HOOD STREET PROJECT
NWS-2022-00219
PRELIMINARY WETLAND MITIGATION PLAN

Camas, Washington

Prepared for:
Modern NW.
8101 NW Glisan
Portland, OR 97213

Prepared by:
Olson Environmental, LLC
222 E. Evergreen Blvd.
Vancouver, WA 98660
(360) 693-4555

July 13, 2022

OLSON ENVIRONMENTAL LLC
ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION

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PRELIMINARY WETLAND MITIGATION PLAN

Project: Hood Street
Applicant: Modern NW
Location: 1811 Hood Street, Camas, Washington
Legal Description: NE & NW ¼ of Section 09,T1N, R3E, W. M., Clark County
Serial Number(s): 127415-000 (4.67 ac.) and 127440-000 (1.41 ac.)
Local Jurisdiction: Camas
Study Area Size: 6.08 acres
Watershed: Lacamas Creek/Dwyer Creek (10)
WRIA: 28 Salmon/Washougal
Project Type: Residential
Zoning: R-7.5
CompPlan: SFM (Single Family Medium)
Plan by: Kevin Terlep
Report Date: July 13, 2022

1.0 INTRODUCTION

This report details a preliminary wetland mitigation plan prepared by Olson Environmental, LLC (OE) for Modern Northwest (Applicant). The study area is located at 1811 Hood Street, Camas, Washington (Fig 1). The study area is a total of 6.08 acres and includes the entirety of parcel 127415-000 (4.67 acres) and 127440-000 (1.41 acres). The Applicant is proposing to build a 17-unit single-family residential housing development, including roads and parking spaces (Fig. 2). This report addresses compensatory mitigation for proposed direct and indirect impacts to three (3) wetlands occurring on the site, as regulated by the Camas Municipal Code (CMC) 16.53 (Wetlands), the Washington State Department of Ecology and the US Army Corps of Engineers under Sections 404 and 401 of the Clean Water Act, respectively.

2.0 EXISTING CONDITIONS

The majority of the study area is open grassland, it slopes moderately from the northeast to the southwest (Fig. 3). One existing house is located in the northeast corner of the property. The eastern property line is immediately parallel to Northwest Hood Street and NW Columbia Summit Drive and NW Klickitat Street are to the north and west, respectively. The property is located within the Dwyer Creek sub-watershed of the Lacamas Creek watershed (WRIA 28). Photographs of the study area are provided in Photo-Sheets 1-4.

2.1 Wetlands

OE conducted a wetland assessment within the project area on June 11, and 14, 2021 using the USACE methodology found in the Regional Supplement to the Manual (USACE 2010). In addition, OE met with a representative from USACE on June 21, 2022. The site visit confirmed identified an additional two (2) wetland units and additional wetland area within the one (1) previously identified wetland.

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Through the course of the field investigation and verification, three (3) slope hydrogeomorphic-class (HGM) wetlands were identified (Table 1). According to the US Fish and Wildlife service wetland classification system, Wetlands A, B, and C are classified as palustrine, with emergent vegetation and seasonally ponded or saturated.

Table 1. Summary of Identified Wetlands

Wetland Identifier	HGM Class	Surface Area	
A	Slope	19,311 ft^2	.44 ac.
B	Slope	2,057 ft^2	.05 ac
C	Slope	6,333 ft^2	.15 ac

Wetland A

Wetland A was identified along the west property line (Fig. 4) in the area indicated by a previous wetland study. This wetland appears to be a remnant of a larger wetland that extended to the northeast and continues onto the property to the west. Vegetation within the wetland is dominated by soft rush (*Juncus effusus* -FACW), teasel (*Dipsacus fullonum* -FAC), velvet grass (*Holcus lanatus* -FAC) and reed canary grass (*Phalaris arundinacea* -FACW). Soils within the wetland are characterized by dark brown to very dark grayish brown matrices (7.5-10YR 3/1) at depths of 0-16 inches, with 2-5% strong brown (7.5YR4-6) redox concentrations occurring at depths 6-16 inches within the matrix. The hydric soil indicator for these soils was redox dark surface (F6). The wetland hydrology indicators were geomorphic position (D2), oxidation within the rhizosphere of living roots (C3) and passing the FAC-neutral test (D5). A summary of the identified wetland is provided in Table 1.

During the on-site boundary verification with USACE on June 21, 2022, primary hydrology indicators including surface water (A1), *saturation* (A3), *iron staining*, and *algal matting* (B4) were observed. These indicators served as the basis for including more wetland area than was identified in 2021

Wetlands B and C

Wetlands B and C are similar in terms of hydrology, vegetation, and soils and will be described together. Wetland B is located east of Wetland A between the house within the study area to the north and the home and yard in the adjacent parcel to the south. Wetland C is located along the northern property line.

During the on-site boundary verification for Wetland A, Wetlands B and C were identified. Neither primary nor secondary hydrology indicators were evident in 2021, so these wetlands were documented at that time. USACE verified the boundaries of both these wetlands when on-site June 21, 2022. Recent mowing of the site has caused deep rutting and soil disturbance within Wetland B and C where soils were wet on the slopes. The hydrology indicators observed to make the positive wetland determination included *surface water* (A1), *saturation* (A3), and *algal mats* (B4).

Due to the mowing, diagnostic characteristics of vegetation were lacking, and positive identification was not possible. Accordingly, hydrology and soils were used independently of vegetation, based on the problematic procedure for hydrophytic vegetation.

