS AND ASSOCIATES. THE TOP-OF-BANK, OHWM AND FEMA FLOOD ELEVATIONS ARE BASED ON THAT SURVEY.

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	Jun 22, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M2

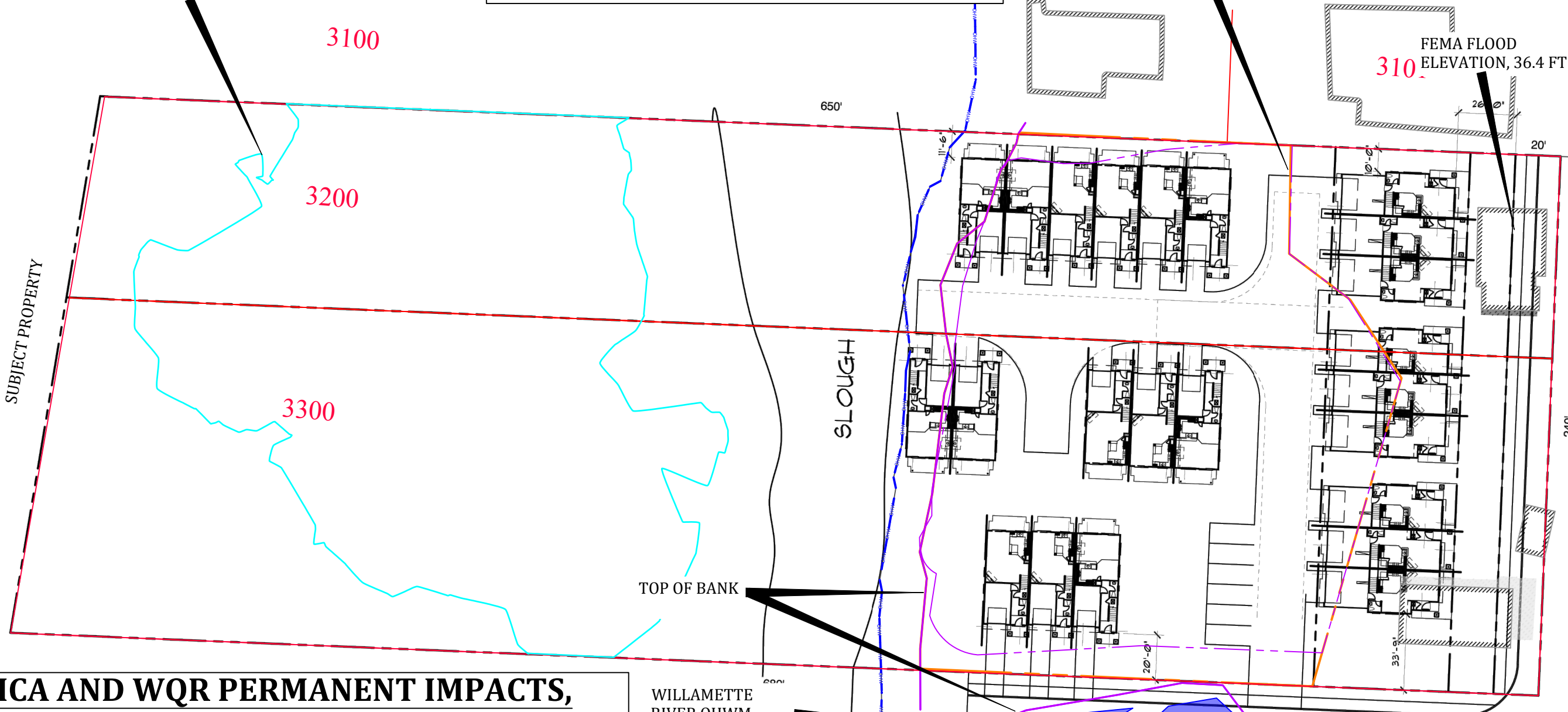
REVISIONS	
MILWAUKIE RIVERFRONT CUSTOM HOMES	
GILLIS PROPERTIES LLC	
5965 WEST A STREET	
WEST LINN, OR 97068	
REJECTED ALTERNATIVE 2	
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS	
environmental technology consultants	
PO Box 821185 Vancouver, WA 98682 360-696-4403	
DATE Jun 22, 2019	
SCALE NOTED	
DRAWN JHM	
JOB 94-02	
SHEET	M3

REJECTED ALTERNATIVE #2
23 UNIT DESIGN
 ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

ISLAND MITIGATION AREA
 41,708 SQFT APPROXIMATELY

HCA BOUNDARY
 PER TITLE 19
 MAPPING

FEMA FLOOD
 ELEVATION, 36.4 FT



**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.

WILLAMETTE
 RIVER OHWM
 ELEVATION = 20FT

WETLAND "B"
 188 SQFT

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

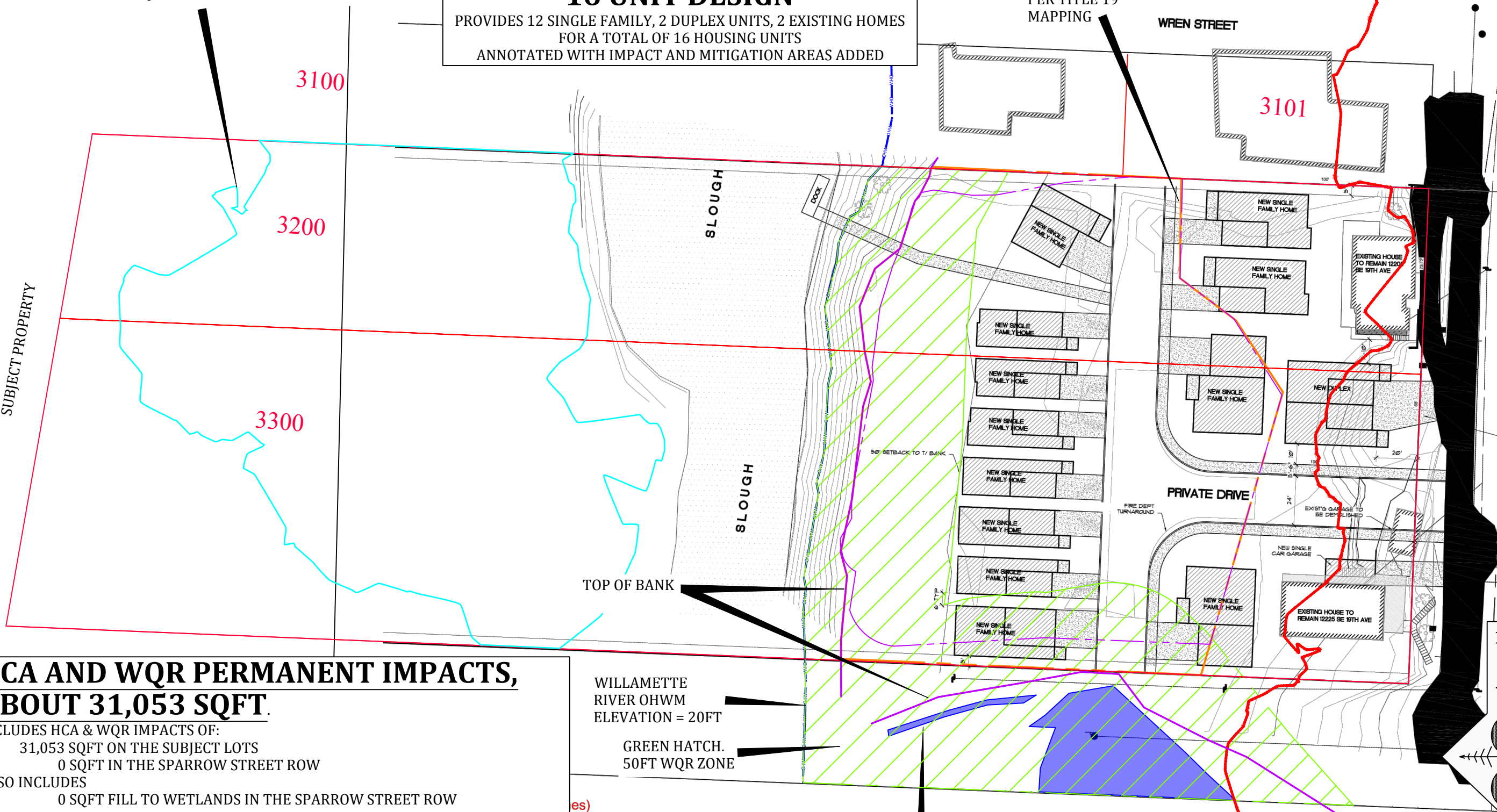
SE 19TH

ISLAND MITIGATION AREA
41,708 SQFT APPROXIMATELY

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

FEMA FLOOD
ELEVATION, 36.4 FT



**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.

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	Jun 22, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02
SHEET	M4

