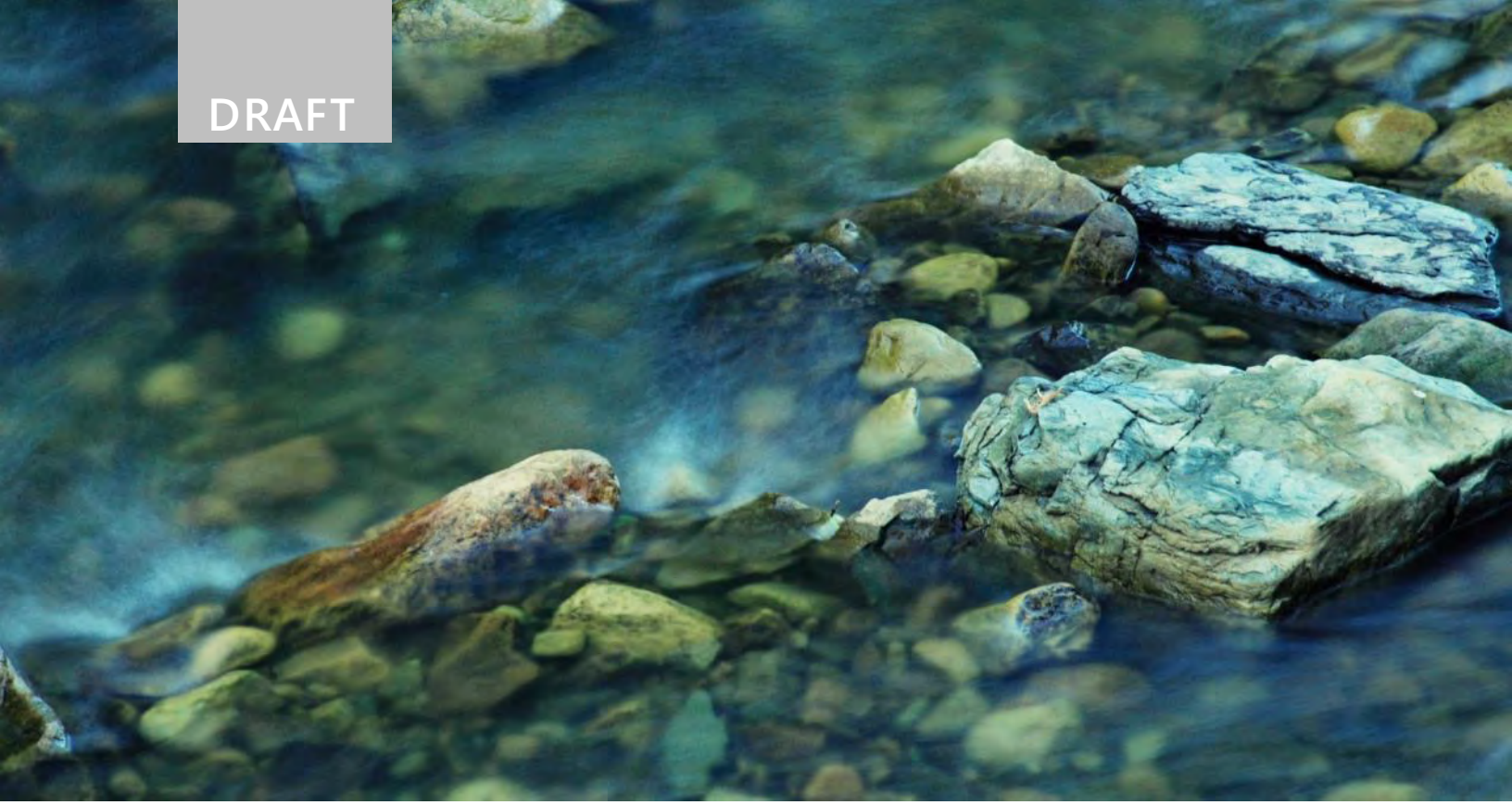

DRAFT

October 2023
Marine Drive Facility Development Project

ANCHOR QEA

Mitigation Plan

RECEIVED
Date: 10/24/2023 Staff: AHK

Prepared for ABC Recycling

DRAFT

October 2023
Marine Drive Facility Development Project

Mitigation Plan

Prepared for
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Burnaby, British Columbia, V3N 2V9
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APPENDICES

ABBREVIATIONS

BMP	best management practice
Ecology	Washington State Department of Ecology
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
FEMA	Federal Emergency Management Agency
HGM	hydrogeomorphic
NRCS	Natural Resources Conservation Service
OBL	obligate wetland
PFO	palustrine forested wetland
Project	Marine Drive Facility Development Project
PSS	palustrine scrub-shrub wetland
Site	Marine Drive proposed development site
USFWS	U.S. Fish and Wildlife Service
WCC	Whatcom County Code

1 Introduction

This mitigation plan describes the proposed wetland buffer impacts and associated compensatory mitigation measures for ABC Recycling's proposed development of a metal recycling facility in Bellingham, Whatcom County, Washington (Figure 1). The Marine Drive Facility Development Project (referred to as the Project in this mitigation plan) would include the construction of a scrap metal shredding and separation facility and a maintenance shop, office building, truck scales, rail spur, and associated appurtenances. The proposed development site (Site) for the Project consists of a 19.69-acre property located at 741 Marine Drive Road in Township 38 North, Range 2 East, Section 44. A vicinity map showing the location of the Project Site is provided in Figure 1, and an aerial photograph showing the existing conditions of the Project Site is provided in Figure 2.

1.1 Project Description

ABC Recycling currently operates nine metal recycling facilities in western Canada and one transload operating facility in Bellingham, Washington. This Project will construct a scrap metal processing facility. The facility will accept imported scrap metal, primarily post-consumer depolluted automobiles and kitchen appliances, and process the scrap metal through the proposed indoor metal shredder. Clean ferrous metal shreds produced from this process will then be delivered to the Port of Bellingham by truck or railcar and loaded onto ocean-going vessels for transport to their ultimate destination. Construction of the majority of the proposed development will occur on an existing gravel-filled, historically developed area, with relatively small portions requiring fill placement into existing wetland buffers. This document describes the required mitigation to compensate for unavoidable impacts in these buffer areas.

The proposed design of the Project (Figure 3) includes the following elements:

- Four pre-manufactured steel buildings
- One office building
- New rail spur on the southern portion of the Site running east-west
- Concrete storage yard within the western portion of the Site
- Concrete pad between three buildings
- Asphalt parking lot next to the proposed office building
- Stormwater detention pond located in the southeast corner of the Site
- Connection to City of Bellingham watermain
- Connection to City of Bellingham sanitary sewer system
- Connection to Whatcom County storm drain

The four pre-manufactured steel buildings include one scrap metal shredding building, two metal reclamation buildings, and one metal processing building. The buildings are located in the central portion of the Site in the historically developed area with a truck access/fire lane road proposed

around the perimeter. A new stormwater detention pond will be installed to provide flow control for the Site and treat water per requirements for industrial sites under Whatcom County Code (WCC) Title 20.80.630 and the enhanced treatment requirements of the Washington State Department of Ecology's (Ecology) *Stormwater Management Manual for Western Washington* (Ecology 2019). The Project will outfall to the existing Whatcom County storm drain system in Marine Drive. The discharge rate from the Site will be substantially reduced from the current condition to help alleviate downstream conveyance stresses on the existing system.

