



**CRITICAL AREA STUDY
AND
BUFFER RESTORATION PLAN**

FOR

STEVE & PAULINE SMITH
SUNNYSIDE NURSERY – 40TH ST NE
MARYSVILLE, WA

Wetland Resources, Inc. Project #17182

Prepared By
Wetland Resources, Inc.
9505 19th Avenue SE, Suite 106
Everett, WA 98208
(425) 337-3174

Prepared For
Steve & Pauline Smith
3915 Sunnyside Blvd
Marysville, WA 98270

January 20, 2019

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	PROJECT DESCRIPTION.....	2
1.2	WETLAND CLASSIFICATIONS.....	2
1.2.1	Cowardin System Classifications.....	2
1.2.2	City of Marysville Classifications.....	2
2.0	WETLAND DETERMINATION REPORT.....	3
2.1	PUBLICLY AVAILABLE DATA.....	3
2.2	FIELD DETERMINATION METHODOLOGY.....	4
2.2.1	Hydrophytic Vegetation Criteria.....	4
2.2.2	Soils Criteria and Mapped Description.....	4
2.2.3	Hydrology Criteria.....	5
2.3	BOUNDARY DETERMINATION FINDINGS.....	5
2.3.1	Wetland A.....	5
2.3.2	Non-wetland Areas.....	5
2.3.3	Wildlife.....	6
3.0	WETLAND FUNCTIONS AND VALUES ASSESSMENT.....	6
3.1	METHODOLOGY.....	6
3.2	FUNCTIONAL COMPONENTS.....	6
3.2.1	Hydrologic Functions.....	7
3.2.2	Water Quality.....	7
3.2.3	Wildlife Habitat.....	7
3.3	VALUE ASSESSMENT.....	7
3.3.1	Wetland A.....	7
3.4	POST-MITIGATION FUNCTIONS AND VALUES.....	8
4.0	BUFFER RESTORATION AND ENHANCEMENT PLAN.....	9
4.1	RESTORATION PLANTINGS.....	9
4.1.1	Buffer Restoration and Enhancement.....	9
4.1.2	Wetland Restoration.....	10
4.1.3	Grass Seeding.....	10
4.1.4	Buffer Mix.....	10
4.1.5	Wetland Seed Mix.....	10
4.2	PROJECT MONITORING PROGRAM.....	11
4.2.1	Inspection and Reporting Requirements.....	11
4.2.2	Monitoring Components.....	11
4.3	PROJECT SUCCESS & COMPLIANCE.....	12
4.3.1	Criteria for Success.....	12
4.3.2	Goal.....	12
4.3.3	Definition of Success.....	12
4.3.4	Objectives.....	12
4.3.5	Performance Standards.....	13
4.4	MAINTENANCE.....	13
4.5	CONTINGENCY PLAN.....	15
4.6	PROJECT NOTES.....	15
4.7	PLANTING NOTES.....	15
5.0	PERFORMANCE BOND.....	18
6.0	USE OF THIS REPORT.....	19
7.0	REFERENCES.....	20

LIST OF APPENDICES

APPENDIX A: WASHINGTON DEPARTMENT OF ECOLOGY WETLAND RATING FORMS

APPENDIX B: WETLAND DETERMINATION DATA FORMS

APPENDIX C: CRITICAL AREA STUDY AND BUFFER ENHANCEMENT PLAN MAP

LIST OF FIGURES

FIGURE 1: AERIAL VIEW OF THE SUBJECT PROPERTY.1

1.0 INTRODUCTION

Wetland Resources, Inc. conducted a site investigation on May 5, 2015, on the 0.92-acre property located northeast of 40th Ave NE and Sunnyside Blvd in Marysville, WA. The property is comprised of one tax parcel (29050300106000) and is further located as a portion of Section 3, Township 30N, Range 5E, W.M.

This document was created in response to a Land Disturbing Activity (LDA) violation that occurred on the property. The subject property is generally flat with a slight northern aspect, and is rectangular in shape. The property borders a single-family development to the north, undeveloped parcels to the east and west, and the Sunnyside Nursery to the south. Property access is from the south via 40th Ave NE.