Soils within Wetlands B and C were a silt loam, each with an upper layer of very dark grayish brown (10YR3/2). The lower depleted layer was a gray to grayish brown (10YR5/21 to 10YR5/2) with distinct yellowish red (5YR5/6-4/6) redox concentrations within the matrix. The hydric soil indicator for both wetlands was F3, *depleted matrix.*

2.1.1 Wetland Functional Assessment

The 2014 Update of Washington State Wetland Rating System for Western Washington (Hruby, 2014) was used to assess the functional characteristics of the identified wetland unit. For the purposes of the functional rating, the HGM class of the wetland unit was used to determine the applicable rating form. Each of the three (3) wetlands identified within the study area were rated as Category IV slope wetlands with habitat scores of 3 (Table 2).

Table 2. Wetland Functional Ratings and Buffers

Wetland Identifier	HGM Class used for Rating	Water Quality Score	Hydrologic Score	Habitat Score	Total Score	Wetland Category
A	Slope	5	6	3	14	IV
B	Slope	5	4	3	12	IV
C	Slope	5	4	3	12	IV

2.1.2 Wetland Buffers

CMC 16.53.040 provides for the protection of wetlands within Camas's jurisdiction. The ordinance establishes protective buffers associated with wetlands and specifies that certain permits or approvals be obtained for projects containing wetlands or their respective buffers.

CMC requires that Category IV wetlands with habitat function scores of 3 to be protected with a 50-foot high-intensity land use buffer (CMC Table 16.53.040-1). The buffer width for each of the three (3) identified wetlands is depicted in Figure 4 and summarized in Table 3, below. In addition to CMC 16.53, jurisdictional wetlands are also regulated at the federal and state levels by the US Army Corps of Engineers (USACE) and the Washington State Department of Ecology (Ecology) under Sections 404 and 401 of the Clean Water Act, respectively. Any impacts to the wetlands may require notification and approval from the USACE and Ecology.

Table 3. Wetland Buffers – High Land Use Intensity

Wetland Identifier	Local Jurisdiction	Wetland Category	Habitat Score (level of function)	Adjacent Land Use Intensity	Buffer Width (feet)
A	City of Camas	IV	3 (Low)	High	50
B	City of Camas	IV	3 (Low)	High	50
C	City of Camas	IV	3 (Low)	High	50

2.2 Non-Wetlands

Most of the non-wetlands throughout the site are dominated by an open grassland that is mowed periodically. Dominant species within the pasture include velvet grass, red fescue (*Festuca rubra* -FAC), reed canary grass, and meadow foxtail (*Alopecurus pratensis* -FAC). Very few trees occur within the study area but several big-leaf maples (*Acer macrophyllum* -FAC) were observed within the study area. A tree line is also formed by the backyards of adjacent parcels to the west. Some of the species there include Douglas-fir (*Pseudotsuga menziesii* -FACU), western red cedar (*Thuja occidentalis* -FAC), and Oregon ash (*Fraxinus latifolia* -FACW).

3.0 AVOIDANCE AND MINIMIZATION

Site plans have been modified to avoid as much direct impact within Wetland A as possible. However, some direct impact within Wetland A is still necessary to allow for a viable project and reasonable use of the property. Direct impacts were also unavoidable for all of the wetland area within Wetlands A and B (Fig 5).

The following additional measures will be taken:

1. The wetland, and wetland buffer boundaries will be temporarily flagged in the field prior to construction.
2. Erosion control measures (e.g. straw bale sediment barriers or sediment fence) will be installed to prevent siltation from entering the sensitive areas during construction.
3. The erosion control measures will be removed once construction is completed and vegetation has become established.

4.0 PROPOSED IMPACTS

4.1 Wetland Impacts

Based on the proposed site plan, unavoidable impacts are proposed to Wetland A, B, and C in the form of grading, excavation and filling (Fig 5). Proposed direct impacts include .19, .05, and .15 acres within Wetlands A, B, and C, respectively. In addition, .19 acres of indirect wetland impact are proposed within Wetland A.

Temporary construction impacts from the installation of an underground detention pipe, outfall, and riprap pad for the stormwater facility are proposed an additional .01 acres within Wetland A (Fig. 6). All proposed impacts are summarized in Table 4.

Table 4: Summary of Total Wetland Impact Area

Wetland Identifier	Wetland Category	Total Area		Direct Impacts (permanent)		Indirect Impacts (permanent)		Temporary Impacts	
		ac	ft^2	ac	ft^2	ac	ft^2	ac	ft^2
A	IV	.44	19,311	.19	8,294	.19	8,484	.01	564
B	IV	.05	2,057	.05	2,057	n/a	n/a	n/a	n/a
C	IV	.15	6,333	.15	6,333	n/a	n/a	n/a	n/a
Totals:		.64	27,701	.39	16,684	.19	8,484	.01	564

4.2 Buffer Impacts

Construction of a 4-ft x 100-ft underground detention pipe for the stormwater facility will result in temporarily filling 154 ft^2 of the wetland buffer along its eastern edge. In addition, a 123 ft^2 riprap pad will be installed, causing permanent impacts within the wetland buffer. A 15-foot construction zone for the above activities will result in an additional 3,421 ft^2 of temporary impact (Table 5 and Fig. 6).

Table 5: Summary of Total Wetland Buffer Impact Area

Wetland Identifier	Wetland Category	Total Buffer Area	Impact Area			
		ac	Permanent Impacts		Temporary Impacts	
			ac	ft^2	ac	ft^2
A	IV	.83	.003	123	.08	3,575
B	IV	.43	n/a*	n/a*	n/a*	n/a*
C	IV	.38	n/a*	n/a*	n/a*	n/a*

* Direct impacts are proposed for the entirety of Wetlands B and C. Therefore, buffer impacts do not apply.