1.2 Construction Methods

Each Project element will be constructed using common construction equipment such as excavators, backhoes, dump trucks, scrapers, graders, and compactors. Best management practices (BMPs) will be in place during all phases of construction to control and mitigate potential erosion, dust, noise, and traffic impacts to the environment, neighbors, and local transportation system.

Proposed mitigation activities will consist of restoration of wetland buffers disturbed by past activities on the Site as described in Section 4.1. Equipment to be used for mitigation construction will include backhoes, excavators, and hand tools. Timing of construction is currently uncertain, based on Project approvals. Additional information regarding BMPs can be found in Section 3.2.

2 Project Site Description

The Project Site is a rectangular-shaped parcel encompassing 19.69 acres (Figure 2). The western third and a small portion of the eastern edge of the Project Site are undeveloped. The rest of the Site is a gravel lot that was previously used for a mix of staging area, storage, and maintenance activities to support shipping and receiving for the previous property owner. Vegetation within the undeveloped portions of the Project Site includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitats. The western third of the Project Site is forested and dominated by deciduous trees with a few conifers and a dense understory of native shrubs. The eastern end of the parcel is a dense scrub-shrub habitat dominated by primarily invasive species. The developed central core of the parcel has little to no vegetation and is primarily compacted gravel, rock, and recycled crushed concrete.

Land use surrounding the Project Site is dominated by active railroad tracks to the south, a paved two-lane road (Marine Drive) with sidewalks to the north, an undeveloped forested/scrub-shrub area to the west, and commercial property with a parking lot and mowed and maintained grass to the east. A property (Lehigh Northwest Cement Company) with industrial land use is located south of the Project Site across the railroad tracks.

2.1 Topography

The topography of the Site is relatively level (Figure 4), with the higher elevation at 101 feet in the northwest sloping gradually to the low elevation at 71 feet in the southeast extent of the parcel. There are gentle slopes and naturally occurring depressions in the western forested area and the eastern end but relatively no slope in the developed interior. The forested area includes a mosaic of upland hummocks and wetland depressions.

2.2 Soils

The National Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023) identifies one soil series within the Site: Urban land–Whatcom–Labounty complex, 0% to 8% slopes as shown in Figure 5. The NRCS identifies portions of the Whatcom–Labounty complex as containing both hydric and non-hydric inclusions. Approximately half of the Site also has modified soils that support historical and current industrial uses of storage/staging activities. The soils are modified with crushed concrete, angular rock, and mixed grades of sand and fines.

2.3 Hydrology

As shown in Figure 6, the Project is located in the Fort Bellingham watershed of the Nooksack Basin Water Resource Inventory Area 1 (Ecology 2023). The Project is outside of the 100-year Federal Emergency Management Agency (FEMA) floodplain. Hydrologic characteristics in the Site are

influenced by regional groundwater, direct precipitation, and surface water runoff. No defined stream channels were identified within the Site during the wetland delineation investigation conducted in October 2020 (Anchor QEA 2023). There is an unnamed SalmonScape-mapped intermittent/ephemeral stream located about 750 feet west of the Site (WDFW 2023). Another SalmonScape-mapped perennial stream (Little Squalicum Creek) is approximately 1,400 feet east of the Site (WDFW 2023). At the time of the delineation in October 2020, water was present within Wetland A in small depressions and a linear ditch-like feature.

2.4 Vegetation Communities and Habitats

Vegetation within the Site includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitat (Figure 7). The western third of the Site is dominated by a forested habitat with a dense understory of native shrubs and ferns. The eastern quarter of the Site is a mix of mostly native and non-native shrubs and some scattered trees. Specific vegetative communities found within the wetland and buffer areas are described in the following sections.

2.5 Wetlands

This section describes the three wetlands that were identified on the Project Site during the October 2020 wetland delineation performed by Anchor QEA, LLC (Anchor QEA 2023). The wetlands are classified according to the U.S. Fish and Wildlife Service's (USFWS's) *Classification of Wetlands and Deepwater Habitats of the United States* report (Cowardin et al. 1979) and by using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) for hydrogeomorphic (HGM) systems. The latter was also used to rate the identified wetlands and assign categories based on their functions and values as required by WCC 16.16.610(C).

Anchor QEA wetland scientists delineated three wetlands (Wetlands A, B, and C) within the Project Site. These wetlands are summarized in Table 1 and described in more detail in the *ABC Recycling Marine Drive Proposed Development Project Wetland Delineation and Critical Areas Report* (Anchor QEA 2023).

Table 1
Wetlands Delineated Within the Wetland Delineation Study Area

Wetlands	Classification		Wetland Rating[1]	Total Wetland Area	
	USFWS	HGM		Square Feet	Acres
Wetland A	Palustrine scrub-shrub (PSS)	Slope and Depressional	IV	25,293	0.58
Wetland B	Palustrine forested (PFO), PSS	Slope and Depressional	III	174,985	4.02
Wetland C	PSS	Depressional	III	4,577	0.11
			Total Area of Wetlands	**204,855**	**4.71**

Note:
1. Hruby 2014.

2.5.1 Wetland A

Wetland A is an approximately 0.58-acre (25,293-square-foot) wetland with mostly PSS vegetation classes and a small area of PFO with depressional and slope HGM classes (Figures 7 and 8). Wetland A is a long, narrow wetland that flanks the northeast and eastern boundary of the Site. Due to the narrow wetland shape, habitat features associated with Wetland A are limited.

Wetland A includes two distinct vegetation communities: the northern 95% of the wetland is scrub-shrub dominated and there is a small patch of forested habitat in the southeast corner. Dominant vegetation in the scrub-shrub habitat includes Himalayan blackberry (*Rubus armeniacus*: facultative [FAC]), English hawthorn (*Crataegus monogyna*: FAC), red-twigged dogwood (*Cornus sericea*: facultative wetland [FACW]), and Chinese privet (*Ligustrum sinense*: FAC). The privet was so dense in areas that no other vegetation was observed due to limited sunlight. Some emergent species observed in the wetland include reed canarygrass (*Phalaris arundinacea*: FACW) and field horsetail (*Equisetum arvense*: FAC).

The small, forested habitat of Wetland A contained scrub-shrub species but also paper birch (*Betula papyrifera*: FAC) and Scouler's willow (*Salix scouleriana*: FAC). The small forest had a very dense shrub understory of non-native species listed previously. The small, forested habitat also included a mosaic of hummocks and wetland depressions within the wetland boundary.

2.5.2 Wetland B

Wetland B is an approximately 4.02-acre (174,985-square-foot) wetland with a PSS and PFO vegetation class and depressional and slope HGM classes (Figures 7 and 8). Wetland vegetation is dominated by paper birch, Scouler's willow, Pacific willow (*Salix lasiandra*: FACW), red-twigged dogwood, twinberry (*Lonicera involucrate*: FAC), and Himalayan blackberry with some understory of piggyback plant (*Tolmiea menziesii*: FAC), field horsetail, and slough sedge (*Carex obnupta*: obligate wetland [OBL]).

2.5.3 Wetland C

Wetland C is an approximately 0.11-acre (4,577-square-foot) wetland with a PSS vegetation class and depressional HGM class (Figures 7 and 8). The entire boundary of Wetland C was delineated within the Site. Wetland vegetation is dominated by Scouler's willow and red-twigged dogwood. The dogwood and willow were so thick that no herbaceous or emergent vegetation was observed.