Prior to the violation, the site was sparsely forested with an overstory of black cottonwood and alder, and a thin understory of salmonberry, spirea, and Himalayan blackberry. No structures existed on-site prior to the violation. As identified in aerial photography, trees and brush had been selectively cleared over the years, leaving only a small swath of vegetation in the middle of the parcel and extending along its northern boundary (Figure 1).



Figure 1: Aerial view of the subject property.

There is one Category III wetland located on the subject site, identified as Wetland A on the attached map. Wetland A is located along the northern portion of the property, and extends off site to the northwest. In the city of Marysville, Category III wetlands require 75-foot buffers,

pursuant to Marysville Municipal Code (MMC) 22E.010.100(4). There are no streams located on or adjacent to the subject property.

1.1 PROJECT DESCRIPTION

A land disturbing activity on the property triggered a notice by City of Marysville Code Enforcement. Vegetation was removed from the property in order to permit a community garden to be moved on site, and to allow more sunlight for said garden. Additionally, some minor grading occurred during the construction of the raised garden beds. Code enforcement was concerned that the vegetation that was removed was contained within the protective buffer of a large wetland complex that lies to the east about 350 feet. During the site visit performed by WRI, it was determined that the vegetation was actually associated with an on-site wetland, which was situated along the northern property boundary. Vegetation clearing and minor grading impacted approximately 15,484 square feet of buffer associated with Wetland A. This impact included the removal of all large trees and understory plants, and well as minor grading associated with the installation of raised garden beds in the northwestern corner of the property.

As a means of resolving the violation, Steve & Pauline Smith, hereafter referred to as the applicant, is proposing to purchase mitigation bank credits for the 4,409 square feet of wetland on-site, and designate the wetland area as regulated buffer. Although no actual impacts will occur in the wetland designated as buffer, mitigation will be provided for these areas as compensatory mitigation as if the wetland was filled. No actual wetland fill will occur on-site, and as such a JARPA will not be required. Additionally, as a means of providing further wetland protection, the applicant will voluntarily provide a natively vegetated 25-foot buffer surrounding the on-site portion of the subject wetland, which will be demarcated by a split-rail fence. Mitigation Bank use will occur pursuant to MMC 22E.010.130. As a result of the proposed mitigation plan (mitigation bank credits), all impacts associated with the LDA violation will be considered resolved.

1.2 WETLAND CLASSIFICATIONS

1.2.1 Cowardin System Classifications

According to the Cowardin System, as described in Classification of Wetlands and Deepwater Habitats of the United States, the classification for the on-site critical areas are as follows:

Wetland A: Palustrine, Forested Wetland, Broad-leaved deciduous, Seasonally Flooded/Occasionally Flooded/Saturated

1.2.2 City of Marysville Classifications

Under the city of Marysville Municipal Code (MMC), Chapter 22E.010, the on-site critical areas are classified as follows:

Wetland A

Category III Wetland: This wetland has two vegetation classes, contains some seasonally flooded areas, and provides moderate habitat value for fish or wildlife. It scores a total of 18 points on the 2014 Wetland Rating Form for Western Washington, which equates to a Category III rating. Pursuant to MMC 22E.010.100(4), Category III wetlands require 75-foot protective buffers.

2.0 WETLAND DETERMINATION REPORT

2.1 PUBLICLY AVAILABLE DATA

Prior to conducting the site investigation, public resource information was reviewed to gather background information on the subject property and the surrounding area in regards to wetlands, streams, and other critical areas. These sources included the following:

USDA/NRCS Web Soil Survey

One soil map unit is predicted to occur on the subject parcel. Tokul gravelly medial loam is mapped on the entirety of the subject parcel. More detailed soil map unit descriptions are provided in the “2.2 Field Determination Methodology” section below.

USFWS National Wetlands Inventory (NWI)

No wetlands were identified in the immediate vicinity of the subject property. The nearest occurrence is a Palustrine Forested/Emergent wetland, located approximately 350 feet to the northeast.

Snohomish County SnoScape interactive mapping tool

No steep slopes with a gradient greater than 33% were identified on-site. In general, buffers occurring in areas with steep slopes are ineligible for reduction under standard application of the code (MMC 22E.010.100(5)(b)(ii)).