5.0 WETLAND COMPENSATION FOR PERMANENT IMPACTS

5.1 Approach

For the proposed permanent wetland impacts associated with the project, the Applicant is proposing the purchase of bank credits as a means of compensation. The direct and indirect impacts to Wetland A for the Hood Street Project will be compensated through the purchase of credits from the Terrace Wetland Bank (TWB). TWB is located approximately 5.7 miles northwest of the project area (Fig. 7), within the Burnt Bridge Creek Watershed.

The bank site has been extensively farmed for at least 60 years, which has drastically altered all aspects of the wetland, including the hydrology through the installation of drain tiles, the soils through repetitive plowing, and the vegetation through continued agricultural production. There was the potential to create a significant amount of functional lift to wetlands and other aquatic resources on the project site, by reestablishing and restoring the historic wetland system and improving existing stream complexity. Ecology's Selecting Wetland Mitigation Sites Using a Watershed Approach (2009) was used to evaluate the mitigation potential of the site. The bank sponsor is proposing to re-establish 85.02 acres of wetland, rehabilitate 4.02 acres of wetland, enhance 0.10 acres of wetland, and the enhancement of 2.53 acres of open channel enhancement along Burnt Bridge Creek. The service area for TWB is shown in Figure 8 and includes the project area.

5.2 Impacted Wetland Resource Functions

5.2.1 Water Quality and Hydrologic Functions

Wetland A moderately contributes to improving water quality based on dense rigid vegetation in a portion of the down-slope area of the wetland on-site. Most of the dense rigid vegetation in this area is composed of reed canary grass and patches of soft rush. The steeper-sloped areas on top of the hillside and the down-slope western portion of Wetland A appear to be the only locations within the study area that are not mowed periodically. In contrast, Wetlands B and C are mowed and also lack dense rigid vegetation that would trap sediment and pollutants. During the wet season, Wetlands B and C are left un-mowed but still lack the rigid vegetation necessary for water quality improvement.

The landscape within the study area does produce excess runoff, but slopes across the site are relatively steep so surface water drains from the area in a relatively short period of time without being impounded. Wetlands A, B, and C do not discharge directly into waters on the 303(d) list, nor are they within a basin or sub-basin where water quality is an issue.

5.2.2 Habitat Function

Habitat loss to Wetland A, B, and C will be minimal. Most of the study area is currently composed of non-native pasture grasses, with a species richness of approximately 5-10. The site does not support a high level of habitat interspersion; emergent vegetation is the only vegetation community that is present within the any of wetland units on-site. A small amount of tree cover does exist along the northern property line, and just west of the wetland boundary where there is a single tree. However, neither location contributes significantly to on-site habitat.

At the land-scape level, the study area is surrounded by high density urban development, with > 50% high intensity land use within 1 kilometer of each of the wetland units on-site. Accessible habitat is also very low for each wetland unit. Lastly, the site does not support species or habitats that valued by society such as threatened or endangered species or WDFW Priority Habitats and Species.

5.3 Wetland and Aquatic Resource Functions Provided at TWB

The following sections are derived from the Terrace Wetland Bank Mitigation Bank Instrument (2017). This information demonstrates that the water quality, hydrologic and habitat functions provided by TWB will provide a functional lift to those provided at the project site.

5.3.1 Water Quality Functions

Water quality functions will be significantly improved over current conditions by replacing the existing disturbed wetland vegetation with forested, scrub-shrub, and emergent persistent vegetation that can trap nutrients, sediments and pollutants, and the increased inundation resulting from disabling the drain tiles will increase the wetland's ability to provide denitrification. Reconnection of the stream to its floodplain will also provide additional water quality improvement within the stream, by allowing floodwaters to disperse into the site and be filtered through wetland soils before returning to the stream. In addition, planting the site with native forested, scrub/shrub and emergent vegetation will increase sediment trapping opportunities on the site which will also increase water quality functions.

Additionally, the Bank site itself directly contributes agricultural runoff high in sediment and herbicides. Establishment of the Bank will allow onsite agricultural practices to cease, eliminating the potential for chemical contaminants to enter the downstream watershed from the site. The resulting overall score for the wetland unit improving water quality functions is high (9 points), which reflects a 3 point increase over baseline conditions.

5.3.2 Hydrologic Functions

Currently, groundwater, runoff, and flood water from Burnt Bridge Creek within the Bank site is quickly and effectively conveyed downstream through the extensive drain tile system. In addition, Burnt Bridge Creek floodplain is disconnected from the stream by a man-made berm along the length of its banks. The stream bank reshaping of the incised channel will remove this man-made berm or raised mound that has formed over years of periodic ditch dredging and deposition of spoils on the banks above the top of the stream. This mound has inadvertently kept higher stream flows from spreading out into the adjacent floodplain where flood waters would normally be stored. Reconnection of Burnt Bridge Creek to its floodplain will provide rehabilitation to the existing floodplain wetlands onsite, which will see an improvement in hydrological function by enabling the floodplain wetlands to assist in capturing and reducing peak flows and downstream erosion processes.

Removal and disabling of numerous drain tiles will allow water storage within the current fields to increase dramatically, returning the wetlands to their historic condition of high water holding capacity. By doing so, the soils will re-saturate and replenish flows to Burnt Bridge Creek throughout the year and in an on-going and sustainable fashion, rather than constant fluctuating flows caused by the artificial drain tiles. High stream flows will saturate adjacent floodplain soils, improving natural detention and reducing downstream impacts of high flood flows. Conversely, the saturated soils will meter flows back into Burnt Bridge Creek after flood events, allowing a natural hydrological cycle. This will supplement summer base flows within Burnt

Bridge Creek, buffer peak flows during flood events, reduce offsite flooding, reduce erosion, provide temperature regulation within the Burnt Bridge Creek during the summer, and recharge groundwater.