2.6 Whatcom County Wetland Buffer Guidance

Required wetland buffers have been identified according to the current WCC Chapter 16.16.630. The WCC identifies minimum protective buffer widths based on the wetland category, land use intensity, and the Ecology habitat rating score, per the 2014 Ecology rating system (Hruby 2014). Table 2 summarizes WCC ratings and buffer widths. Figure 9 presents the impervious surface footprint established as part of

previous development activities, for consideration in establishing protective buffer widths and impacts associated with this development proposal.

Table 2
Wetland Rating and Standard Buffer Widths

Wetland	2014[1] State Rating (Ecology)	Local Rating[2] (Whatcom County)	Ecology Habitat Rating Score	Low-Intensity Land Use Buffer Width (feet)[2]	High-Intensity Land Use Buffer Width (feet)[2]
Wetland A	IV	IV	4	-	50
Wetland B	III	III	5	-	150
Wetland C	III	III	4	50	-

Note:
1. Hruby 2014.
2. WCC 16.16.630.

2.6.1 Wetland A Buffer

Dominant buffer vegetation of Wetland A included a maintained mowed lawn to the east and outside of the Site. Buffer to the north and south was limited due to paved roads and gravel railroad right-of-way but mostly was dominated by Himalayan blackberry and common snowberry (*Symphoricarpos albus*: facultative upland [FACU]). The buffer to the west was more diverse and contained black cottonwood (*Populus trichocarpa*: FAC), red alder (*Alnus rubra*: FAC), Indian plum (*Oemleria cerasiformis*: FACU), and Himalayan blackberry.

2.6.2 Wetland B Buffer

Dominant buffer vegetation of Wetland B includes red alder, big-leaf maple (*Acer macrophyllum*: FACU) western red cedar (*Thuja plicata*: FAC), English hawthorn, Nootka rose (*Rosa nutkana*: FAC), Indian plum, snowberry, and Himalayan blackberry. In several areas along the southern boundary of Wetland B, the buffer extent is limited by gravel fill material associated with the developed portion of the Site.

2.6.3 Wetland C Buffer

Dominant buffer vegetation of Wetland C was very similar to the buffer of Wetland B and included red alder, big-leaf maple, paper birch, western red cedar, Nootka rose, Indian plum, snowberry, and bracken fern (*Pteridium aquilinum*: FACU). The buffer along the eastern side of Wetland C is limited by Marine Drive.

2.7 Wetland Delineation and Rating Limitations

Wetland identification is an inexact science, and differences of professional opinion often occur between trained individuals. Final determinations for wetland boundaries and rating concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available. No other warranty, expressed or implied, is made.

3 Mitigation Approach

3.1 Impact Summary

The proposed development footprint of the Project consists of five operational buildings, a paved concrete storage area, asphalt parking area and perimeter truck access and fire lane road, and a stormwater detention pond (Figure 3). The footprint of the development is located within the southeastern half of the Site and avoids impacts to the existing wetlands. Impacts to wetland buffers are limited to two main areas: a portion of the perimeter access road and the proposed facility entrance from Marine Drive (Figure 9).

The proposed Project design will result in the following impacts on existing wetland buffers as discussed in the following sections.

3.1.1 Wetland Impacts

No wetland impacts are proposed.

3.1.2 Wetland Buffer Impacts

The proposed Project is anticipated to result in approximately 0.05 acre (2,088 square feet) of existing upland scrub-shrub wetland buffer impacts from vegetation clearing and fill placement to construct the perimeter access road and the widened facility entrance from Marine Drive (Figure 9).

3.2 Avoidance and Minimization Measures

The Project has been designed to minimize, and ultimately compensate for, unavoidable wetland buffer impacts. The development footprint of the proposed Project was configured to avoid wetland impacts on the Project Site by locating the facility within the extent of the historically developed footprint to the extent possible and within the minimum needed footprint required for operations as much as practicable. As a result of Site planning efforts, impacts to wetland buffers have been minimized to the maximum extent practicable while still achieving the Project purpose.

Numerous alternative designs since the original layout have been considered for the proposed Project to avoid and minimize impacts to the wetlands and their buffers. Appendix A provides a representative comparison of these scenarios. Through the advancement of the alternative design scenarios, the extent of the development footprint has been reduced in size from its original footprint to reduce associated wetland and buffer impacts.

At the conclusion of the alternative design scenarios, the Project includes three areas of unavoidable impacts to a portion of the wetland buffers for Wetlands A and B (Figure 9). WCC Section 15.04.010 and the 2015 International Fire Code require a 25-foot fire lane with appropriate turning radii to provide life safety access to all buildings and work areas on the Site, which results in impacts to the

buffer for Wetland B. In addition, the entrance footprint of the Site must be expanded to accommodate the turning radius of vehicles required under the High Intensity Industrial land zoning of the Site. The vehicles utilized in this type of land use require a 50-foot turning radius. This footprint expansion results in impacts to the buffer for Wetlands A and B.

The Project has been designed to avoid impacts to Wetlands A, B, and C and minimize impacts to the wetland buffers to the maximum extent possible while meeting design criteria for the development and Whatcom County requirements for safe egress/ingress to and from the property. General Site design measures have been incorporated that are intended to reduce the development footprint. This includes expanding buffers where feasible. Buffer restoration activities are described in Section 4.

Other measures to avoid and minimize impacts include the implementation of the following BMPs during construction:

- All work will be performed according to the requirements and conditions of the Project permits.
- Impacts to the wetlands and remaining buffers on the Site will be minimized during construction through the use of temporary erosion and sediment control BMPs.
- The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control, and Countermeasures Plan prior to the commencement of any Project activities.
- All concrete will be poured in dry conditions, or within confined areas not connected to surface waters, and shall be sufficiently cured prior to contact with surface waters.
- All wash water and concrete-laden water associated with construction will be treated to meet State of Washington surface water quality standards (Chapter 173-201A Washington Administrative Code) prior to discharge into surface waterbodies. Concrete-laden water may also be removed from the Project Site.
- Excess or waste materials will not be disposed of or abandoned within the wetlands, wetland buffers, or allowed to enter waters of the state.
- No petroleum products, chemicals, or other toxic or deleterious materials will be allowed to enter wetlands, wetland buffers, or other waters of the state.
- The contractor will be required to properly maintain construction equipment and vehicles to prevent them from leaking fuel or lubricants. If there is evidence of leakage, further use of such equipment will be suspended until the deficiency has been corrected.
- The Project will be constructed consistent with the stormwater management design criteria outlined in the *Stormwater Management Manual for Western Washington* (Ecology 2019) and the Whatcom County *2018 Stormwater Management Program* manual (Whatcom County 2018) to reduce and control surface runoff.

3.3 General Objectives of Mitigation

The general objectives of the wetland buffer mitigation include the following:

- Ensure no loss of wetlands as a result of the Project
- Provide for a "no net loss" of wetland buffer area for the Project as a whole
- Restore native upland habitat between the proposed development and existing on-site wetlands

3.4 Compensatory Mitigation and No Net Loss Policy

The proposed Project would directly impact 0.05 acre (2,088 square feet) of existing wetland buffer area. WCC requires that compensatory mitigation wetland buffer impacts be performed at a 1:1 mitigation-to-impact ratio (WCC 16.16.680(C)). Using Whatcom County's base ratios, the proposed wetland buffer mitigation plan will provide 0.05 acre (2,088 square feet) of compensatory wetland buffer mitigation through the restoration of previously filled buffers.

4 Proposed Mitigation Site Design

This section describes the proposed mitigation plan for the Project.