ISLAND MITIGATION AREA
41,708 SQFT APPROXIMATELY

REJECTED ALTERNATIVE #4
18 UNIT DESIGN
PROVIDES 15 SINGLE FAMILY, 1 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

FEMA FLOOD
ELEVATION, 36.4 FT

WREN STREET

3101

3100

3200

3300

SUBJECT PROPERTY

SLOUGH

SLOUGH

TOP OF BANK

Dock

50' SETBACK TO T/BANK

PRIVATE DRIVE

FIRE DEPT TURNAROUND

EXISTING GARAGE TO BE DEMOLISHED

EXISTING HOUSE TO REMAIN 1220 SE 19TH AVE

EXISTING HOUSE TO REMAIN 1225 SE 19TH AVE

**HCA AND WQR PERMANENT IMPACTS,
ABOUT 32,000 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.

WILLAMETTE RIVER OHWM
ELEVATION = 20FT

GREEN HATCH.
50FT WQR ZONE



PRELIMINARY SITE PLAN - 19th ST DEVELOPMENT
ATTACHED ALTERNATIVE

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 Jun 22, 2019
SCALE NOTED
DRAWN JHM
JOB 94-02
SHEET

M5

PROPOSED MITIGATION AREA
 APPROXIMATELY 41,708 SQFT OF AREA AVAILABLE ON THE ISLAND THAT ARE ABOVE OHWM. WETLAND DETERMINATION SURVEY SHOW WETLAND HYDROLOGY IS NOT PRESENT, A SOIL SURVEY FOUND SOILS ARE DEEP ENOUGH TO SUSTAIN MITIGATION PLANTS. MUCH OF THE AREA IS PRESENTLY COVERED BY BLACKBERRY.

3100

3101

SUBJECT PROPERTY

WILLAMETTE RIVER OHWM ELEVATION = 20FT

Test pit 3200

P8

P9

Test pit

P10

P11

3300

Test pit

USE AREA 1 PLANT LIST. 8,022 SQFT APPROX

USE AREA 2 PLANT LIST 33,686 APPROX

PROPOSED HCA DISTURBANCE TO BE MITIGATED

REVISIONS

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

PROPOSED MITIGATION SITE.

environmental technology consultants



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

DATE	Jun 22, 2019
SCALE	NOTED
DRAWN	JHM
JOB	94-02

SHEET
M6

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 irrigation 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 2.

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 2
Annual Mitigation Monitoring Report Template

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

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.						
Native Trees and Shrubs, recommended and alternates.	Number Planted	AS-BUILT 2019	2020	2021	2022	2023
Trees (385 required)						
Shrubs (1,925 required)						
TOTAL NUMBER OF TREES + SHRUBS SURVIVING.						
PERCENT SURVIVING (DIVIDE TOTAL BY 2,310) May be more than 100%						

APPENDIX 3 PLANTING PLAN

Two planting areas, (Area 1 and Area 2) identified on Figure M6, and described further in Appendix 4 will be planted with the following plant list. Substitutions within the list are allowed depending on availability of plants. Taller shrubs (those with a maximum height of 20FT or higher), may be substituted for trees. Consult a landscape professional for species suitability to the site.

Table 1: Native Tree List															
Common Name	Botanical Name	Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Some Shade	Shady	Deer?	Height (ft)	Number	Area 1	Area 2	
Trees	Vine Maple	Acer circinatum	X	X	X	X	X	X	X		25	50	15	35	
	Big Leaf Maple	Acer macrophyllum	X	X	X		X	X		3	100	25	9	16	
	Red Alder	Alnus rubra	X	X	X	X	X	X		2	120	50	10	40	
	Apple Serviceberry	Amelanchier grandiflora	X	X	X		X	X			25		0	0	
	Oregon Ash	Fraxinus latifolia	X		X	X	X	X			70	30	0	30	
	Western Larch	Larix occidentalis	X	X			X	X			135		0	0	
	Pacific Crabapple	Malus fusca	X		X	X	X	X			40	25	10	15	
	Quaking Aspen	Populus tremuloides	X		X	X	X	X		3	82		0	0	
	Black Cottonwood	Populus trichocarpa	X		X	X	X	X		2	160		0	0	
	Bitter Cherry	Prunus emarginata	X	X	X		X	X			30	25	10	15	
	Oregon White Oak	Quercus garryana	X	X	X		X	X		3	75	50	10	40	
	Cascara	Rhamnus purshiana	X	X	X	X	X	X	X		30	25	10	15	
	Pacific Willow	Salix lasiandra	X		X	X	X	X		0	40	25	0	25	
	Scouler's Willow	Salix scouleriana	X	X	X		X	X		0	30	25	10	15	
	Grand Fir	Abies grandis		X	X	X		X	X	X	2	250		0	0
	Noble Fir	Abies procera		X	X	X		X	X	X	0	230		0	0
	Alaska Yellow Cedar	Callitropis nootkatensis		X		X	X	X			0	120		0	0
	Incense cedar	Calocedrus decurrens		X	X	X		X	X		2	120		0	0
	Port Orford cedar	Chamaecyparis lawsoniana		X	X							200		0	0
	Sitka Spruce	Picea sitchensis		X		X	X	X	X		0	200		0	0
	Shore Pine	Pinus contorta		X	X	X	X	X	X			50		0	0
	Ponderosa pine	Pinus ponderosa		X	X			X	X			235		0	0
	Douglas Fir	Pseudotsuga menziesii		X	X	X		X	X		2	250		0	0
	Pacific Yew	Taxus brevifolia		X	X	X		X	X			25		0	0
	Western Red Cedar	Thuja plicata		X		X	X		X	X	1	200	35	0	35
	Western Hemlock	Tsuga heterophylla		X		X			X	X	2	225	20	15	5
	Myrtlewood Cal laurel	Umbellularia californica		X	X	X	X	X	X	X	2	135		0	0
	TOTAL TREES REQUIRED = 385											385	99	286	

Selected Native Plants from the Portland Native Plant List with recommendations developed by the Clark County Extension Service, Watershed Stewards and Clark County Clean Water Program. Gary Bock, December 2005 with additions by ETC