By increasing groundwater levels at the Bank site through disabling drain tiles, it will have an effect of "mounding" the groundwater. This adds downward pressure on the groundwater as well as increased storage due to the highly absorbent peat soils. Therefore, it should not be assumed that a groundwater elevation increase at the Bank site only benefits Burnt Bridge Creek

Watershed hydrologically. Once the tiles are disabled, the flow path of the shallower groundwater will not only be lateral to Burnt Bridge Creek but also vertical and downward to the larger aquifer within the Upper Troutdale Formation (that bisects and discharges to both Burnt Bridge Creek and Lacamas Watersheds), thus providing hydrological improvements to areas well outside of the Bank boundary. The resulting overall score for the wetland unit improving hydrologic functions is moderately high (7 points), which reflects a 2 point increase over baseline conditions.

5.3.3 Habitat Functions

The majority of the Bank site currently contains limited habitat for wildlife. The wetlands onsite are low quality wetlands within managed agricultural fields. Within the Bank site, Burnt Bridge Creek consists of a ditched, incised channel with very little native riparian vegetation. The Bank is adjacent to Oregon White Oak Woodland Priority Habitat within the Oak Bank, however, the woodland area is currently disconnected from the Bank's existing wetlands by the historic and existing agricultural use of the majority of the Bank site.

The proposed site plan will provide diverse wetland habitat for a variety of large and small mammals, song birds, waterfowl, amphibians, and insects. The addition of trees and shrubs along the Burnt Bridge Creek will provide temperature regulation, cover, and leaf litter, important to the overall health of the stream system. Large woody material will be incorporated within the Bank site, in the form of horizontal logs and snags, and habitat features such as bird boxes and perch poles will provide additional areas for perching and nesting habitat for avian species. The improvements to the Burnt Bridge Creek corridor traversing the Bank site will increase functions such as food chain support, lower water temperatures, and improve base flow support. These improvements will be transported offsite and will potentially benefit Burnt Bridge Creek downstream areas that have been mapped as fish-bearing (within a half-mile downstream of the Bank site). In addition, the restored Bank site wetlands will be mutually beneficial to the wildlife corridors located both east and west of the Bank site, which encompass both wetlands and mapped Priority Habitat and Species areas (Figure A-3b, Wildlife Habitat Corridors). The resulting overall score for the wetland unit providing wildlife habitat functions is moderately high (7 points), which reflects a 2 to 3 point increase over baseline conditions.

5.4 Un-Compensated Aquatic Resource Functions

Construction of a 4-ft x 100-ft underground retention pipe will result in temporarily filling 154 ft^2 of the wetland buffer along its eastern edge. In addition, a 123ft^2 riprap pad will be permanently installed. A 15-foot construction buffer for the above utilities will result in an additional 3,421 ft^2

of temporary impact which will be restored post-construction. These impacts will be compensated on site, as discussed in Section 6 of this document.

5.5 Proposed Mitigation Credits

The credit-debit ratio for the bank is outlined in Table 6 (Bank Instrument – Appendix E, Table E-2). Wetland A, B, and C are Category IV wetlands, as rated by Ecology's updated rating system for western Washington (Hruby 2014). As per the approved TMB bank instrument, Category IV wetlands are compensated at a rate of .85:1. The indirect wetland impacts for Wetland A are compensated at one-half the direct impact ratio as per previous discussions with Ecology. Accordingly, the ratio for indirect impacts within Wetland A is .425.

Table 6: Typical Credit-Debit Ratios from Terrace Mitigation Bank Instrument.

Resource Impact	**Bank Credits: Impact Acreage**
Wetland, Category I	Case-by-Case
Wetland, Category II	1.2:1
Wetland, Category III	1:1
Wetland, Category IV	.85:1
Critical Area Buffer	Case-by-Case

Therefore, the applicant is proposing to purchase 0.41 bank credits (Table 7) to compensate for the combined .19 acres of direct wetland impacts within Wetlands A, B, and C and 0.19 acres of indirect impact to Wetland A.

Table 7: Mitigation Bank Credits Proposed for Wetland A Impacts

Wetland Unit	Total Wetland Area		Direct Impact Area (permanent)		Indirect Impact Area (permanent)		Wetland Rating	Credits Required per ratio/impact		Proposed Mitigation Credit Purchase
	acres	ft^2	acres	ft^2	acres	ft^2		Direct	Indirect	
								.85:1	.425:1	
A	.44	19,311	.19	8,294	.19	8,484	IV	.16	.08	.24
B	.05	2,057	.05	2,057	n/a	n/a	IV	.04	n/a	.04
C	.15	6,333	.15	6,333	n/a	n/a	IV	.13	n/a	.13
Total - Cat IV:	.64	27,701	.39	16,684	.19	8,484	Total	.33	.08	**.41**

5.6 Credit Purchase Timing

Please note that the applicant already secured .06 credits from the bank manager on March 4, 2022. We have contacted the bank manager and are waiting on information regarding credit availability for the remaining .35 credits.

6.0 WETLAND COMPENSATION FOR TEMPORARY IMPACTS AND BUFFER IMPACTS

6.1 Approach and Rationale

The temporary impacts caused by construction activities associated with the installation of the underground detention pipe will be restored with a native seed mix, the riprap pad will be planted with native seedlings. CMC 16.53.050-C3 provides that stormwater facilities are allowed in buffers of wetlands with low habitat function (scores <4), as long as functions are replaced and that they are designed to blend in with the natural landscape. In addition, CMC 16.53.050-D.7 states that temporary activities are allowed within wetlands provided that they last no longer than three (3) months that do not result in a reduction of function or acreage.

6.2 Planting Plan

Permanent buffer impact resulting from the installation of the riprap pad will be restored through the planting of native willow saplings, as outlined in Table 8 and is depicted in Figure 9.