DNR FPARS ARCIMS Mapping Application for streams

There are no streams on or adjacent to the subject site. The closest mapped stream is Ebey Slough, which is 0.35 miles from the subject property.

WDFW Priority Habitat and Species (PHS) Interactive Map

Confirms that the nearest identified wetland is located approximately 350 feet northeast of the subject site. Additionally, Ebey Slough is mapped as providing habitat to multiple priority fish species, including several runs of Chinook and Steelhead.

WDFW Salmonscape Interactive Mapping System

Further confirms the presence of multiple salmonid species using the segment of Ebey Slough near to the subject site. Species include Chinook, steelhead, Coho, chum, pink, and bull trout.

2.2 FIELD DETERMINATION METHODOLOGY

Wetland Resources staff conducted a site visit on May 5, 2015, to locate wetlands and streams occurring within and near the project site. Wetland conditions were evaluated using routine methodology described in the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, (referred as 2010 Regional Supplement). MMC 22E.010.060(1) requires the use of the *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology Publication #96-94, March 1997, or as amended) for delineations in the city. Our findings are consistent with both manuals.

The following criteria descriptions were used in the boundary determination:

- 1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
- 2.) Examination of the site for hydric soils;
- 3.) Determining the presence of wetland hydrology

2.2.1 Hydrophytic Vegetation Criteria

The manuals define hydrophytic vegetation as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. One of the most common indicators for hydrophytic vegetation is when more than 50 percent of a plant community consists of species rated “Facultative” and wetter on lists of plant species that occur in wetlands.

2.2.2 Soils Criteria and Mapped Description

The manuals define hydric soils as those that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Field indicators are used for determining whether a given soil meets the definition for hydric soils.

According to NRCS Web Soil Survey, the soil map unit Tokul gravelly medial loam is predicted to occur on the subject property.

Tokul Gravelly Medial Loam, is described as moderately deep, moderately well drained soil on till plains. This soil formed in glacial till and volcanic ash. Typically, the surface is covered with a mat of leaves, twigs, and decomposed litter about two inches thick. The surface layer is dark brown gravelly loam about 4 inches thick. The subsoil is brown, strong brown, and dark yellowish brown gravelly loam about 18 inches thick. A hardpan is at a depth of about 31 inches. Permeability of this soil is moderate above the hardpan and very slow through it. Available water capacity is moderate. Included in this unit are areas of soils that have slopes of more than 8 percent, McKenna and Norma soils in depressional areas along drainageways on till plains, Terric Medisaprists in depressional areas on till plains, Winston and Pastik soils on terraces and outwash plains, and Ragnar soils on outwash plains. Included areas make up about 25 percent of

the total acreage. McKenna and Norma soils are listed as hydric on the Hydric Soils List for Washington State.

2.2.3 Hydrology Criteria

The Washington State Wetlands Identification and Delineation Manual, 1997 edition, states that “areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days ≥ 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands.” Field indicators are used for determining whether wetland hydrology parameters are met.

Based on the results of the site investigation, one wetland was identified on the subject property. The wetland was rated pursuant to the Washington State Wetland Rating System for Western Washington (updated 2014).

2.3 BOUNDARY DETERMINATION FINDINGS

2.3.1 Wetland A

This wetland is located on the north side of the property in a topographic depression. Wetland A is approximately 4,410 acres and a small portion extends off-site to the northwest. Dominant vegetation in Wetland A is represented by black cottonwood (*Populus balsamifera*; FAC), Douglas spirea (*Spiraea douglasii*; FACW), salmonberry (*Rubus spectabilis*; FAC), lady fern (*Athyrium filix-femina*; FAC), and reed canary grass (*Phalaris arundinacea*; FACW). The dominant species rate “facultative” or wetter, indicating that a hydrophytic vegetative community is present in the areas mapped as wetland.

Typical wetland soils from 0 to 8 inches below the surface have a Munsell color of very dark gray (10YR 3/1) and a sandy loam texture. From 8 to 18 inches below the surface, soils have a color of very dark gray (10YR 3/1) with 20% dark brown (10YR 3/3) redoximorphic features, and a sandy loam texture. These soils meet the F6 (Redox Dark Surface) hydric soil indicator. Soils were saturated at the surface, and the water table was observed at 6 inches below the surface during our May 2015 site visit.