Table 2: Native Shrub List

	Common Name	Botanical Name	Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Shade	Deer?	Height (ft)	Number	Area 1	Area 2	
Shrubs	Serviceberry	Amelanchier alnifolia	X	X	X		X	X	X		20		0	0	
	Red Osier Dogwood	Cornus stolonifera	X		X	X	X	X	X		15	200	50	150	
	Beaked Hazelnut	Corylus cornuta	X		X		X	X	X	2	20	200	50	150	
	Oceanspray	Holodiscus discolor	X	X	X		X	X		1	15		0	0	
	Twinberry*	Lonicera involucrata	X		X	X	X	X		1	10	200	50	150	
	Sweetgale	Myrica gale	X			X	X				10	100	50	50	
	Indian Plum	Oemlaria cerasiformis	X	X	X		X	X	X	3	15	200	50	150	
	Mock Orange	Philadelphina lewisii	X	X	X		X	X		3	9		0	0	
	Pacific Ninebark	Physocarpus capitatus	X		X	X	X	X	X	0	13	200	32	168	
	Rosa species	R. nutkana, R. pisocarpa	X	X	X	X	X	X		1	26	50	25	25	
	Rhododendron red or w	Rhododendron sp		X	X			X	X	0	20		0	0	
	Rhododendron columb	Western Labrador-Tea		X			X	X	X		20		0	0	
	Golden currant	Ribes aureum	X	X			X	X			10		0	0	
	Red-flowering Currant	Ribes sanguineum	X	X	X		X	X		0	13	75	0	75	
	Thimbleberry	Rubus parviflorus	X	X	X		X	X	X	0	8	100	50	50	
	Salmonberry	Rubus spectabilis	X		X	X	X	X	X	0	10	200	50	200	
	Blue Elderberry	Sambucus cerulea	X	X	X			X	X	1	15	173	0	123	
	Red Elderberry	Sambucus racemosa	X	X	X		X	X	X	1	15		0	0	
	Spirea	Spirea douglasii	X		X	X	X	X		0	7		0	0	
	Snowberry	Symphoricarpos albus	X	X	X	X	X	X		1	11	174	0	174	
	Red Huckleberry	Vaccinum parvifolium	X	X	X			X	X	3	10		0	0	
	Alaskan Blueberry	Vaccinum ovalifolium	X	X	X		X	X		3	10		0	0	
	American cranberrybus	Viburnum opulus america	X	X	X					2	10	53	53	0	
	Salal	Gaultheria shallon		X	X	X	X	X	X	0	5		0	0	
	Oregon Grape	Mahonia sp.		X	X	X	X	X	X	0	6		0	0	
	Pacific Wax Myrtle	Myrica californica		X	X	X		X	X		13		0	0	
	Evergreen Huckleberry	Vaccinum ovatum		X	X	X			X	X	0	10		0	0
	TOTAL SHRUBS REQUIRED = 1,925											1925	460	1465	

Selected Native Plants from the Portland Native Plant List with recommendations developed by the Clark County Extension Service, Watershed Stewards and Clark County Clean Water Program. Gary Bock, December 2005 with additions by ETC

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

Areas denuded by ground clearing, removal of invasive species, or otherwise disturbed in preparation for planting shall be seeded with the following seed mix, or approved substitute, available from Sunmarkseeds.com

Native Pacific Northwest Mix

This 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.

Planting Rate/acre	25-30 lbs.
Planting Rate for 1/2 acre or less	8 oz./1000 sq.ft.
Seeds/lb.	331,000

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

Seeding, Planting, and Mulching Specifications and Guidelines©

Prior to planting, the site shall be inspected for the presence of invasive species that can pose a risk to the native plant community, (e.g. reed canary grass, Himalayan blackberry, English Hawthorn, Japanese knotweed, etc.). All invasive weeds shall be chemically controlled with a herbicide approved for vegetation control in environmentally sensitive areas such as a non-surfactant containing **glyphosate** formulation such as **Aquamaster®** or **Rodeo®** or an amine form of **trichlopyr** such as **Garlon 3A®**. Tank mixes of both chemicals are permitted as long as directions for tank mixes are followed.

- 1) After excavation and construction is completed, if topsoil is required 3" of topsoil shall be applied over the complete surface of the graded mitigation site. The topsoil shall be tilled deeply into the exposed ground surface to a minimum of 8" and optimally 12". 3" of environment-friendly hogfuel shall be applied over the entire surface following planting.
- 2) **Plants will conform to the American Standard for Nursery Stock (ANSI Z60.1-2004)** or the most current version. As stated in the American Standard for Nursery Stock (ANSI Z60.1-2004), "**All container grown nursery stock shall be healthy, vigorous, well rooted, and established in the container in which it is**

growing; shall have a well established root system reaching the sides of the container to maintain a firm ball when the container is removed, but shall not have excessive root growth encircling the inside of the container."

- 3) Plants sold or designated "**Conservation Grade**" will not be acceptable for this project.
- 4) All plants shall be tagged for dormant season identification. Tags to remain on plant material after planting for monitoring purposes.
- 5) Planting will be done preferably during the winter months. Roots will be protected from freezing, heat and desiccation. All plant materials will be protected if left unplanted overnight.
- 6) **Preparing the Planting Hole and Planting.**
 - a) Dig planting hole no deeper than 90% of the height of the rootball.
 - b) Dig the planting hole at least twice the width of the rootball.
 - c) *Do not loosen the bottom of the hole in any way.* Leave the bottom of the hole undisturbed for the rootball to sit firmly on, to make sure no subsiding takes place, which causes root balls to sink.
 - d) **DO NOT FORCE ROOTS INTO THE HOLE IN SUCH A WAY AS TO BEND LONG ROOTS.**
 - e) Use only existing native backfill soil. *Do not use any soil amendments in the hole.*
 - f) Score the outside of the rootball with at least four (4) 1"-2" incisions cut from the top of the rootball to the bottom. Any circling roots that are discovered either circling the sides or circling the bottom of the rootball will be cut through with loppers or hand-pruners. Any circling roots inside the 1" depth incisions will be cut through.
 - g) Place the rootball in the planting hole on the bottom of the hole.
 - h) Make sure approximately 1" of the rootball (e.g. 10% of rootball top is above grade) sits above grade so that the top of the rootball is visible, and the crown of the plant is plainly seen (e.g. Trunk flare visible).
 - i) Level rootball by propping with backfill soil and fill hole with 1/3 of backfill soil.
 - j) Tamp the backfill soil with a sod tamper or hands. Do not tamp with feet in any way that could place any weight on the top of the rootball. *Fibrous-rooted plants will tear and separate from the plant from tamping directly on the rootball with feet.*
 - k) Water in well. Place remaining backfill soil making sure none is placed on top of the rootball. Tamp the backfill soil and water again.
 - l) Any excess backfill soil can be used to form a small circular berm around the rootball, making sure that none ends up on the top of the rootball.
 - m) Place 3"-4" of an *environmentally friendly hogfuel, "H& H Recyclers Trailmix", or "Stumpgrindings" with a minimum of bark (e.g. stump grindings), coarse woody mulch in a 6' diameter circle around the plant, making sure it is no less than 2" from trunk. No mulch is to come in contact with the plant stems/trunks.
- 7) **Handling and Care of Planting Plugs**
- 8) Use only existing native backfill soil or till in a 2" to 3" layer of organic amendment over whole planting site. Do not use any soil amendments in the hole.
- 9) Dig planting hole no deeper than the height of the plug.
- 10) Dig the planting hole at least twice the width of the plug.
- 11) Roughen exterior of heavily rooted or rootbound plugs to open up rootball and activate new root initials.
- 12) Center the plug in the planting hole.
- 13) Backfill soil around plug and tamp soil around plug with fingers and hands.
- 14) **Handling and Care of Whips, Live Stakes and Sprigs**
 - a) All plant material will be stored in water or water filled containers covering at least ½ of the stake until ready to be installed in the ground.
 - b) Use only existing native backfill soil. Do not use any soil amendments in the hole.
 - c) All plants to be planted as whips, stakes, or sprigs shall be planted as follows:
 - d) Each piece must be freshly cut with the base cut at a 45 degree taper.
 - e) Whips and stakes shall be 4' to 5' in length and 3/4" to 1½" in diameter (Cottonwood stakes may be 3/4" to 2½").
 - f) Optimally, the bottom half of whips and stakes will be immersed in water for 7-10 days (NRCS recommendation 2 to 6).