Table 8: Riprap Pad Plantings

Species	Plant Form	Minimum Size	Minimum Spacing	Required Number
Native Willow (*Salix* spp.)	Stake	2’	3'	20
Total Plants				**20**

Source of Plant Materials. All plants will be obtained from nurseries specializing in plant materials native to the Pacific Northwest.

Planting Time. Bare-root shrubs and trees should be planted between December 1 and February 28, when plants are dormant. If planting is conducted outside this time period, containerized plant stock will be used and extra care and watering may be needed to ensure that plants become adequately established.

Planting Guidelines. A hole, one foot in diameter and one foot deep, shall be excavated for bare root stock. The holes should be large enough to accommodate the plant roots without restriction. Plants will be held in place with the top of the root mass at ground level. Topsoil will be backfilled around the roots and lightly tamped to remove any air pockets in the soil. Mulch (3 inches deep) shall be applied around the base of each plant. Future maintenance should use scarification (by hand) to keep the 1-foot diameter area free of herbaceous vegetation until plants are well established. If the soils are not saturated, each plant should be watered at the time of planting. Supplemental watering (every two weeks during the summer season) may also be required to ensure plant survival and mitigation success.

The footprint of the stormwater pipe and outfall in addition to a 15-foot construction buffer-zone within the wetland and buffer will be planted with a native seed mix, as outlined in Table 7 and depicted in Table 9.

Table 9. Native grass mix for wetland and buffer restoration.

Common Name	Scientific Name	Wetland Indicator Status	% by Weight	Seeding rate
meadow barley	*Hordeum brachyantherum*	FACW	40	1.0 lb/1000ft^2
California brome	*Bromus carnatus*	UPL	35	
Red fescue	*Festuca rubra rubra*	FAC	20	
Tufted hairgrass	*Deschampsia caespitosa*	FACW	3	
Spike bent grass	Agrostis exerata	FACW	2	

*Sunmark Seeds International, Inc erosion control mix

6.3 Mitigation Project Schedule

The restoration activities will occur during the winter/spring concurrent with the construction of the subdivision.

6.4 Goals And Objectives

The goal of this compensation plan is the is to re-establish native vegetative cover within the wetland buffer in areas temporarily impacted by construction activities (Fig 5).

Objective 1: Establish native herbaceous vegetative cover within the pipeline and outfall footprint, as well as within a 15-foot construction buffer within the wetland and wetland buffer.

Objective 2: Establish native woody species adjacent to the riprap for the stormwater outfall.

6.5 Performance Standards

Performance measures and standards are used to provide a basis for evaluating whether project goals and objectives are being met. This plan established the following criteria as the basis for evaluating mitigation compliance and success. In order to meet the goals and objectives, the mitigation must meet the following criteria:

Performance Standard Year 1 – Planted woody species in the scrub/shrub & forested areas of the mitigation site will achieve at 100 percent survival one year after the site has been planted. Any plants not surviving will be planted back to the original number proposed in this plan.

Year 1 - at least 100 percent survival of all planted native woody species.

Performance Standard Year 1 – Seeded areas will establish at least 60% cover after one year of planting. If cover is not achieved, it will be re-seeded.

6.6 Monitoring and Maintenance

The following actions will be implemented as part of the wetland mitigation monitoring and maintenance plan on this site:

1. The initial and all successive year plantings will be supervised by a qualified professional to ensure that correct planting procedures are followed and that plantings are done according to the planting scheme.

2. An as-built monitoring report will be submitted to the City once the plantings are installed.

3. Monitoring of planted areas will commence the summer following the initial planting (year 1). Monitoring will be conducted by a qualified professional during the late spring or summer time period. For each year that monitoring is required, a report documenting the monitoring results will be submitted to the City of Camas. The report will identify deficiencies in the mitigation progress and any contingency measures that will be taken to correct those deficiencies. Photographs taken from established photo-stations will be included with these reports.

4. To ensure planting success, the applicant will be responsible for performing minor maintenance over the monitoring period. This will include the selective removal of undesirable plant species such as blackberry (*Rubus* spp.) that may be hindering the growth and establishment of the favored plant stands. An area, 1-foot in diameter surrounding each planted woody species, will be kept free of competing vegetation. This can be accomplished either by scarifying the area by hand or through the use of weed-control rings.

5. Maintenance of the enhancement area may include irrigation of the planted stock. A watering schedule will be established during the dry months (June through September) so that the plants are watered on a weekly basis during this time period. If necessary, a temporary above ground irrigation system capable of watering the entire enhanced wetland area will be installed.

6. Any maintenance that is required within the wetland area will be supervised by a qualified wetland professional familiar with this project.

6.7 Adaptive Management Plan

Adaptive management plans are designed to identify potential courses of action, and any corrective measures to be taken when monitoring indicates project goals are not being met. The contingency measures for this site are as follows:

1. Replacement Plantings—Replacement plantings will also be made throughout the monitoring period if monitoring reveals that unacceptable plant mortality has occurred. Woody species will be re-planted to the original number of plants proposed in the accepted mitigation plan annually throughout the duration of the monitoring and maintenance period. In addition, if herbaceous cover fails to establish where native seeding was performed, it will be re-seeded.

2. Soil Erosion—Any areas demonstrating soil erosion problems will be restored as soon as possible. If there does not appear to be a problem with the original design, the eroded areas will be restored by replacing any lost topsoil and replanted according to the original planting scheme. See Table 10 for additional maintenance and contingency measures.