4.1 General Description of Mitigation

The mitigation plan addresses the specific loss of wetland buffer functions at the impact site and replaces these functions on the Project Site. The general mitigation plan is to create additional wetland buffer in two adjacent areas through the removal of invasive Himalayan blackberry and the planting of native woody and herbaceous vegetation (Figure 9). Wetland mitigation activities would consist of the following specific activities as shown in Appendix B-1 and B-2:

- Clearing and grubbing to prepare the mitigation sites
- Removing existing fill materials
- Placing 80 cubic yards of topsoil in the restored buffer
- Planting approximately 12 container trees, 52 shrubs, and 60 groundcover plants
- Installing a temporary irrigation system to provide water for new plantings

Native plant species to be installed within the wetland buffer are listed in the planting schedule in Section 4.4. Once completed, a temporary irrigation system will be installed within the wetland buffer.

4.2 Functional Benefits of Mitigation Plan

No wetlands would be impacted by the proposed Project. The mitigation plan is anticipated to retain functional benefits of wetland buffers by creating the same amount of wetland buffer compared to the current environmental baseline that will be impacted. The Project will also remove invasive species from the existing wetland buffer (primarily Himalayan blackberry), which will be a benefit to habitat functions.

4.3 Soil Preparation

The contractor will remove historical fill from the mitigation area and dispose of it off site at an appropriate upland location. Following fill removal, the contractor will import topsoil to establish suitable soil conditions for plant installation on site. See Planting Guidelines in Appendix B-2 for details on soil preparation.

4.4 Vegetation

Plantings in the wetland buffer mitigation areas will be installed to establish a mix of forested, scrub-shrub, and emergent upland and transitional plant communities. The goal of the planting plan is to mimic natural conditions. Plantings will be installed in clusters and grouped and spaced to replicate a natural pattern of plant dispersal and enhance habitat for a variety of wildlife. Invasive species, such

as Himalayan blackberry, will be removed from the mitigation area prior to the installation of the plants.

Following construction, invasive species will be controlled in accordance with the monitoring program. Volunteer species of native woody plants, such as red alder and black cottonwood, will be encouraged. Mitigation site management activities are described in Section 5.5.

4.5 Construction and Planting Schedule

Construction plans for the mitigation are included in Appendix B as follows:

- Appendix B-1: Planting Plan, Schedule, and Details
- Appendix B-2: Planting Guidelines
- Appendix B-3: Bond Quantity Worksheet

5 Regulatory Compliance

Whatcom County's guidance for the content of compensatory mitigation plans requires that the general goals of the plan be identified (WCC 16.16.690(A)(3)(b)). Goals describe the overall intent of mitigation efforts, and objectives describe individual components of the mitigation site in detail. Performance measures and success standards describe specific on-site characteristics that indicate a function is being provided. Performance measures are used to guide management of the mitigation site. Success standards are thresholds to be measured during the final year of the monitoring period that demonstrate the mitigation site has complied with regulatory requirements and is providing intended functions. The mitigation site will be monitored to demonstrate that intended wetland functions have been achieved. Monitoring will take place for 5 years following mitigation implementation with the option to reduce to 3 years if performance monitoring shows that plants are well established. Contingency plans describe what actions can be taken to correct site deficiencies.

The following sections present the proposed goals and objectives of the mitigation plan.

5.1 General Mitigation Goals

The goal for the wetland buffer mitigation site will be to establish native tree, shrub, and/or groundcover vegetation communities in the wetland buffer areas.

5.2 Objective and Standards of Success for Wetland and Buffer Mitigation

Objective: Wetland buffer plant communities will be restored by installing native trees, shrubs, and groundcover species.

- **Performance Measure 1:** Average survival of planted container trees and container shrubs will be at least 90% at the end of Year 1 and at least 70% at the end of Year 3.
- **Performance Measure 2:** Within planted areas, native tree and shrub vegetation cover will be at least 15% at the end of Year 3 and at least 30% at the end of Year 5.
- **Performance Measure 3:** Invasive, non-native trees, shrubs, and herbaceous species are maintained at levels below 15% total cover within planted buffer areas at all times.

5.3 Monitoring Plan

To ensure success of the mitigation plan, monitoring will be completed to determine the success of the wetland buffer mitigation. An as-built report will be completed after plant installation and submitted to Whatcom County for use as a reference document during the monitoring period.

Monitoring of the planted buffer areas will occur near the end of the peak growing season in summer or early fall in each monitoring year after installation. Annual monitoring reports will be

submitted to Whatcom County for each monitoring year. Monitoring reports will be prepared in accordance with WCC 16.16.260(C). Data on the number and species of plants (as a measure of diversity), survival rates, canopy (aerial percentage) cover, stem density, and plant heights will be measured and recorded during each monitoring period. Permanent sample plots and photography stations will also be established at control points to document existing conditions during each monitoring period.

Plant community success within the planting area will be evaluated during the monitoring periods. To evaluate plant diversity, the assessment will include installed plant survival and vegetation percent cover. Invasive trees and shrubs will be removed where present in the wetland buffer. Following planting, all created buffer areas will have less than 15% cover of invasive trees and shrubs each monitoring year.

5.4 Contingency Plan

All contingencies cannot be anticipated. Any proposed contingencies would remain flexible so that modifications can be made to subsequent years' construction if portions of the previous year's construction do not produce the desired results. Problems or potential problems would be evaluated by a qualified biologist and coordinated with the regulatory agencies. Specific contingency actions would be developed, agreed to by consensus, and implemented based on all scientifically and economically feasible recommendations. Contingencies may include the following:

- Evaluating invasive shrub species removal/maintenance techniques
- Considering species suitability for site conditions and providing replanting recommendations with same or alternate plants, and potentially adjusting planting locations
- Additional monitoring or unscheduled monitoring

If, during the monitoring program, other maintenance needs are identified as necessary to ensure the success of the mitigation project, they will be implemented, unless impacts are generated by third parties or acts of nature.

5.5 Mitigation Site Management

Following construction, the mitigation area will be actively managed in perpetuity as required by WCC 16.16.260(E). This will likely include at least one management or maintenance visit per year for the duration of the 5-year monitoring period plus additional visits on an as-needed basis to maintain the planted vegetation and control invasive species. Site management visits will occur during the growing season in May through July. The following tasks will be completed during the first 2 monitoring years:

- During Years 1 and 2, the planting area will be weeded by hand to remove any new shoots of non-native and invasive vegetation within a 2-foot radius of each installed plant.

- During Year 1, installed plantings in the wetland buffer area must receive a minimum of 1 inch of water each week from June to September from the temporary irrigation system or natural rainfall.
- During the Year 2 management visit, tree stakes will be removed.
- During subsequent years, additional management actions may also be required to respond to other monitoring recommendations.

Following completion of construction, the mitigation sites will be protected from development or other alteration in perpetuity through a deed restriction, conservation easement, or other appropriate protection measure.

6 References

Anchor QEA (Anchor QEA, LLC), 2023. *ABC Recycling Marine Drive Proposed Development Project Wetland Delineation and Critical Areas Report*. Prepared for ABC Recycling. October 2023.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Fish and Wildlife Service.

Ecology (Washington State Department of Ecology), 2019. *Stormwater Management Manual for Western Washington*. Publication No. 19-10-021. Olympia, Washington.

Ecology, 2023. Ecology Find Your WRIA. Accessed October 16, 2023. Available at: https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up.