Field observations indicate that the area mapped as wetland is flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soils. Therefore, the vegetation, soil, and hydrologic criteria are all met for the on-site wetland.

2.3.2 Non-wetland Areas

Dominant vegetation in the non-wetland areas adjacent to the wetland is represented by beaked hazelnut (*Corylus cornuta*; FACU), Douglas spirea (*Spiraea douglasii*; FACW), Red elderberry (*Sambucus racemosa*; FACU), common velvet grass (*Holcus lanatus*; FAC), red fescue (*Festuca rubra*; FAC), various *Agrostis* species (*Agrostis spp.*), western sword fern (*Polystichum munitum*; FACU), and Himalayan blackberry, (*Rubus armeniacus*; FACU).

Typical soils in the area mapped as non-wetland have a Munsell color of very dark yellowish brown (10YR 3/4), with a gravelly sandy loam texture, to 10 inches beneath the soil surface. The subsurface layer is dark yellowish brown (10YR 4/4) to at least 18 inches below the surface. No redoximorphic features were present within the soil profile. Soils were somewhat moist at the time of our May 2015 site investigation. Soils sampled in the area mapped as non-wetland do not appear to be flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part, and therefore do not appear to meet wetland soils criteria.

Given that the dominant vegetative community is not hydrophytic, direct hydrologic indicators are lacking, and hydric soils are absent in these areas, it appears that areas mapped as non-wetland do not meet criteria for wetlands.

2.3.3 Wildlife

Prior to the on-site violation, which resulted in the removal of all vegetation, Wetland A provided moderate habitat functions. Wetland A and its associated edges provide a potential movement corridor, which are extremely important as areas become more populated. The critical areas and the associated buffers contain resources such as food, water, thermal cover, and hiding cover in close proximity. Due to the lack of vegetation no wildlife species were detected during our on-site investigations in 2015, although several species, including gray squirrels (*Sciurus* spp.) and raccoon (*Procyon lotor*), are expected to occur within the area. Avian activity was not strongly detected. However, given the potential for available habitat after restoration efforts, it is expected that the following avian species would use the area: American Crow (*Corvus brachyrhynchos*), Steller's Jay (*Cyanocitta stelleri*), Black-capped Chickadee (*Poecile atricapilla*), Dark-eyed Junco (*Junco hyemalis*), Spotted Towhee (*Pipilo maculatus*), Song Sparrow (*Melospiza melodia*), and potentially Pacific Wren (*Troglodytes pacifica*).

3.0 WETLAND FUNCTIONS AND VALUES ASSESSMENT

3.1 METHODOLOGY

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetlands, but is typical for assessments of similar systems common to Western Washington.

3.2 FUNCTIONAL COMPONENTS

Wetlands in Western Washington perform a variety of ecosystem functions. Included among the most important functions provided by wetlands are stormwater control, water quality improvement, fish and wildlife habitat, aesthetic value, recreational opportunities and education. The most commonly assessed functions and their descriptions are listed below.

3.2.1 Hydrologic Functions

Wetlands often function as natural water storage areas during periods of precipitation and flooding. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or floodflow and controlling baseflows of downstream systems. Stormwater storage capacity and floodflow attenuation are generally a function of the size of the wetland and their topographic characteristics.

3.2.2 Water Quality

Surface water quality improvement is another evaluated function. Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Pondered areas within depression wetlands also allow sediments to drop out of suspension, thereby increasing water quality. As development increases, the potential for polluted water to reach wetlands and streams also increases. Unnaturally high inputs of pollutants, which are often found in urbanized areas, along with the size of the wetlands and the vegetation structure within them are the main limiting factors of this function.