Table 10: Maintenance and Contingency Requirements

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Planting Areas	Trash and debris	Any trash or debris which exceeds 1 $ft^3/100ft^2$ (equal to the volume of a standard size office garbage can). In general, there should be no evidence of dumping.	Trash and debris cleared from site.
Planting Areas	Erosion	Eroded damage >2 inches deep where cause of damage is still present or where there is potential for continued erosion.	Eroded areas should be stabilized with appropriate erosion control BMPs (e.g., seeding, mulching, rip rap).
Planting Areas	Plant mortality	Plant mortality jeopardizes attaining the required survival rate.	Plants should be replaced according to the planting plan. Modifications to the planting plan should be made if monitoring identifies problems with the original planting scheme.
Planting Areas	Invasion of undesirable plant species.	Undesirable plant species are hindering the growth and establishment of the favored plant stands.	Undesirable species removed by hand, or in accordance with recommendations of the Clark County Weed Control Board.

6.8 DEMARCATION

As required by CMC 16.53.040-C (Standards), Small signs shall be posted at an interval of one (1) per lot or (1) every 100 feet, whichever is less, and perpetually maintained at locations along the outer perimeter of the wetland buffer approved by the responsible official worded substantially as follows: “Wetland and Buffer – Please retain in a natural state”.

7.0 LITERATURE CITED

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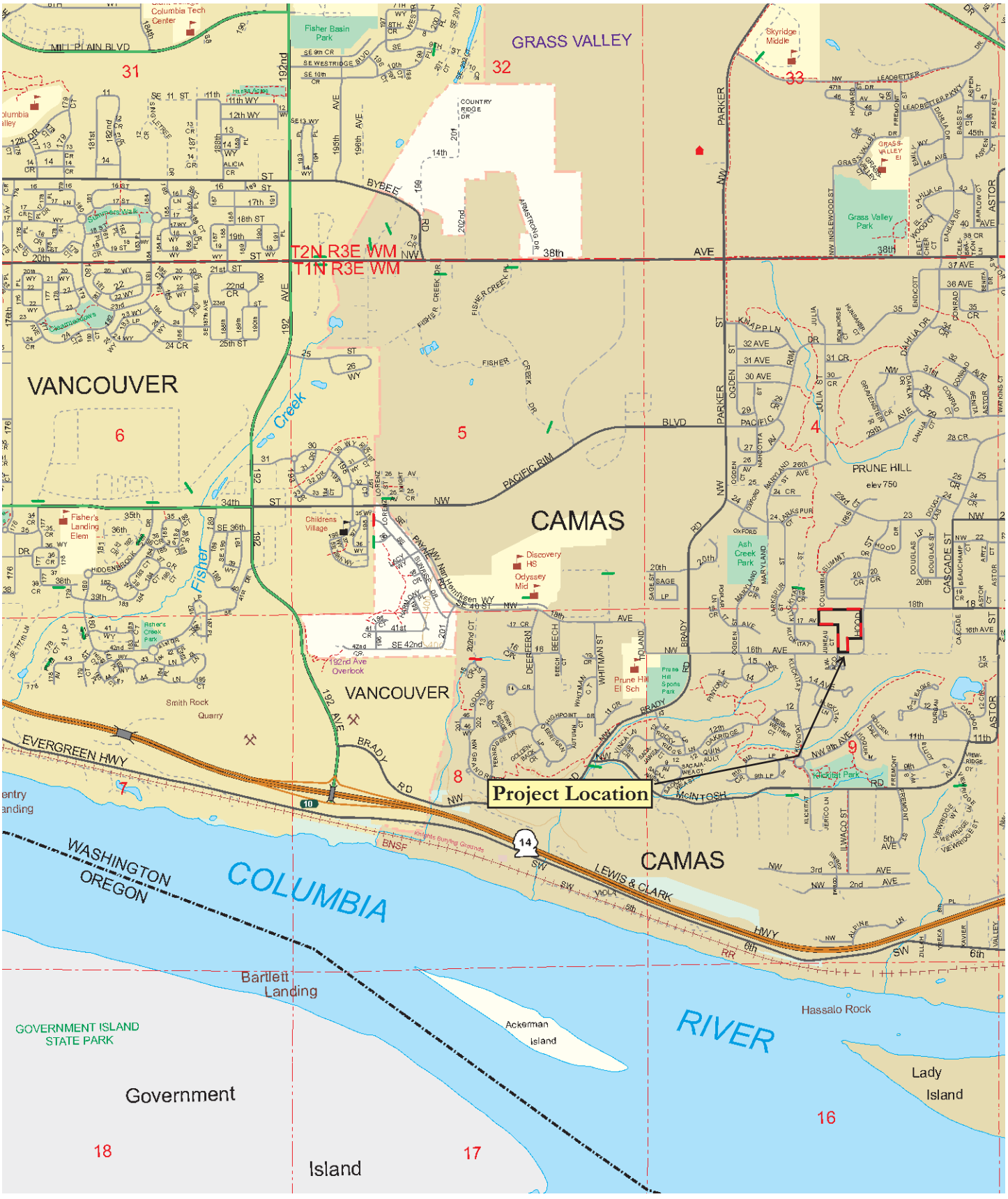
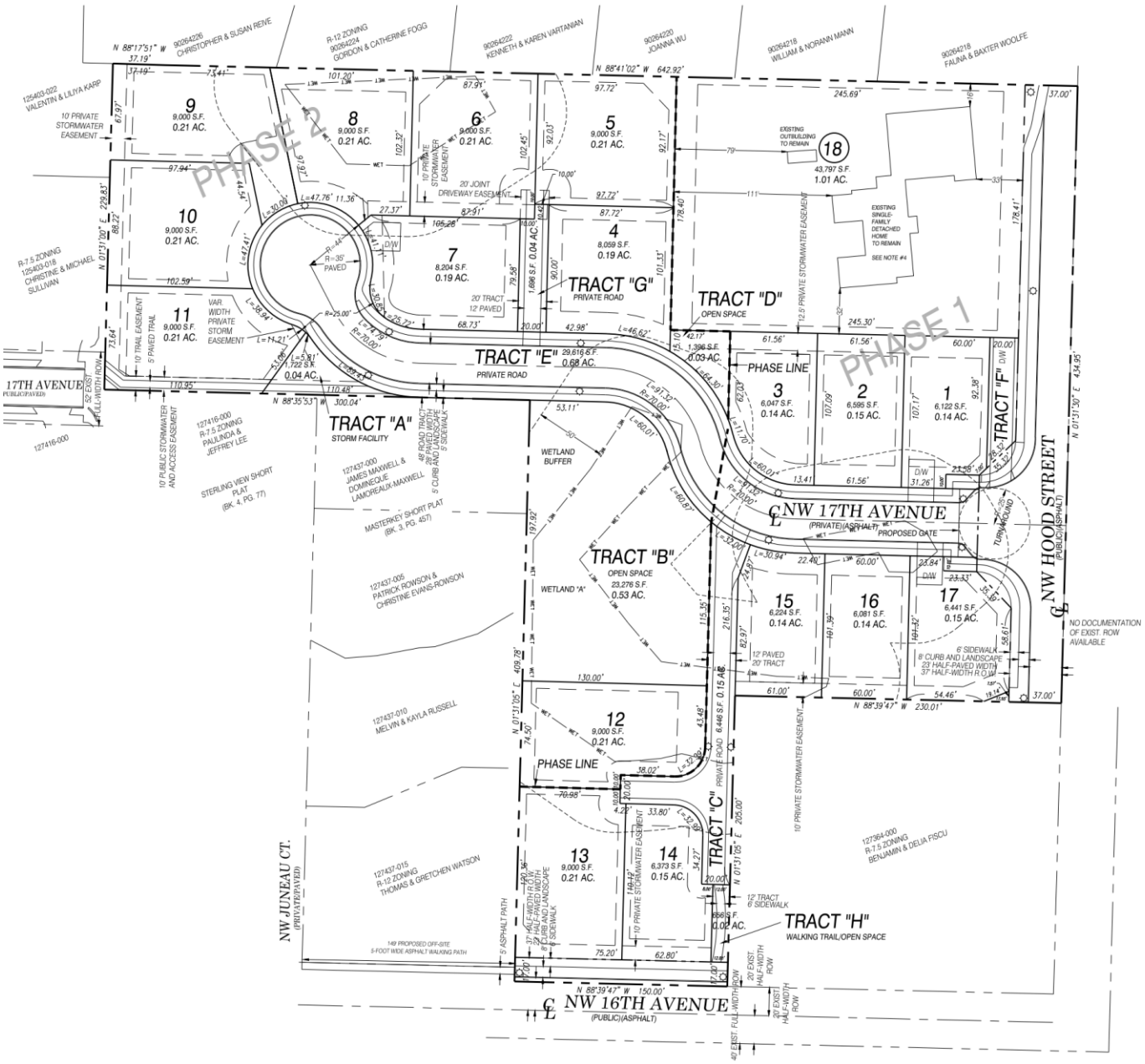