Hruby, T., 2014. *Washington State Wetland Rating System for Western Washington: 2014 Update*. Prepared for Washington State Department of Ecology. October 2014.

USDA (U.S. Department of Agriculture), 2023. Natural Resource Conservation Service (NRCS) Web Soil Survey. Accessed October 19, 2023. Available at: http://websoilsurvey.nrcs.usda.gov/app.

WDFW (Washington Department of Fish and Wildlife), 2023. SalmonScape. Accessed October 19, 2023. Available at: http://apps.wdfw.wa.gov/salmonscape/.

Whatcom County, 2018. Whatcom County, Washington 2018 Stormwater Management Program. Available at: https://www.whatcomcounty.us/DocumentCenter/View/34217/2018_SWMP_Report.

Figures

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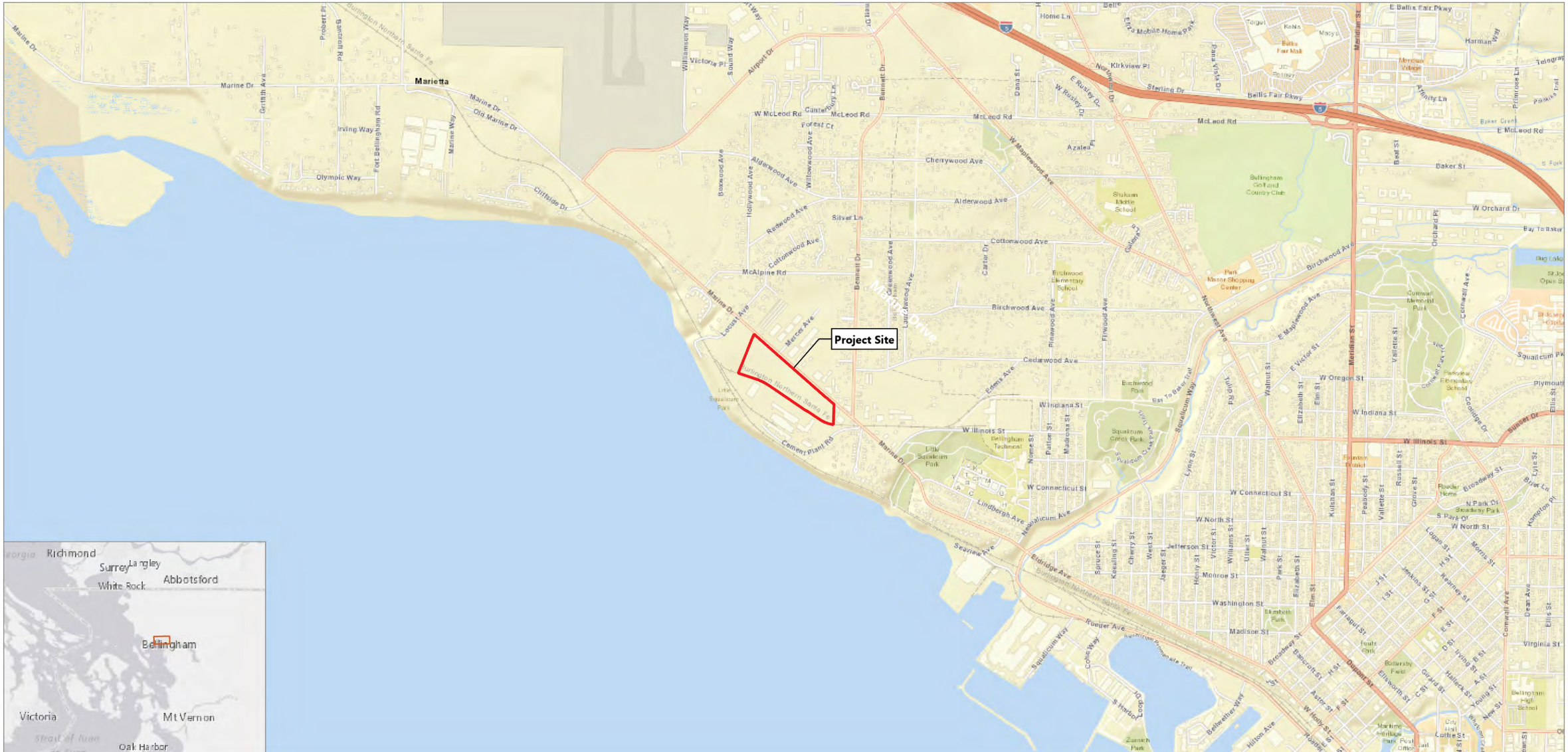

LEGEND:

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ANCHOR QEA

Figure 1
Vicinity Map
Mitigation Plan
Marine Drive Facility Development Project

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LEGEND:

Project Site

Tax Parcel Boundary

SOURCE:
Aerial Imagery: Esri (2023)

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Figure 2
Site Aerial Photograph/Existing Conditions
Mitigation Plan
Marine Drive Facility Development Project

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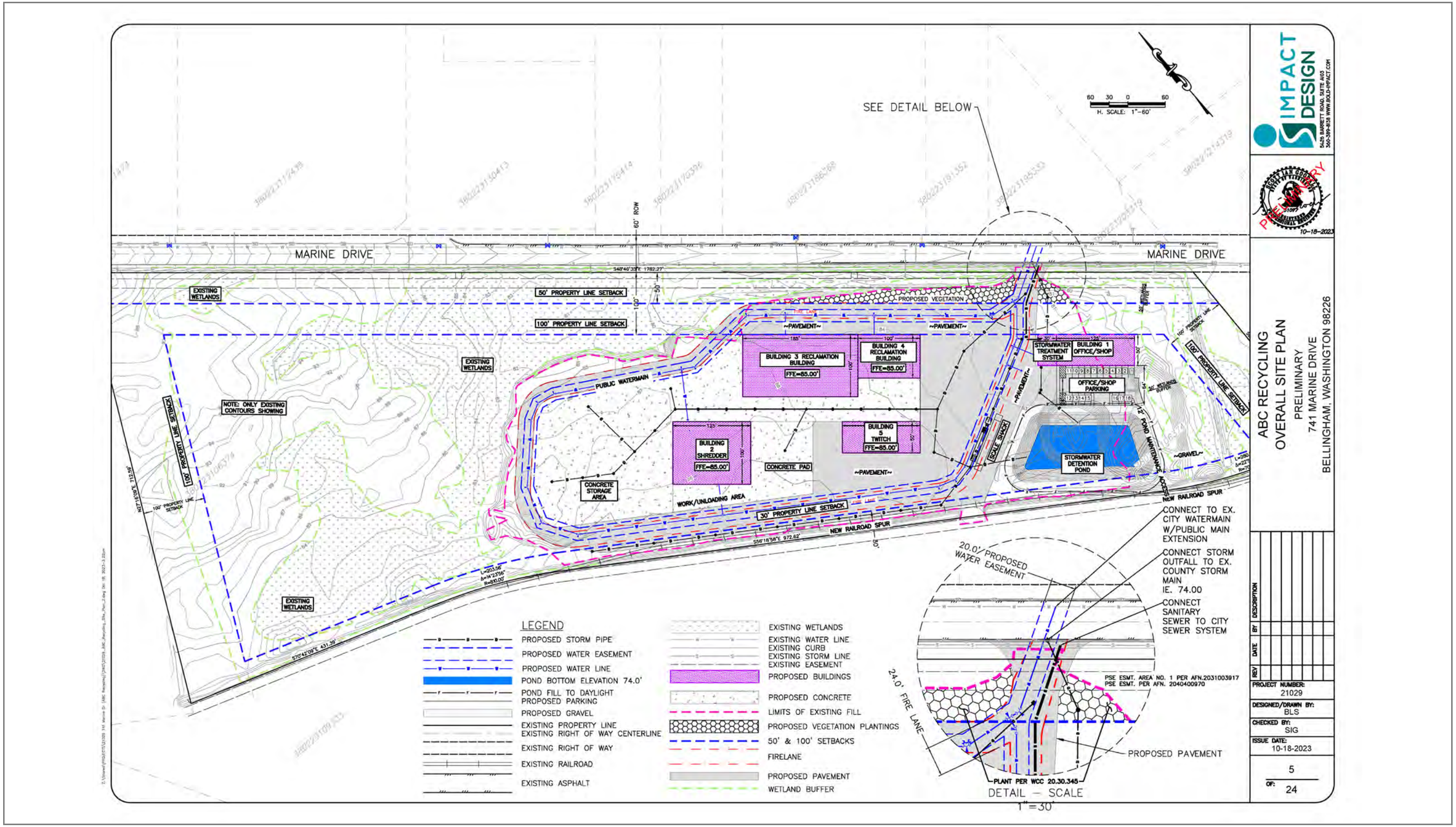