- g) Keep all plant materials moist in transport. In hot and/or windy days cover with wet burlap.
- h) Plant when soil is moist to facilitate penetration of the stakes into the ground.
- i) For plants that are difficult to root use a rooting hormone as specified on the product container prior to installing
- j) Install the base of pieces into the ground at least 2/3 of their length.
- k) If soil conditions do not allow easy penetration of pieces into the ground, prepare a small diameter hole using a probe such as a piece of large diameter rebar or similar device prior to installing sprig. The hole diameter should be smaller than the sprig diameter. If hole is too large gently tamp soil around plant.
- l) DO NOT POUND PIECES INTO THE SOIL WITH A HAMMER, MALLET, OR ANY OTHER IMPACT DEVICE!

15) Handling and Care of Loose Seed

- 16) Seed mixes shall be broadcast with a "cyclone" type spreader either a walk behind spreader with pneumatic tires to impact area to be seeded as little as possible. Or a "belly-crank" type of spreader that hangs in front of technician shall be used. No drop spreaders will be used at all.
- 17) If topsoils have not been replaced a 3" minimum layer compost shall be evenly applied to the subject area and thoroughly tilled to at least 8" depth, optimally to one foot of depth.
- 18) Seed mixes containing very small seeds can be mixed with dry builders sand to facilitate even spreading of seed.
- 19) Seed shall be evenly applied to all bare soil areas. No mulches purposely placed around individual plants shall have seed broadcast on it so as to minimize any competition from the seed mix species.
- 20) Seeded areas shall be mulched with weed free straw or peat moss at no more than 1/2" depth.

21) Animal Protection and Fertilization

- 22) Each plant will have a sturdy planting tube of heavy plastic or metal screening as per manufacturer instructions (e.g. Tubex Tree Shelters, Protex Pro/Gro Tubes, Tree Pro tubes). If in rolls, cut to size for plant and zip-lock together as needed. Staple or stake plant tubes to the ground. Use staples with a minimum length of 6". Use longer staples in floodplain areas that have flooding events.
- 23) In areas with deer beaver and/or nutria population pressure consider metal fencing or screening such as "chicken wire". Fencing should be tailored to the particular herbivore threat.
- 24) Fertilization shall be done with a slow release fertilizer (e.g. Agriform, Scotts Sierra Tablets, Healthy Start Macro Tablets, and AgSafe Agritab Corp. Tablets) that provides a minimum of two (2) years feeding.

25) Erosion Control

- 26) Slopes that require erosion control covers shall have Coir Fiber blankets cut and applied to surfaces and stapled at the recommended staple spacing configuration with 7" or longer steel staples.

Fertilizer Example:

AGSAFE AGRITAB TABLETS

Minimum Guaranteed Analysis: Guaranteed Analysis

20.00% TOTAL NITROGEN (N)*

2.4% Ammoniacal Nitrogen

0.8% Urea Nitrogen

Copper (Cu)

4.5% Water Soluble Organic Nitrogen

BORON (B)

2.3% Water Insoluble Nitrogen

TOTAL

10.00% AVAILABLE PHOSPHORIC ACID (P₂O₅)

Soluble Iron (Fe)

5.00% SOLUBLE POTASH (K₂O)

(Mn)

2.00% CALCIUM (Ca)

Manganese (Mn)

1.00% MAGNESIUM (Mg), TOTAL

0.50% Water Soluble Magnesium (Mg)

Soluble Zinc (Zn)

2.00% SULFUR (S), TOTAL

2.00% Combined Sulfur (S)

05% COPPER (Cu)

0.05% Water Soluble

0.02%

1.00% IRON (Fe),

0.50 Water

0.05% MANGANESE

0.05% Water Soluble

0.05% ZINC (Zn)

0.05% Water

Derived From: Ureaform,

Methylene Ureas, Urea,

Ammonium Phosphates, Calcium

Phosphates, Potassium Sulfate,

Magnesium Oxide, Magnesium

Sulfate, Sodium Borate, Copper

Sulfate, Iron Sulfate, Ferrous

Sulfate, Manganese Sulfate, and

Zinc Sulfate.

*14% slowly available Nitrogen

from ureaform, dimethylene urea,

and trimethylene urea.

NON-PLANT FOOD

INGREDIENTS

HUMUS (10%) – Humic Acids (5-

7%) derived from Humus Utah

Shale Ore

PROPRIETARY BLEND – Plant

and Fish Extracts, Organics, and

Beneficial Soil Bacteria & Fungi

*All reference to pesticide applications were done by a state licensed applicator- (Washington State Department of Agriculture Commercial Pesticide Applicator License #75375
Oregon State Department of Agriculture Commercial Pesticide Applicator License #AG-L1003662CPA

APPENDIX 4
MITIGATION AREA CURRENT CONDITIONS AND SUITABILITY
Lot 3200 and 3300 SE 19th Avenue, Clackamas County, Oregon



Evaluated by: Annakate Martin *Annakate Martin* ETC Job EVA18007
Annakate Martin, Senior Biologist June 18, 2019

Prepared for:
Mathew Gillis
4776 Carolina Avenue, NE
Salem, OR 97305

 <p>environmental technology consultants</p>	<p>Environmental Technology Consultants 375 Portland Avenue Gladstone, OR 97027 <i>A Division of Sisul Enterprises, Inc.</i> (360) 984-8767 Fax: (503) 657-5779 WA Landscape Contractors License #: ENVIRTCO23RB Web: www.etcEnvironmental.net Email: AnnakateMetc@etcEnvironmental.net</p>
<p><i>"Creating Tomorrow's Environment - Today"</i></p>	

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Photo 1. Cover page. Looking south through the approximate middle of Mitigation area 1 (left side) and area 2 (right side).

INTRODUCTION

PURPOSE OF THIS REPORT:

This report is to provide information on the habitat of the proposed mitigation areas on the subject properties island to be determine by the City of Milwaukie if the island can be used for mitigation. The island is west of the proposed development on the subject site to the east.

Only those areas on the island that are above OHWM, 20' elevation were investigated and reported on (Figures M1 through M5). Observations were made of the soils, vegetation and hydrology were observed, although most of the two lots were traversed regardless of elevation but in some areas blocked by blackberries.

PROPOSED USE:

There are two areas on the island that are determined to be in good condition for mitigation, Mitigation Area 1 and Mitigation Area 2. Mitigation Area 2 is 33,686 SQFT and would have 281 trees and 1,197 shrubs planted in the area. Mitigation Area 1 is 8,022 SQFT and would have 99 trees and 496 shrubs planted. The plantings would be a dense planting of trees every 8' apart and shrubs every 4' apart and some in cluster plantings.

DISCLAIMER:

This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge.

QUALIFICATIONS OF ANNAKATE MARTIN, NRS

I received my Bachelor of Science degree in Natural Resources from Washington State University in 2002. In 2002 I worked for the University of Idaho on MAP tracking steelhead and salmon on the Snake River out of Clarkston, Washington. 2002-2003 I worked for Idaho Fish and Game as a field technician for identifying fish in remote streams in Idaho. In 2004, 2016 and currently I have worked for Environmental Technology Consultants conducting wetland delineations and all other environmental reports. From 2007-2014 I worked for 3 Kings Environmental conducting Phase I ESA reports, asbestos and lead surveys. In 2011 I started my own company primarily providing erosion control services and conducting Phase I ESA habitat assessments. I was employed with Clark Public Utilities as a Watershed Coordinator in which I oversaw property restoration with native plants and maintained a nursery in 2017 before coming back to ETC in 2018.

I am currently working on getting my certification as a Professional Wetland Scientist from Portland State University. I have 20 years working in the environmental field specializing in many different areas.

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

QUALIFICATIONS OF JOHN MCCONNAUGHEY

I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American Samoa to serve as a fisheries projects leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants for the past 10 years. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS), and was renewed in 2015.

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

Landscape Setting and Land Use

Study Area

The study area included only the western “island” portions of parcels 3200 & 3300. Areas that were thick with blackberry could still be observed from a distance. Portions of the adjoining properties were observed also.