APPLICANT: Modern NW 8101 NW Glisan Portland, OR 97213 **PURPOSE:** Preliminary Wetland Mitigation Report	**Project Location** **Hood Street (NWS-2022-00219)** **Camas, Washington** OLSON ENVIRONMENTAL LLC 222 E. Evergreen Blvd., Vancouver, WA 98660 ph: 360-693-4555 fax: 360-699-6242	**PROPOSED ACTIVITIES IN:** Lacamas Creek Watershed **LEGAL:** NE & NW 1/4 of S09, T1N, R3E W. M. **NEAR:** Camas, Washington **COUNTY:** Clark County **DATE:** July 13, 2022 **Figure 1**



APPLICANT:
Modern NW
8101 NW Glisan
Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Proposed Site Plan
Hood Street (NWS-2022-00219)t
Camas, Washington

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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
NEAR: Camas, Washington
COUNTY: Clark County
DATE: July 13, 2022

Figure 2

APPLICANT:
Modern NW
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Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Topographic Map [Clark County GIS]
Hood Street (NWS-2022-00219)
Camas, Washington

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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
NEAR: Camas, Washington
COUNTY: Clark County
DATE: July 13, 2022

Figure 3

APPLICANT:
Modern NW
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PURPOSE:
Preliminary Wetland Mitigation Report

Delineated Wetland and Buffers - High LUI
Hood Street (NWS-2022-00219)t
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NEAR: Camas, Washington
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Figure 4

APPLICANT:
Modern NW
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Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Direct and Indirect Wetland Impacts
Hood Street (NWS-2022-00219)
Camas, Washington

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Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
NEAR: Camas, Washington
COUNTY: Clark County
DATE: July 13, 2022

Figure 5

APPLICANT:
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PURPOSE:
Preliminary Wetland Mitigation Report