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Figure 3
Proposed Project
Mitigation Plan
Marine Drive Facility Development Project

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LEGEND:

- Project Site
- Extent of Historically Developed Area
- 1-Foot Contour

SOURCE:
Aerial Imagery: Esri (2023)

NOTES:
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.
2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.
3. Vertical datum is North American Vertical Datum of 1988, Feet.

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Figure 4
Existing Topography
Mitigation Plan
Marine Drive Facility Development Project

DRAFT

LEGEND:

- Project Site
- Urban Land - Whatcom-Labounty complex, 0 to 8 percent slopes

SOURCES:

1. Aerial Imagery: Esri (2023)
2. USDA Natural Resource Conservation Service Web Soil Survey (USDA 2020)

0 500
Feet

Publish Date: 2023/10/16, 4:56 PM | User: jlarson
Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Wetland_Mitigation_Plan\Wetland_Mitigation_Plan.aprx

ANCHOR QEA

Figure 5
Mapped Soils
Mitigation Plan
Marine Drive Facility Development Project

DRAFT

LEGEND:

- Project Site
- 100 Year FEMA Floodplain
- Floodway
- Water Body
- Watercourse
- WRIA1 Watersheds And Basins

SOURCES:
1. Aerial Imagery: Esri (2023)
2. Floodplain Data: FEMA (2023)
3. Waterbody/Watercourse Data: Washington State DNR

NOTES:
1. FEMA: Federal Emergency Management Agency
2. DNR: Department of Natural Resources

0 0.4
Miles

Publish Date: 2023/10/23, 9:20 AM | User: jlarson
Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Wetland_Mitigation_Plan\Wetland_Mitigation_Plan.aprx

ANCHOR QEA

Figure 6
Hydrologic Setting
Mitigation Plan
Marine Drive Facility Development Project

DRAFT

LEGEND:

- Project Site
- Delineated Wetland
- PFO/PSS
- PSS
- Extent of Historically Developed Area

Existing Vegetation Communities

- Disturbed
- Upland Forest
- Upland Herbaceous
- Upland Scrub-Shrub
- Wetland Forest
- Wetland Scrub-Shrub

SOURCE:
Aerial Imagery: Esri (2023)
NOTES:
PFO: Palustrine forested
PSS: Palustrine scrub-shrub

0 220
Feet

Publish Date: 2023/10/23, 9:54 AM | User: jlarson
Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Wetland_Mitigation_Plan\Wetland_Mitigation_Plan.aprx

ANCHOR QEA

Figure 7
Existing Vegetation Communities
Mitigation Plan
Marine Drive Facility Development Project

DRAFT

LEGEND:

- Project Site
- Delineated Wetland
- Wetland Buffer
- Extent of Historically Developed Area
- 1-Foot Contour

SOURCE:
Aerial Imagery: Esri (2023)

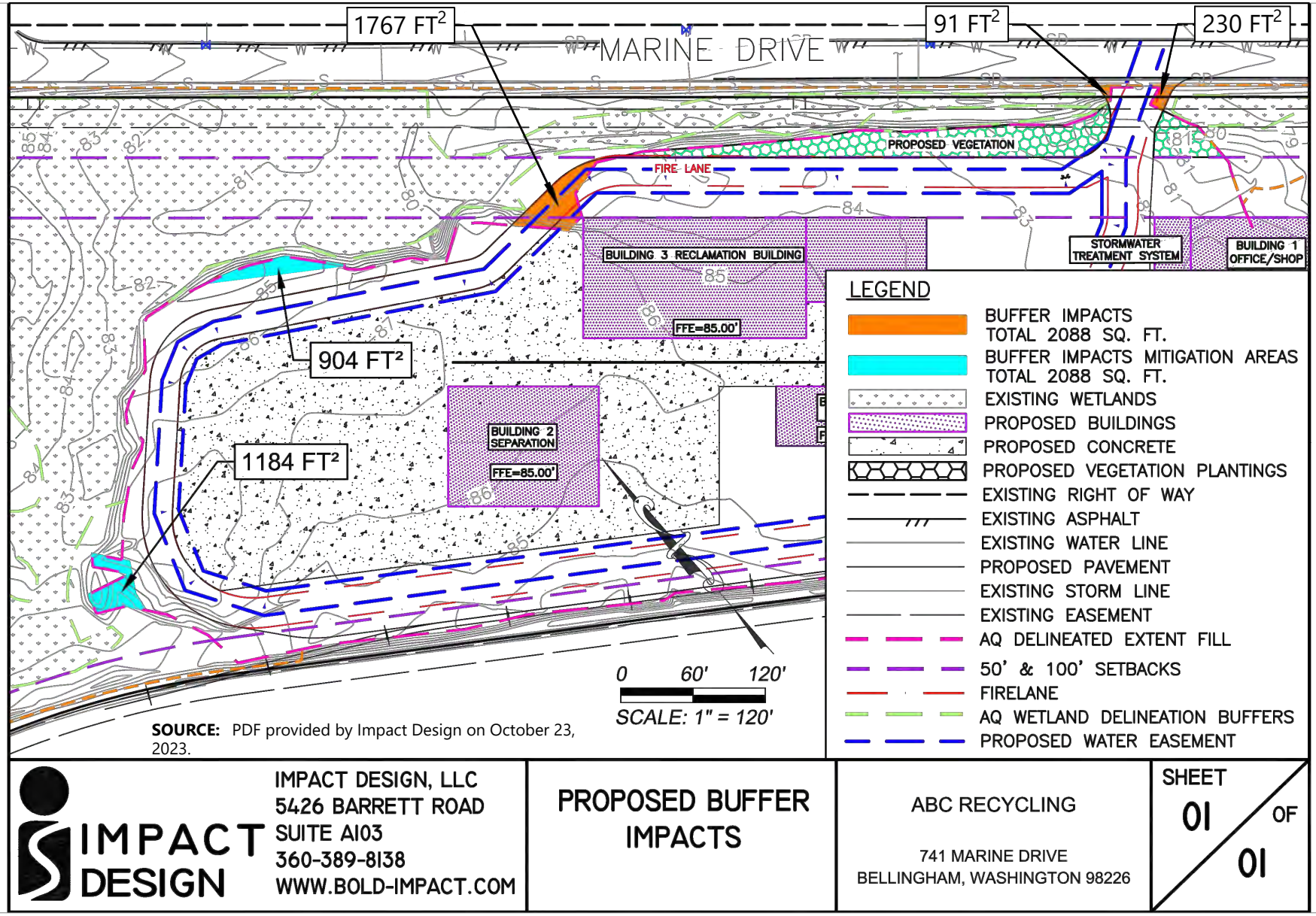
NOTES:
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.
2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.
3. Vertical datum is North American Vertical Datum of 1988, Feet.