JURISDICTIONAL CONSIDERATIONS

- City of Milwaukie, Oregon
- Clackamas County, Oregon.
- Shoreline of the State area.
- FEMA flood hazard maps.
- No NWI, State or County mapped wetlands on the parcel.
- No Priority Habitat and Species areas mapped on the parcel.

LANDSCAPE SETTINGS

The island is rock around the lower elevations on the south and west sides and a sandy loam on the east side. As you walk up into the island it is dense with blackberries and opens up in the middle with a small field of grasses, daisies and Ash saplings. Along the east side of the property there are mature Black Cottonwoods and Ash trees with some native snowberry and

Rosa sp. Primarily the mitigation areas are dense blackberry and in Mitigation Area 1 there is a mature Tree of Heaven mixed in with all that blackberry and some shiny geranium.

The soils that were found were a 10YR3/3 sandy loam with no hydrology present and no indicator of hydrology. There were some areas that had granite rock coming out of the ground but that was in the lower elevation areas.

PREVIOUS AND CURRENT LAND USES, & SITE ALTERATIONS

There have been no known previous uses for the island besides recreational for people to walk out to. It is possible that there was some use of the island and slough for log storage before 1950.

Methods

General Wetland Determination Methodology: This investigation was carried out in accordance with the guidelines set forth in the Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1, 1987) and its recent 2010 update, version 2.0.

Site Specific Methodology: All areas of the parcel were accessible by foot. I dug 3, 16" test pits and 4 data plots that covered the majority of each area in the mitigation sites. I was observing the vegetation, soils and hydrology.

Weather: It was a very rainy spring day with downpours at different times. The weather had been on and off rain before the site visit.

Previous Studies

We are not aware of any previous wetland investigation on the subject parcel island.

Mapping Method

Cell phone GPS was used to locate data plots and they are shown on figure M1.

Description of All Wetlands and Other Non-Wetland Waters

No areas of the lots met the three criteria for determining wetland presence and no waterways or streams were observed on the island, there were also no primary or secondary features indicating flooding.

The vegetation at P8 and along the eastern side of the island had more native species than the majority of the Mitigation areas. The mitigation areas were basically 100% *Rubus armeniacus* with some *Populus balsamifera*, *Fraxinus latifolia*, *Rosa sp*, and *Symphoricarpos albus*. There was a small dip in elevation between the two mitigation areas that had native grasses, oxeye daisies and Ash saplings.

Surface soils are similar to other areas of the property, a 10YR3/3 sandy loam. There were no Hydric features observed.

No areas of bare soil and no indications of water ponding or movement were observed. The soil was not saturated to at least 16" (the depth of my soil pit). As the area has received average precipitation this past spring, in my opinion an area not exhibiting wetland hydrology on May 31 is not a wetland.

CONCLUSION: No wetlands or waterways exist above OHWM on the island. The island is an upland area with a sustainable ecosystem for the planting of native vegetation. If we could remove the blackberry and other invasive species and mitigate it with native plants, I believe it would be a thriving habitat community.

REQUESTED ACTIONS

1. We ask for the approval of the island to be the mitigation site for the disturbance within the HCA area.

APPENDIX A) Data Forms

Data forms following this page:

P8

P9

P10

P11

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Lots 3300 and 3200 map** City/County: **Milwaukie** Sampling Date: **5/23/2019**
 Applicant/Owner: **Mathew Gillis, 4776 Carolina Avenue NE, Salem OR 97305** State: **OR** Sampling Point: **P8**
 Investigator(s): **John McConnaughey, PWS; Annakate Martin, NRS** Section, Township, Range: **Section 35 T1S R1E**
 Landform (hillslope, terrace, etc.): **Island** Local relief (concave, convex, none): Slope (%): **0**
 Subregion (LRR): **LRR A** Lat: **45.4347°** Long: **-122.64530°** Datum: **NAD 84**
 Soil Map Unit Name: **Newberg fine sandy loam** NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is sampled area in a wetland? Enter text Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

Remarks: On the northeast corner on the subject site property on the island.

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30' circle)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:														
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)														
2. Populus balsamifera	10	Y	FAC															
3.																		
4.				<u>Prevalence Index worksheet:</u> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><u>Total % Cover of:</u></td> <td style="width: 50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species 0 %</td> <td>x1 = 0 %</td> </tr> <tr> <td>FACW species 0 %</td> <td>x2 = 0 %</td> </tr> <tr> <td>FAC species 0 %</td> <td>x3 = 0 %</td> </tr> <tr> <td>FACU species 0 %</td> <td>x4 = 0 %</td> </tr> <tr> <td>UPL species 0 %</td> <td>x5 = 0 %</td> </tr> <tr> <td>Column Totals: 0 % (A)</td> <td>0 % (B)</td> </tr> </table> Prevalence Index = B/A = 0	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species 0 %	x1 = 0 %	FACW species 0 %	x2 = 0 %	FAC species 0 %	x3 = 0 %	FACU species 0 %	x4 = 0 %	UPL species 0 %	x5 = 0 %	Column Totals: 0 % (A)	0 % (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species 0 %	x1 = 0 %																	
FACW species 0 %	x2 = 0 %																	
FAC species 0 %	x3 = 0 %																	
FACU species 0 %	x4 = 0 %																	
UPL species 0 %	x5 = 0 %																	
Column Totals: 0 % (A)	0 % (B)																	
Total tree cover = 10 % = Total Cover																		
<u>Sapling/Shrub Stratum</u> (Plot Size: 30' circle)																		
1. Rubus armeniacus	40	Y	FAC	Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><u>Total % Cover of:</u></td> <td style="width: 50%;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species 0 %</td> <td>x1 = 0 %</td> </tr> <tr> <td>FACW species 0 %</td> <td>x2 = 0 %</td> </tr> <tr> <td>FAC species 0 %</td> <td>x3 = 0 %</td> </tr> <tr> <td>FACU species 0 %</td> <td>x4 = 0 %</td> </tr> <tr> <td>UPL species 0 %</td> <td>x5 = 0 %</td> </tr> <tr> <td>Column Totals: 0 % (A)</td> <td>0 % (B)</td> </tr> </table> Prevalence Index = B/A = 0	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species 0 %	x1 = 0 %	FACW species 0 %	x2 = 0 %	FAC species 0 %	x3 = 0 %	FACU species 0 %	x4 = 0 %	UPL species 0 %	x5 = 0 %	Column Totals: 0 % (A)	0 % (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species 0 %	x1 = 0 %																	
FACW species 0 %	x2 = 0 %																	
FAC species 0 %	x3 = 0 %																	
FACU species 0 %	x4 = 0 %																	
UPL species 0 %	x5 = 0 %																	
Column Totals: 0 % (A)	0 % (B)																	
2.																		
3.																		
4.																		
5.																		
Total Shrub Cover 40% = Total Cover				<u>Hydrophytic Vegetation Indicators:</u> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> 6 - Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
<u>Herb Stratum</u> (Plot Size:) 5' circle																		
1. Symphoricarpos albus	15	Y	FACU															
2. Crataegus douglassi	5	N	FAC															
3. Mahonia aquifolium	1	N	FACU															
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
Total herb cover 60 % = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> Enter text No <input type="checkbox"/>														
<u>Woody Vine Stratum</u> (Plot Size: enter text)																		
Hedra helix	100%	Y	FACU															
	%		FACU															
	%		= Total Cover															
% Bare Ground in Herb Stratum 0%																		
	40 %																	

Remarks: Plants were thriving in this area, large trees and many saplings.