Temporary Wetland and Wetland Buffer Impacts
Hood Street (NWS-2022-00219)
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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
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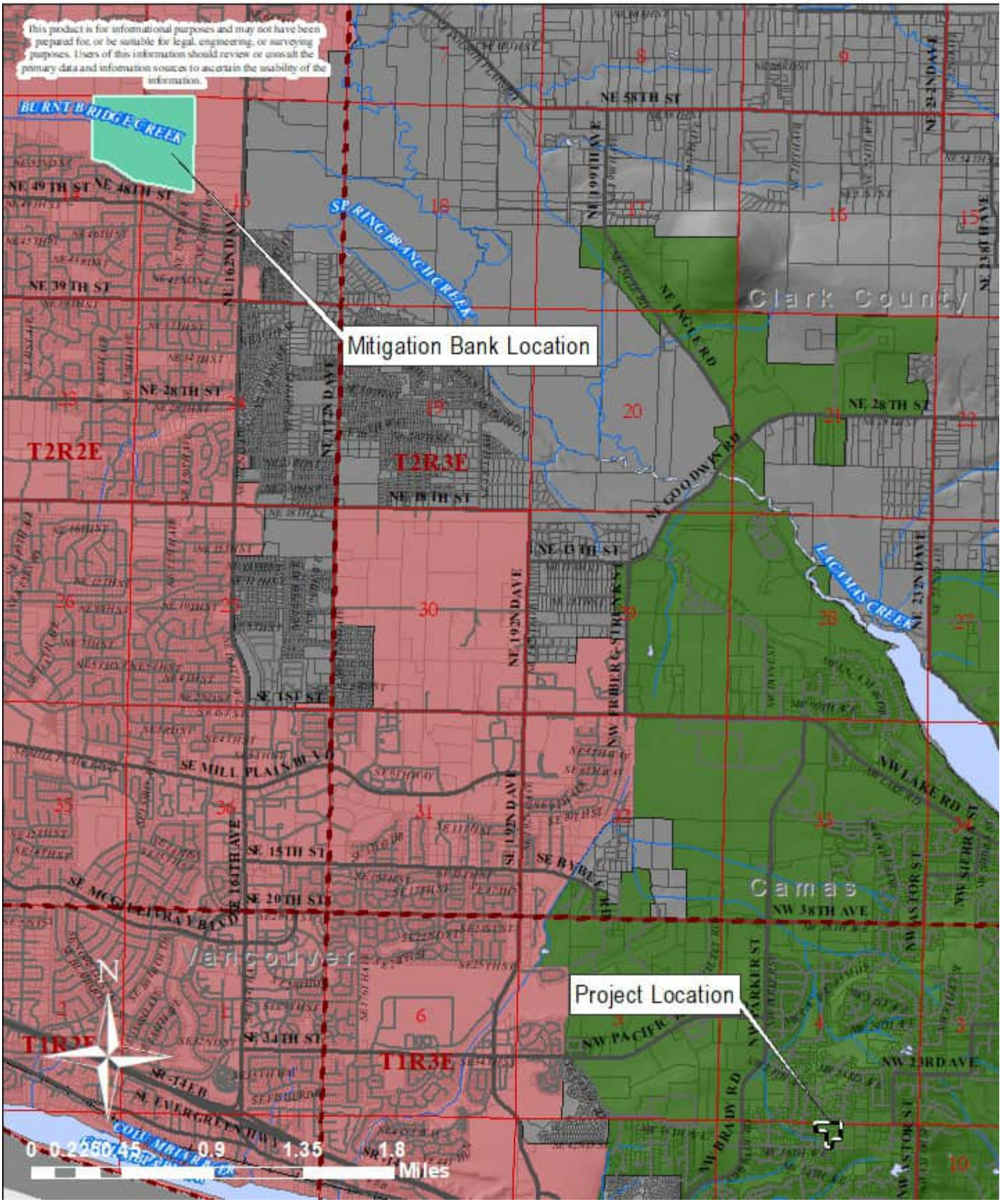
DATE: July 13, 2022

Figure 6



APPLICANT:
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PURPOSE:
Preliminary Wetland Mitigation Report

Project and Terrace Wetland Bank Locations
Hood Street (NWS-2022-00219)
Camas, Washington

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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
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DATE: July 13, 2022

Figure 7

APPLICANT: Modern NW 8101 NW Glisan Portland, OR 97213 **PURPOSE:** Preliminary Wetland Mitigation Report	**Project Location &Terrace Wetland Bank Service Area** **Hood Street (NWS-2022-00219)** **Camas, Washington** OLSON ENVIRONMENTAL LLC 222 E. Evergreen Blvd., Vancouver, WA 98660 ph: 360-693-4555 fax: 360-699-6242	**PROPOSED ACTIVITIES IN:** Lacamas Creek Watershed **LEGAL:** NE & NW 1/4 of S09, T1N, R3E W. M. **NEAR:** Camas, Washington **COUNTY:** Clark County **DATE:** July 13, 2022 **Figure 8**

APPLICANT:
Modern NW
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Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Restoration Activities
Hood Street (NWS-2022-00219)
Camas, Washington

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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
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DATE: July 13, 2022

Figure 9

Wetland Finger Facing East

Top of Wetland Facing West

Wetland Finger Facing West

Maples Along Northern Property boundary

Bottom of Wetland Facing South

Western Property Boundary Facing 16th Ave

APPLICANT:
Modern NW
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PURPOSE:
Preliminary Wetland Mitigation Report

Site Photographs: Wetland A (2021)
Hood Street (NWS-2022-00219)
Camas, Washington

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Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
NEAR: Camas, Washington
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DATE: July 13, 2022

Photo-Sheet 1






APPLICANT:
Modern NW
8101 NW Glisan
Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Site Photographs: Wetland A (2022)
Hood Street (NWS-2022-00219)
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DATE: July 13, 2022

Photo-Sheet 2

APPLICANT:
Modern NW
8101 NW Glisan
Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Site Photographs: Wetland B
Hood Street Project (NWS-2022-00219)
Camas, Washington

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PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NE & NW 1/4 of S09, T1N, R3E W. M.
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DATE: July 13, 2022

Photo-Sheet 3






APPLICANT:
Modern NW
8101 NW Glisan
Portland, OR 97213

PURPOSE:
Preliminary Wetland Mitigation Report

Site Photographs: Wetland C
Hood Street (NWS-2022-00219)
Camas, Washington

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Photo-Sheet 4