0 200
Feet

Publish Date: 2023/10/18, 10:15 AM | User: jlarson
Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Wetland_Mitigation_Plan\Wetland_Mitigation_Plan.aprx

ANCHOR QEA

Figure 8
Delineated Wetlands and Wetland Buffers
Mitigation Plan
Marine Drive Facility Development Project



DRAFT

Publish Date: 2023/10/23 11:50 AM | User: cwee
Filepath: K:\Projects\2005-ABC Recycling\Marine Drive Property\2005-WK-001 Figure 9 Impacts.dwg Figure 9

ANCHOR QEA

Figure 9
Proposed Project Impacts and Proposed Wetland Buffer Mitigation

Mitigation Plan
Marine Drive Facility Development Project

Appendix A
Avoidance Scenarios

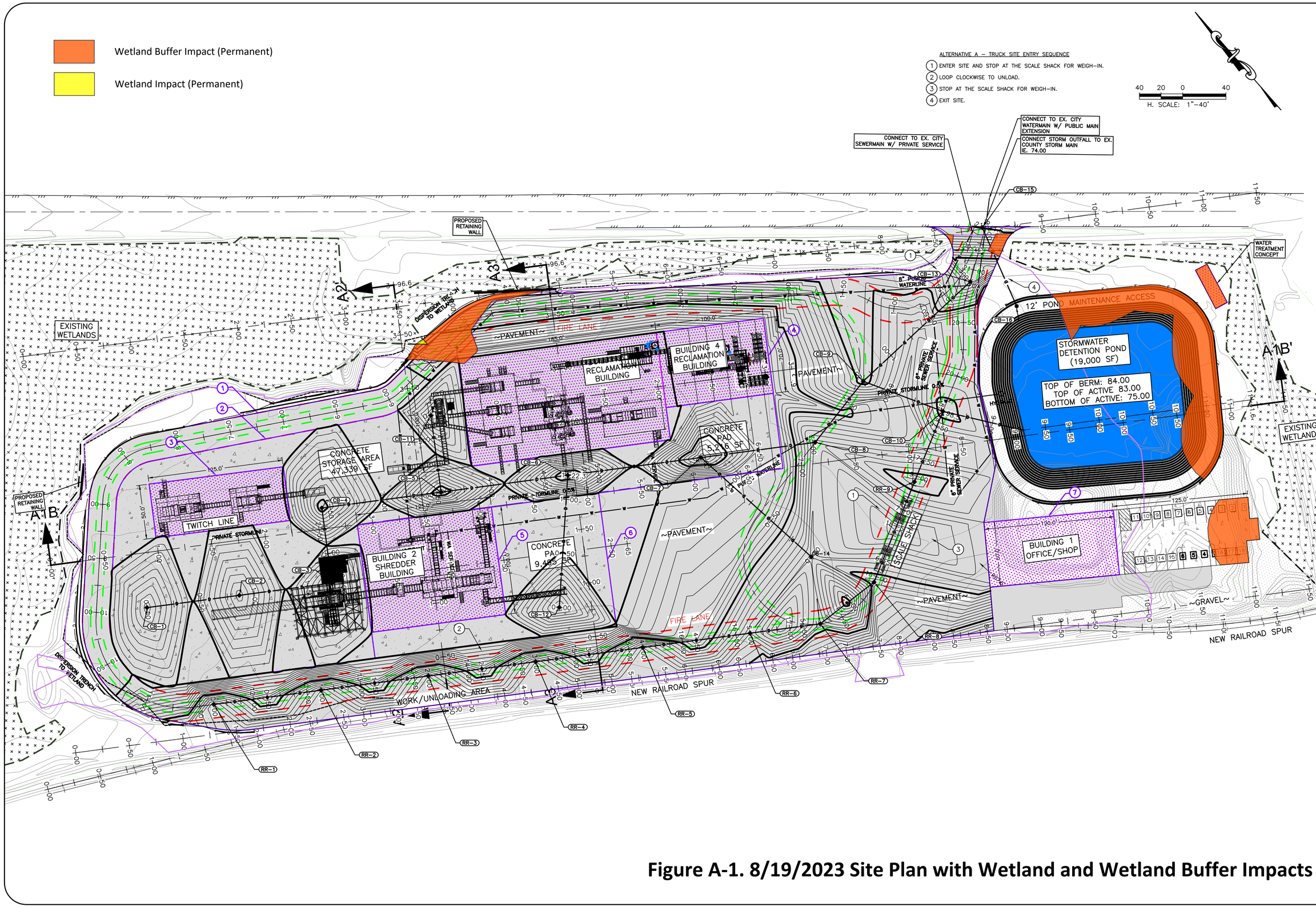


Figure A-1. 8/19/2023 Site Plan with Wetland and Wetland Buffer Impacts

IMPACT DESIGN
5426 BARRETT ROAD, SUITE A103
360-389-9133 WWW.BOLD-IMPACT.COM

PRELIMINARY
08.19.2023

ABC RECYCLING
OVERALL SITE PLAN
PRELIMINARY
661 CORNWALL AVENUE
BELLINGHAM, WASHINGTON 98225

REV	DATE	BY	DESCRIPTION

PROJECT NUMBER: 21029
DESIGNED/DRAWN BY: BLS
CHECKED BY: SIG
ISSUE DATE: 08.19.2023

Z:\Shared\PROJECTS\21029 741 Marine Dr (ABC Recycling)\DWG\21029_ABC_Recycling_Site_Plan_2.dwg Aug 26, 2023-2:11pm