3.2.3 Wildlife Habitat

Wetlands have potential to provide diverse habitat for aquatic, terrestrial, and avian species for nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including wetlands, adjacent uplands, large bodies of water, and movement corridors between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

3.3 VALUE ASSESSMENT

3.3.1 Wetland A

Hydrologic Function

Wetland A has a one hydrogeomorphic (HGM) Classification and is considered a depression wetland, with a constricted outlet. In general, wetlands in depression areas with limited outlets store greater amounts of water than wetlands containing outlets with unrestricted flows. Depression wetland areas, such as this, provide flood reduction functions by sequestering surface flows during storm events, thereby reducing the rate of hydrologic input downstream. By providing storage of stormwater, depressions attenuate surface flows, thus allowing floodwaters to reach downstream waterways over an increased period of time. The heights of downstream water levels are thereby reduced, decreasing over-bank flooding in urbanized areas. This wetland collects and temporarily stores precipitation as well as runoff from the surrounding area during storm events. However, the wetland's constricted outlet reduces the potential residence time of water within the wetland. The wetland therefore provides a moderate value for this function.

Water Quality

This wetland provides some water quality benefits as water moves through the system. Since this wetland is in a depression with a restricted outlet, the residence time is moderate. Depressional wetlands improve water quality by allowing sediment to settle out of the sequestered stormwater due to the reduction in flow velocity. This sediment is often ionically bonded to pollutants such as phosphorous. A large portion of Wetland A is seasonally flooded. Seasonally flooded depressional areas provide the aforementioned functions most effectively because of their ability to contribute live storage. As a result of property clearing, the current on-site conditions allow for a limited bio-filtration function due to the lack of persistent vegetation. Consequently, the wetland is providing a low to moderate value of Water Quality function.

Prior to the violation, the on-site conditions provided a moderately dense cover of persistent forest and scrub-shrub vegetation. Therefore, residence time and vegetation allowed this wetland to provide a moderate value for this function.

Wildlife Habitat

As a result of property clearing, the current on-site conditions do not provide much habitat for wildlife. The lack of significant cover reduces the potential accessible habitat that wildlife seeks. Therefore this wetland provides a low value for this function.

Pre-violation, Wetland A had some potential to perform a wildlife habitat function. The wetland had moderate structural complexity and is composed of multi-strata forest vegetation. There is moderate species diversity, and multiple hydroperiods. The vegetation within the wetland provided resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. Roads and residential development surrounding the subject property disturbed the continuity of the corridor. This disturbed nature and isolation of the wetland limited the ability to provide a high value for this function. Therefore, pre-violation, this wetland provided a moderate value for this function.

3.4 POST-MITIGATION FUNCTIONS AND VALUES

Proposed Protections

Wetland A is rated as a Category III wetland and therefore receives a 75-foot protective buffer. Currently, this wetland provides a low level of functions and values due to its disturbed nature. Prior to the clearing violation it is expected that the wetland was providing a moderate level of functions and values. In order to resolve the violation on-site, the owner is proposing to designate the wetland as buffer and purchase Wetland Mitigation Bank Credits. Additionally, as a means of protecting stormwater functions on-site, the applicant is proposing a 25-ft natively vegetated buffer. Through mitigation bank credits and buffer restoration, the applicant will have fulfilled compensatory mitigation requirements for the on-site violation, as well as offer permanent protection, thereby meeting the requirements of MMC 22E.010.100.

Two-rail fencing will be constructed along the buffer boundary, and signage designating the presence of environmentally sensitive areas will be installed at a minimum rate of one every 100 lineal feet. These actions will fulfill the requirements of MMC 22E.10.370.

Expected Functions and Values

Credits from the Snohomish Basin Mitigation Bank (SBMB) will be purchased as mitigation for designating the wetland as buffer. This bank is located at the confluence of the Snoqualmie and Skykomish Rivers, within the Snohomish Basin (WRIA-7). Typically, credit ratios for on-site impacts to Category III wetlands are 1 credit per 1 acre of impacted wetlands. As no actual wetland fill will occur, credits will be purchased at a ratio of 0.5 credits per 1 acre of wetland. The subject wetland is 4,409 square feet, therefore 0.051 credits will be purchased.