SOIL

Project Site: 3300 & 3200

Sampling Point:

P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	10YR3/3	100					Silt sand loam	Sand 70%, silt 30%

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	2 cm Muck (A10)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/>	Very Shallow Dark Surface (TF12)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Matrix (F3)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Redox Depressions (F8)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	
Depth (Inches):	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Salt Crust (B11)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Stunted or Stresses Plants (D1) (LRR A)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	

Field Observations:	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **No indicators of hydrology**

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Lots 3300 and 3200 map** City/County: **Milwaukie** Sampling Date: **5/23/2019**
 Applicant/Owner: **Mathew Gillis, 4776 Carolina Avenue NE, Salem OR 97305** State: **OR** Sampling Point: **P9**
 Investigator(s): **Annakate Martin, NRS** Section, Township, Range: **Section 35 T1S R1E**
 Landform (hillslope, terrace, etc.): **Island** Local relief (concave, convex, none): Slope (%): **0**
 Subregion (LRR): **LRR A** Lat: **45.4347°** Long: **-122.64530°** Datum: **NAD 84**
 Soil Map Unit Name: **Newberg fine sandy loam** NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is sampled area in a wetland? Enter text Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: In upland grass field.	

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30' circle)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:														
1.				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)														
2.																		
3.																		
4.																		
Total tree cover =		0 %	= Total Cover															
<u>Sapling/Shrub Stratum</u> (Plot Size: 30' circle)																		
1. Fraxinus latifolia	5	Y	FAC	Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species 0 %</td> <td>x1 = 0 %</td> </tr> <tr> <td>FACW species 0 %</td> <td>x2 = 0 %</td> </tr> <tr> <td>FAC species 0 %</td> <td>x3 = 0 %</td> </tr> <tr> <td>FACU species 0 %</td> <td>x4 = 0 %</td> </tr> <tr> <td>UPL species 0 %</td> <td>x5 = 0 %</td> </tr> <tr> <td>Column Totals: 0 % (A)</td> <td>0 % (B)</td> </tr> </table> Prevalence Index = B/A = 0	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species 0 %	x1 = 0 %	FACW species 0 %	x2 = 0 %	FAC species 0 %	x3 = 0 %	FACU species 0 %	x4 = 0 %	UPL species 0 %	x5 = 0 %	Column Totals: 0 % (A)	0 % (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species 0 %	x1 = 0 %																	
FACW species 0 %	x2 = 0 %																	
FAC species 0 %	x3 = 0 %																	
FACU species 0 %	x4 = 0 %																	
UPL species 0 %	x5 = 0 %																	
Column Totals: 0 % (A)	0 % (B)																	
2.																		
3.																		
4.																		
5.																		
Total Shrub Cover		5%	= Total Cover															
<u>Herb Stratum</u> (Plot Size:) 5' circle																		
1. Leucanthemum vulgare	40	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> 6 - Problematic Hydrophytic Vegetation ¹ (Explain) 1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. Bromus arvensis	50	Y	FACU															
3. Vicia Americana	20	N	FAC															
4. Daucus carota	15	N	FACU															
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
Total herb cover		125%	= Total Cover															
<u>Woody Vine Stratum</u> (Plot Size: enter text)																		
Hedra helix	0%	Y	FACU	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> Enter text No <input checked="" type="checkbox"/>														
	%		FACU															
	%	= Total Cover																
% Bare Ground in Herb Stratum 0%		40 %																
Remarks: Plants are healthy and thriving, Ash saplings are sprouting up.																		

SOIL

Project Site: 3300 & 3200

Sampling Point:

P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	10YR3/3	100					Silt sand loam	Sand 70%, silt 30%

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	2 cm Muck (A10)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/>	Very Shallow Dark Surface (TF12)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Matrix (F3)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Redox Depressions (F8)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: Depth (Inches): Remarks:	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Salt Crust (B11)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Stunted or Stresses Plants (D1) (LRR A)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **No indicators of hydrology**

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Lots 3300 and 3200 map** City/County: **Milwaukie** Sampling Date: **5/23/2019**
 Applicant/Owner: **Mathew Gillis, 4776 Carolina Avenue NE, Salem OR 97305** State: **OR** Sampling Point: **P9**
 Investigator(s): **Annakate Martin, NRS** Section, Township, Range: **Section 35 T1S R1E**
 Landform (hillslope, terrace, etc.): **Island** Local relief (concave, convex, none): Slope (%): **0**
 Subregion (LRR): **LRR A** Lat: **45.4347°** Long: **-122.64530°** Datum: **NAD 84**
 Soil Map Unit Name: **Newberg fine sandy loam** NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is sampled area in a wetland? Enter text Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: In mitigation 2 area, GPS said altitude 29.	

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 10' circle)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. Ailanthus altissima	10	Y	NOL	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 4 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)																
2.																				
3.																				
4.																				
Total tree cover =	10 %	= Total Cover		<u>Prevalence Index worksheet:</u> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species 0 %</td> <td>x1 = 0 %</td> </tr> <tr> <td>FACW species 0 %</td> <td>x2 = 0 %</td> </tr> <tr> <td>FAC species 0 %</td> <td>x3 = 0 %</td> </tr> <tr> <td>FACU species 0 %</td> <td>x4 = 0 %</td> </tr> <tr> <td>UPL species 0 %</td> <td>x5 = 0 %</td> </tr> <tr> <td>Column Totals: 0 % (A)</td> <td>0 % (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = 0</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species 0 %	x1 = 0 %	FACW species 0 %	x2 = 0 %	FAC species 0 %	x3 = 0 %	FACU species 0 %	x4 = 0 %	UPL species 0 %	x5 = 0 %	Column Totals: 0 % (A)	0 % (B)	Prevalence Index = B/A = 0	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species 0 %	x1 = 0 %																			
FACW species 0 %	x2 = 0 %																			
FAC species 0 %	x3 = 0 %																			
FACU species 0 %	x4 = 0 %																			
UPL species 0 %	x5 = 0 %																			
Column Totals: 0 % (A)	0 % (B)																			
Prevalence Index = B/A = 0																				
<u>Sapling/Shrub Stratum</u> (Plot Size: 10' circle)																				
1. Rubus armeniacus	90	Y	FAC																	
2.																				
3.																				
4.																				
5.																				
Total Shrub Cover	90%	= Total Cover																		
<u>Herb Stratum</u> (Plot Size:) 5' circle				<u>Hydrophytic Vegetation Indicators:</u> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> 6 - Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. Geranium lucidum	50	Y	NOL																	
2. Bromus arvensis	20	Y	FACU																	
3. Galium aparine	5	N	FACU																	
4.																				
5.																				
6.																				
7.																				
8.																				
9.																				
10.																				
Total herb cover	75%	= Total Cover																		
<u>Woody Vine Stratum</u> (Plot Size: enter text)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> Enter text No <input checked="" type="checkbox"/>																
Hedra helix	0%	Y	FACU																	
	%		FACU																	
	%	= Total Cover																		
% Bare Ground in Herb Stratum 0%	%																			

Remarks: Plants are healthy and thriving,

SOIL

Project Site: 3300 & 3200

Sampling Point:

P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-14	10YR3/3	100					Silt sand loam	Sand 70%, silt 30%

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	2 cm Muck (A10)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/>	Very Shallow Dark Surface (TF12)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Matrix (F3)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Redox Depressions (F8)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: Rock Depth (Inches): 14	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Salt Crust (B11)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Stunted or Stresses Plants (D1) (LRR A)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No indicators of hydrology

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Lots 3300 and 3200 map** City/County: **Milwaukie** Sampling Date: **5/23/2019**
 Applicant/Owner: **Mathew Gillis, 4776 Carolina Avenue NE, Salem OR 97305** State: **OR** Sampling Point: **P11**
 Investigator(s): **John McConnaughey, PWS; Annakate Martin, NRS** Section, Township, Range: **Section 35 T1S R1E**
 Landform (hillslope, terrace, etc.): **Island** Local relief (concave, convex, none): Slope (%): **0**
 Subregion (LRR): **LRR A** Lat: **45.4347°** Long: **-122.64530°** Datum: **NAD 84**
 Soil Map Unit Name: **Newberg fine sandy loam** NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is sampled area in a wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Enter text
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks: On trail between blackberries in mitigation area 1.