The SBMB has restored approximately 200 acres back to historical habitat conditions. The project has reconnected and reestablished a series of stream channels, associated riparian wetlands, depressional wetlands and forested uplands which support a wide variety of plant and animal life. Rich soils and a dynamic hydrologic influence from the river sustain native wetland plants within aquatic bed, emergent, shrub and forested wetland classes. Additionally, the project provides off-channel rearing and refuge for salmonids which is a limiting factor in the Snoqualmie System. With the completion of the SBMB and the surrounding restoration activities adjacent to the project, more than 600 acres of floodplain habitat including wetlands, uplands and riparian areas will be restored in this area.

4.0 BUFFER RESTORATION AND ENHANCEMENT PLAN

The applicant is voluntarily proposing to establish a 25-foot buffer along the boundary of the on-site wetland. This natively vegetated buffer will increase the quantity, density, and structural diversity of the native plant assemblage within the on-site, thereby improving attenuation of floodflow, biofiltration function, and the quality of wildlife habitat provided.

4.1 RESTORATION PLANTINGS

Prior to plant installation a pre-planting meeting shall take place. This meeting is to ensure the proper identification of planting areas and to verify that any invasive species on-site have been properly removed. Detailed plant installation instructions are referenced in detail in this report under section 4.8 *Planting Notes*.

4.1.1 Buffer Restoration and Enhancement

7,692 square feet of buffer associated with Wetland A will be restored and enhanced with the following trees and shrubs.

Common Name	Latin Name	Size	Spacing	Quantity
1. Douglas fir	<i>Pseudotsuga menziesii</i>	1 gallon	12'	17
2. Grand fir	<i>Abies grandis</i>	1 gallon	12'	17

Sunnyside Nursery
40th St NE
WRI #17182

4.2 PROJECT MONITORING PROGRAM

4.2.1 Inspection and Reporting Requirements

1. Initial compliance/as-built report at completion of construction
2. Inspection and brief status report 30 days after planting
3. Inspection and brief status report early in the first growing season
4. Inspection and brief status report and the end of the first growing season
5. Inspection and brief status report early in the second growing season
6. Inspection and brief status report and the end of the second growing season
7. Annual site inspection (once per year in the fall) in years 3-5
8. Annual reports (one report submitted in the fall of each monitored year) for years 3-5

It is the opinion of *Wetland Resources, Inc* staff that three years should be sufficient to ensure the future success of the enhancement plantings; contingent upon prompt maintenance actions taken as recommended in the status reports provided throughout the first two years, as well as site conditions meeting the year 5 performance standards (performance standard 5) by the time of the annual site inspection in year 3.

4.2.2 Monitoring Components

Purpose for Monitoring

The purpose for monitoring this mitigation project shall be to evaluate its success. Success will be determined if monitoring shows at the end of five years that the definitions of success stated below are met. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscape and/or wetland specialist and the City of Marysville during the period of the bond or until the project is evaluated as successful.

Monitoring

Monitoring shall be conducted for five years in accordance with the approved Mitigation Plan. The monitoring period will begin once the City receives written notification confirming the mitigation plan has been implemented and City staff inspects the site and issues approval of the installation.

Vegetation Monitoring

Sampling points or transects will be established for vegetation monitoring and photo points will be established from which photos will be taken throughout the monitoring period. Permanent sampling points must be identified on the mitigation site plans in the first monitoring report (they may be drawn on approved plans by hand). Each sampling point shall detail herbaceous, shrub, and tree coverage. Monitoring of vegetation sampling points shall occur annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

Photo points

No less than two permanent photo points will be established within each mitigation area. Photographs will be taken from these points to visually record condition of the enhancement

area. Photos shall be taken annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

Monitoring Report Contents

Monitoring reports shall be submitted by October 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1. Site plan and vicinity map
2. Historic description of project, including date of installation, current year of monitoring, restatement of mitigation / restoration goals, and performance standards
3. Plant survival, vigor, and areal coverage for every plant community (transect or sampling point data), and explanation of monitoring methodology in the context of assessing performance standards
4. Slope condition, site stability, any structures or special features
5. Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures
6. Observed wildlife, including amphibians, avians, and others
7. Assessment of nuisance / exotic biota and recommendations for management
8. Receipts for any structural repair or replacement
9. Color photographs taken from permanent photo-points that shall be depicted on the monitoring report map

4.3 PROJECT SUCCESS & COMPLIANCE

4.3.1 Criteria for Success

Upon completion of the proposed mitigation project, an inspection by a qualified wetland professional shall be made to determine plan compliance. An as-built report will be supplied to the City of Marysville to show compliance with the mitigation plan. The qualified wetland professional will perform condition monitoring of the plantings and provide reports according to the schedule described in Section 4.3.1.

4.3.2 Goal

To provide mitigation for the impacts to functions and values from the proposed development through enhancement of degraded buffer areas so that they provide greater protective and ecological functions and values.

4.3.3 Definition of Success

The mitigation project goal will be deemed successful when objectives are met, as evidenced through the observation of set performance standards.

4.3.4 Objectives

Objective 1: To establish a diverse, native plant community in the critical areas buffer that will persist and create an appropriate vegetative matrix.

Objective 2: To have significant native vegetative cover throughout the planting area.

Objective 3: To remove existing invasive species and limit the establishment and spread of those species in the buffer.

4.3.5 Performance Standards

The objectives will be considered successfully met when, and if, the following performance standards are observed:

Performance Standard 1

End of Year 1: 100 percent survival of newly planted species, and no more than 5 percent cover by invasive plant species.

Performance Standard 2

End of Year 2: at least 95 percent survival of installed plant species, and no more than 10 percent cover by invasive plant species.

Performance Standard 3

End of Year 3: at least 90 percent survival of installed plant species, and no more than 10 percent cover by invasive plant species.

Performance Standard 4

End of Year 4: at least 85 percent survival of installed plant species, at least 60 percent aerial coverage by native species and groundcover, and no more than 10 percent cover by invasive plant species.

Performance Standard 5

End of Year 5: at least 80 percent survival of installed plant species, at least 80 percent aerial coverage by native species and groundcover, and no more than 10 percent cover by invasive plant species.

When assessing aerial coverage, native volunteer plants may be included when making calculations. However, for the purpose of assessing survival of planted species, only installed plantings shall be considered. Restoration and enhancement plantings should be clearly marked with flagging during installation, as described in the *Flagging* paragraph of section “4.8 Planting Notes.”

In the event that a performance standard is not met by the time specified, maintenance actions shall be implemented promptly to meet the standard, and thus bring the plan into compliance.

4.4 MAINTENANCE

The mitigation areas will require periodic maintenance to remove undesirable species and replace vegetation mortality. Maintenance shall occur in accordance with the approved plans. Maintenance may include, but will not be limited to: removal of competing grasses (by hand if

necessary), irrigation, fertilization (if necessary), replacement of plant mortality, and the replacement of mulch for each maintenance period. Chemical control, only if approved by City staff, shall be applied by a licensed applicator following all label instructions.

Duration and Extent

In order to achieve performance standards, the permittee shall be responsible for maintaining the mitigation area for the duration of the five-year monitoring period. Maintenance will include: watering, weeding around the base of installed plants, pruning, replacement, re-staking, removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-750-005) as well as Himalayan blackberry and reed canarygrass, and any other measures needed to ensure plant survival.

Survival

The permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by the City of Marysville. A growing season for these purposes is defined as occurring from spring to spring (March 15 to March 15 of the following year). For fall installation (often required), the growing season will begin the following spring. The permittee shall replace any plants that are failing, weak, defective in manner of growth, or dead during this growing season.

Installation Timing for Replacement Plants

Replacement plants shall be installed between November 1 and March 15, unless otherwise determined.

Standards for Replacement Plants

Replacement plants shall meet the same standards for size and type as those specified for the original installation, unless otherwise directed by a qualified professional.

Replanting

Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted.

Herbicides / Pesticides

Unless deemed absolutely necessary by the consulting biologist and/or the City biologist, chemical controls shall not be used in the mitigation area, critical areas, or their buffers. Any chemical controls used shall be applied by a licensed applicator following all label instructions.

Irrigation / Watering

Water should be provided during the dry season (July 1 through October 15) for the first two years after installation to ensure plant survival and establishment. A temporary above ground irrigation system and/or water truck should provide water. Water should be applied at a rate of 1" of water twice per week for year one and 1" per week during year two.