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30' circle)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:														
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)														
2.				Total Number of Dominant Species Across All Strata: 3 (B)														
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)														
4.				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"><u>Total % Cover of:</u></th> <th style="width: 50%;"><u>Multiply by:</u></th> </tr> </thead> <tbody> <tr> <td>OBL species 0 %</td> <td>x1 = 0 %</td> </tr> <tr> <td>FACW species 0 %</td> <td>x2 = 0 %</td> </tr> <tr> <td>FAC species 0 %</td> <td>x3 = 0 %</td> </tr> <tr> <td>FACU species 0 %</td> <td>x4 = 0 %</td> </tr> <tr> <td>UPL species 0 %</td> <td>x5 = 0 %</td> </tr> <tr> <td>Column Totals: 0 % (A)</td> <td>0 % (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = 0	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species 0 %	x1 = 0 %	FACW species 0 %	x2 = 0 %	FAC species 0 %	x3 = 0 %	FACU species 0 %	x4 = 0 %	UPL species 0 %	x5 = 0 %	Column Totals: 0 % (A)	0 % (B)
<u>Total % Cover of:</u>	<u>Multiply by:</u>																	
OBL species 0 %	x1 = 0 %																	
FACW species 0 %	x2 = 0 %																	
FAC species 0 %	x3 = 0 %																	
FACU species 0 %	x4 = 0 %																	
UPL species 0 %	x5 = 0 %																	
Column Totals: 0 % (A)	0 % (B)																	
Total tree cover = 0 % = Total Cover																		
<u>Sapling/Shrub Stratum</u> (Plot Size: 10' circle)																		
1. Rubus armeniacus	90	Y	FAC															
2.																		
3.																		
4.																		
5.																		
Total Shrub Cover 90% = Total Cover																		
<u>Herb Stratum</u> (Plot Size:) 5' circle																		
1. Bromus arvensis	10	Y	FACU															
2. Galium aparine	6	Y	FACU															
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
Total herb cover 16 % = Total Cover																		
<u>Woody Vine Stratum</u> (Plot Size: enter text)																		
Hedra helix	0%		FACU															
	%		FACU															
	%		= Total Cover															
% Bare Ground in Herb Stratum 0%																		
40 %																		

- Hydrophytic Vegetation Indicators:
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - 5 - Wetland Non-Vascular Plants¹
 - 6 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes
 Enter text No

Remarks: Plants were thriving in this area, large trees and many saplings. Herbaceous plants were lacking due to the blackberries.

SOIL

Project Site: 3300 & 3200

Sampling Point:

P11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-20	10YR3/3	100					Silt sand loam	Sand 70%, silt 30%

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)				Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/>	Histosol (A1)	<input type="checkbox"/>	Sandy Redox (S5)	<input type="checkbox"/>	2 cm Muck (A10)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Stripped Matrix (S6)	<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/>	Very Shallow Dark Surface (TF12)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Depleted Matrix (F3)		
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	<input type="checkbox"/>	Redox Depressions (F8)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: Depth (Inches): Remarks:	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Salt Crust (B11)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Stunted or Stresses Plants (D1) (LRR A)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0 Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): 0	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **No indicators of hydrology**

APPENDIX B) Ground Level Color Photographs



Photo 1: Looking east into Mitigation Area 1, from the south. Part of the blackberry patch is evident in the photo along with some native Black Cottonwood and Ash



Photo 2: Looking directly into the dense blackberries in Mitigation Area 1.



Photo 3: Looking south into Mitigation Area 1 (on the left) and Mitigation Area 2 (on right) with the wild grass in the middle.



Photo 4: Dense blackberry patch in Mitigation Area 2, Tree of Heaven in upper right corner.



Photo 5: Tree of Heaven in Mitigation Area 1.



Photo 6: A picture of P8, which is in the northeast corner of the property, the most native vegetation that was observed besides the native grasses.

APPENDIX C) Literature Citations

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4. Gilkey, Helen M. and La Rea J. Dennis. *Handbook Of Northwestern Plants*. Oregon State University, Corvallis, Oregon, 1980.
5. Gilkey, Helen M. and Patricia L. Packard. *Winter Twigs: Northwestern Oregon & Western Washington*. Oregon State University Press, Corvallis, Oregon, 1962.
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10. Pollock, M.M., J.M. Wheaton, N. Bouwes, and C.E. Jordan. 2011. Working with Beaver to Restore Salmon Habitat in the Bridge Creek Intensively Monitored Watershed: Design Rationale and hypotheses, Interim Report. NOAA Northwest Fisheries Science Center: Seattle, WA. 63. pp.
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15. Vepraskas, Michael J. *Redoximorphic Features for Identifying Aquic Conditions*. Technical Bulletin 301. North Carolina Agricultural Research Service, North Carolina State University, December, 1992.
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**APPENDIX 5
MITIGATION PROPOSAL AND ALTERNATIVE ANALYSIS**

Project No. 1549.002.G
Page No. 1

Mr. Matthew Gillis
Oregon Residential Properties, LLC
2050 Beavercreek Road, Suite 101-337
Oregon City, Oregon 97045

**Re: Geotechnical Consultation Services, Evaluation of Existing Soil Cover Depth,
Elk Rock Estates Proposed Mitigation Site, Milwaukie (Multnomah County), Oregon**

Dear Mr. Gillis:

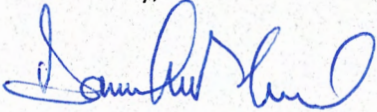
In accordance with your request, we have completed our evaluation of the soil cover depth at the above proposed Elk Rock Estates Mitigation Site (see Site Vicinity Map, Figure No. 1). The purpose of our work at this time was to perform soil probes across the proposed mitigation area to evaluate whether soil conditions exist which would allow for and/or support the proposed planting and mitigation work.

Specifically, on June 4, 2019, we were present at the site and performed a total of nine (9) soil probes across the proposed mitigation area (see Site Exploration Plan, Figure No. 2). The soil probes, which were advanced with portable hand auger equipment in the areas currently vegetated, encountered an existing depth of soil above the underlying Basalt bedrock deposits of from about two (2) to three (3) feet or more. The subsurface soils encountered in the test holes generally consisted of a gray to dark gray and/or dark olive-brown, loose, silty fine sand consistent with the alluvial soil characteristics along the banks of the Willamette River. We point out that while areas were present across the proposed mitigation area where Basalt bedrock was exposed and were generally void of vegetation and/or soil cover, much of the proposed mitigation area contains an existing soil cover which is presently vegetated with a moderate to dense growth of grass, weeds and brush as well as numerous small to large size trees.

In this regard, based on the results of our recent soil probes performed at the site, we are of the opinion that the area(s) across the proposed mitigation area which contain an existing soil cover are suitable for the proposed planting and mitigation work.

We appreciate this opportunity to be of service to you at this time and trust that the above information is suitable to your present needs. Should you have any questions regarding the above or if you require any additional assistance and/or information, please do not hesitate to call.

Sincerely,

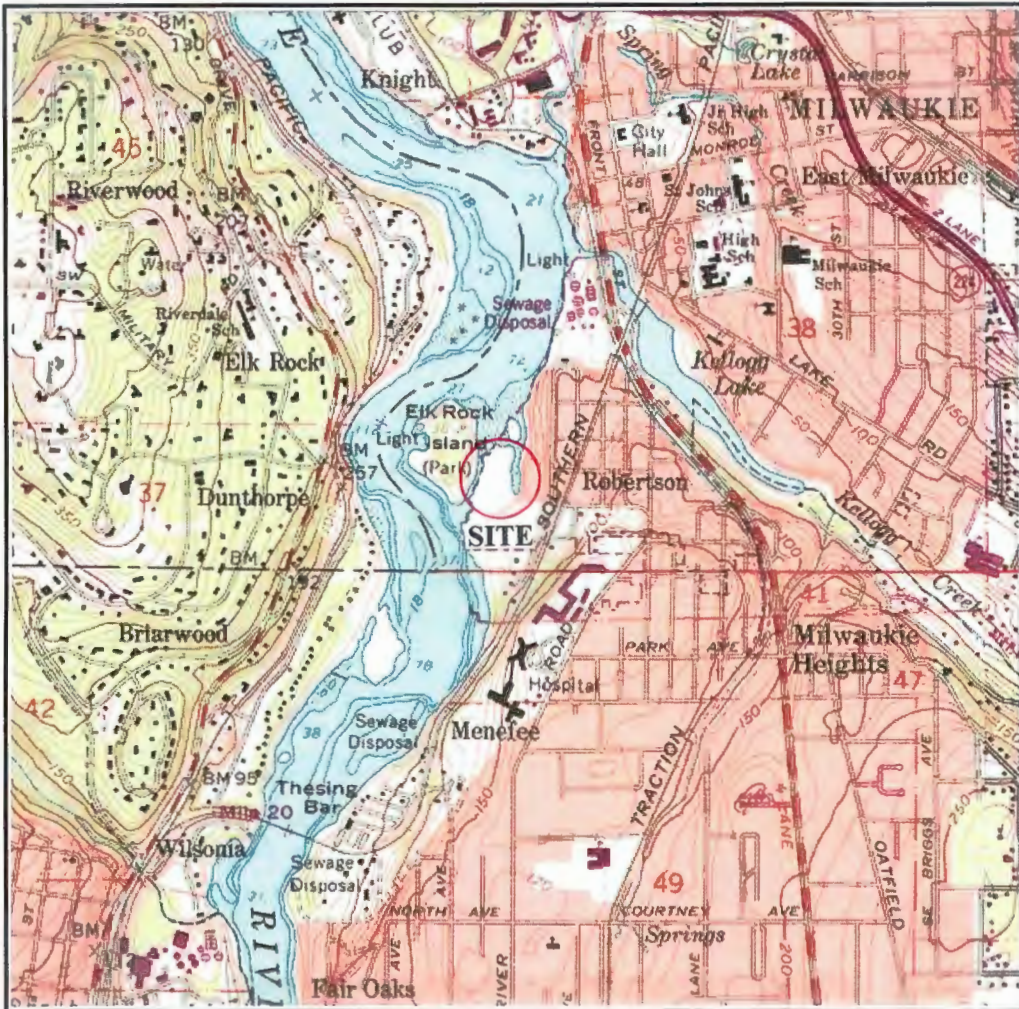


Daniel M. Redmond, P.E., G.E.
President/Principal Engineer



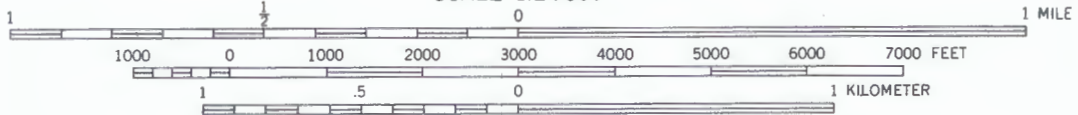
Attachments:

- Figure No. 1 - Site Vicinity Map
- Figure No. 2 - Site Exploration Plan
- Figure No. 3 - Soil Probe Logs



LAKE OSWEGO QUADRANGLE
 OREGON
 7.5-MINUTE SERIES (TOPOGRAPHIC)

SCALE 1:24 000



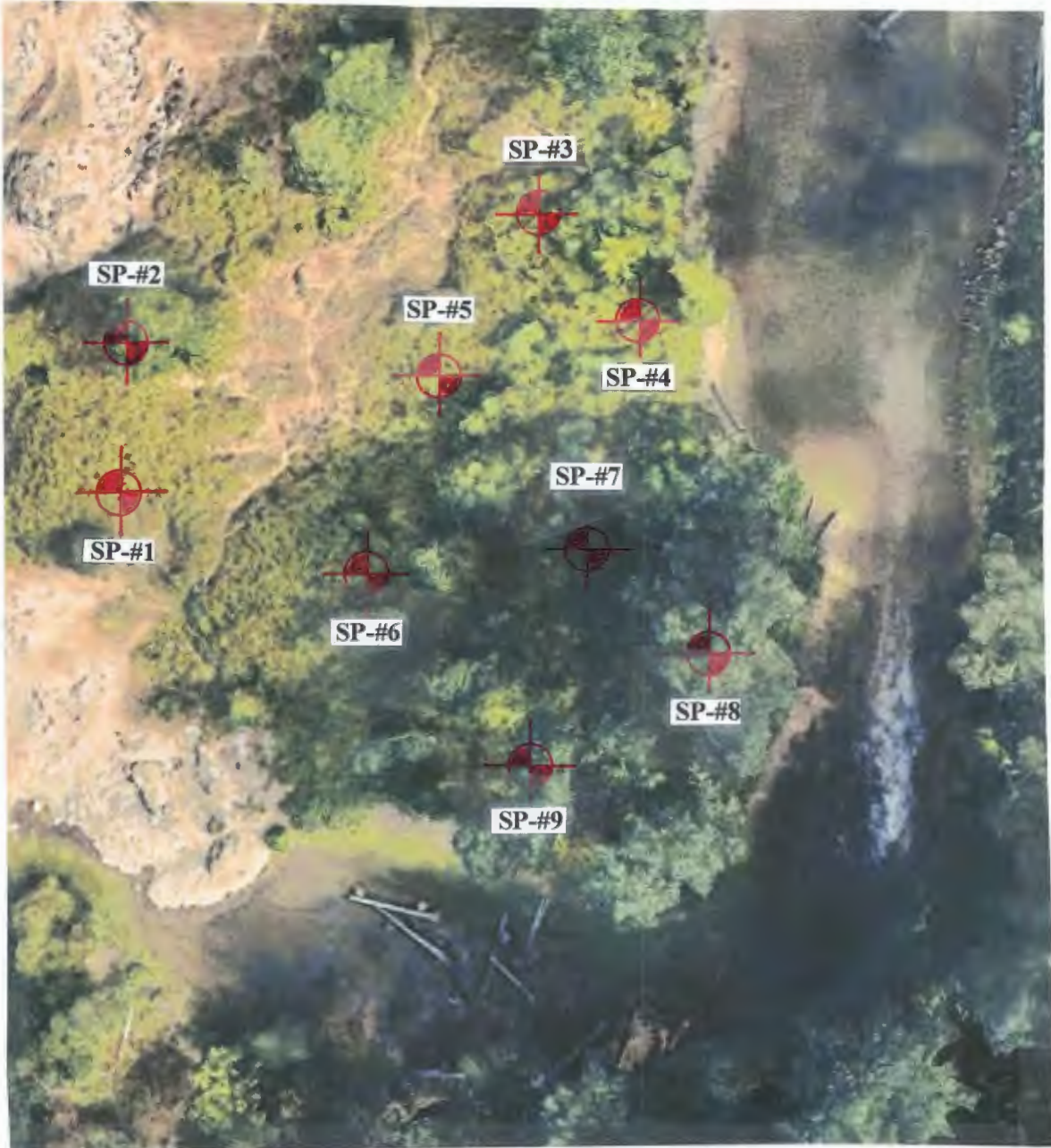
CONTOUR INTERVAL 10 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 DEPTH CURVES AND SOUNDINGS IN FEET—WILLAMETTE RIVER DATUM

SITE VICINITY MAP

Project No. 1549.002.G

ELK ROCK ESTATES SITE

Figure No. 1



LEGEND

SP-#9 Indicates approximate location of soil probe

SITE EXPLORATION PLAN

ELK ROCK ESTATES SITE

Project No. 1549.002.G

Figure No. 2

SOIL PROBE LOGS

Soil Probe Location

Depth of Existing Soil Cover

SP-#1	+2.0'
SP-#2	+3.0'
SP-#3	+2.0'
SP-#4	+3.0'
SP-#5	+2.0'
SP-#6	+3.0'
SP-#7	+3.0'
SP-#8	+3.0'
SP-#9	+3.0'

Figure No. 3