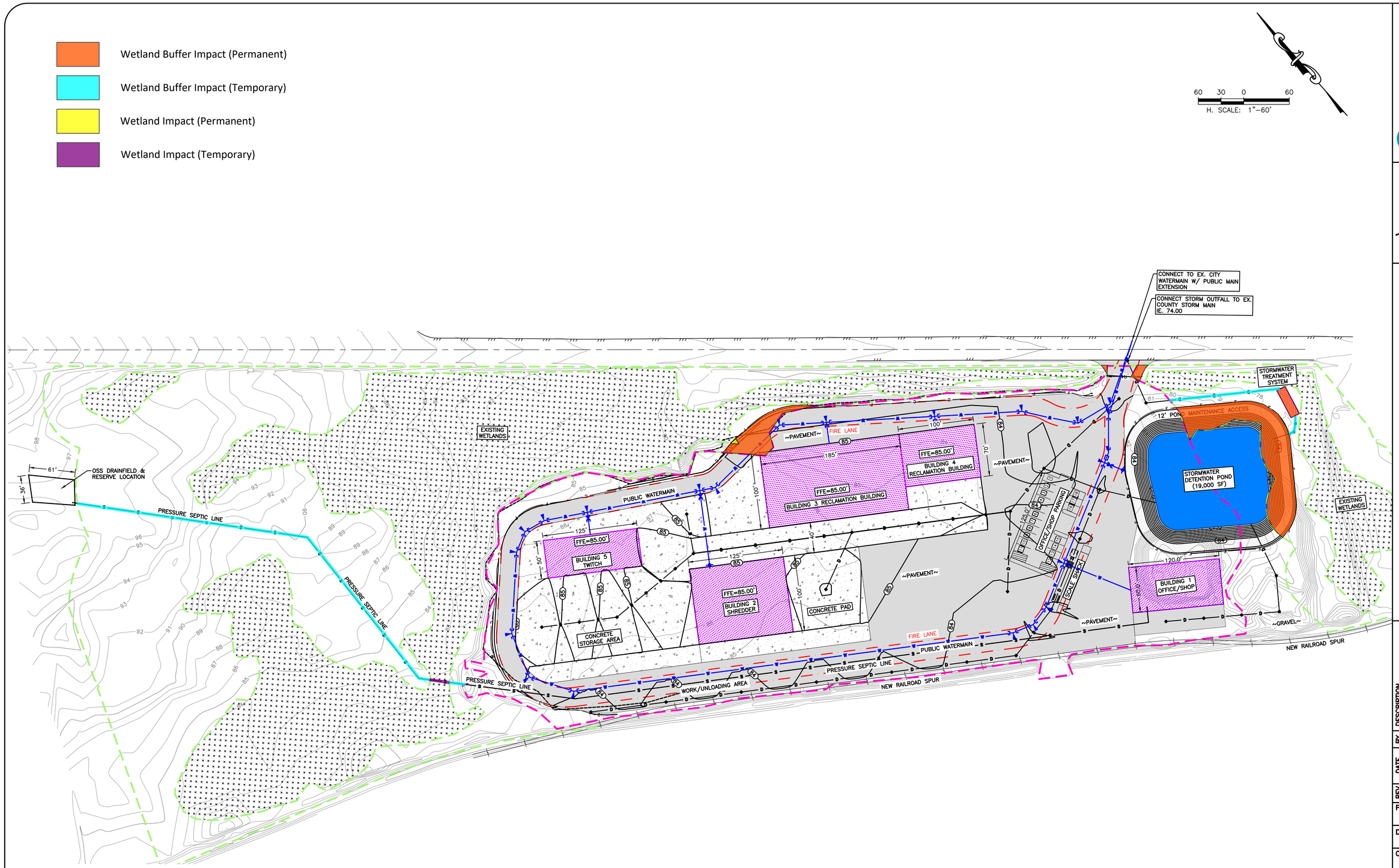


Figure A-2. 9/30/2023 Site Plan with Wetland and Wetland Buffer Impacts

IMPACT DESIGN
5426 BARRETT ROAD, SUITE A103
360-389-9133 WWW.BOLD-IMPACT.COM

PRELIMINARY
09-30-2023

ABC RECYCLING
OVERALL SITE PLAN
PRELIMINARY
741 MARINE DRIVE
BELLINGHAM, WASHINGTON 98226

REV	DATE	BY	DESCRIPTION

PROJECT NUMBER: 21029
DESIGNED/DRAWN BY: BLS
CHECKED BY: SIG
ISSUE DATE: 09-30-2023

Z:\Shared\PROJECTS\21029 741 Marine Dr (ABC Recycling)\DWG\21029_ABC_Recycling_Site_Plan_2.dwg Oct 03, 2023-1:09pm

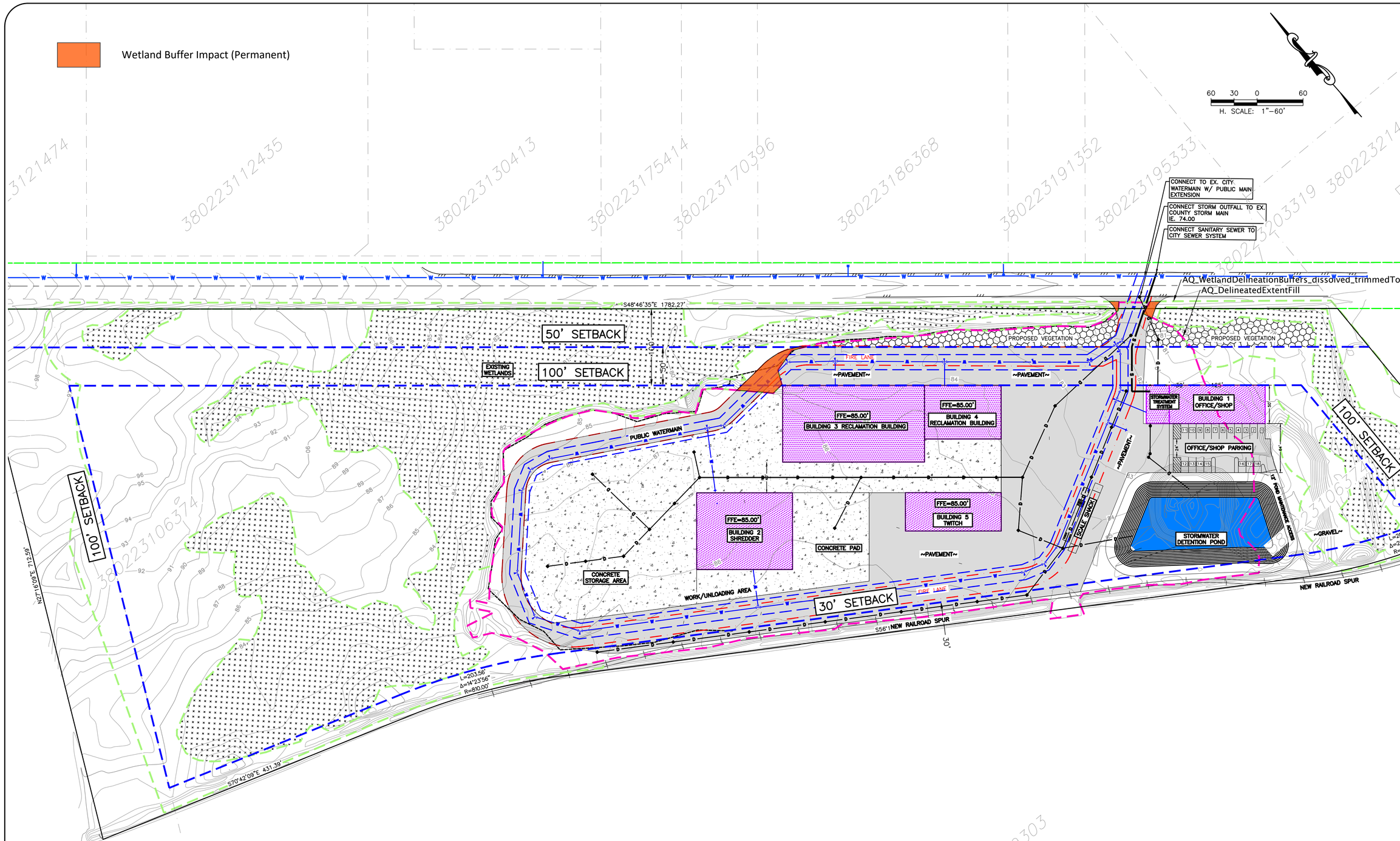


Figure A-3. 10/29/2023 Site Plan with Wetland Buffer Impacts

IMPACT DESIGN
5426 BARRETT ROAD, SUITE A103
360-389-9133 WWW.BOLD-IMPACT.COM

SCOTTIAN GODFREY
STATE OF WASHINGTON
31077
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY
10-16-2023

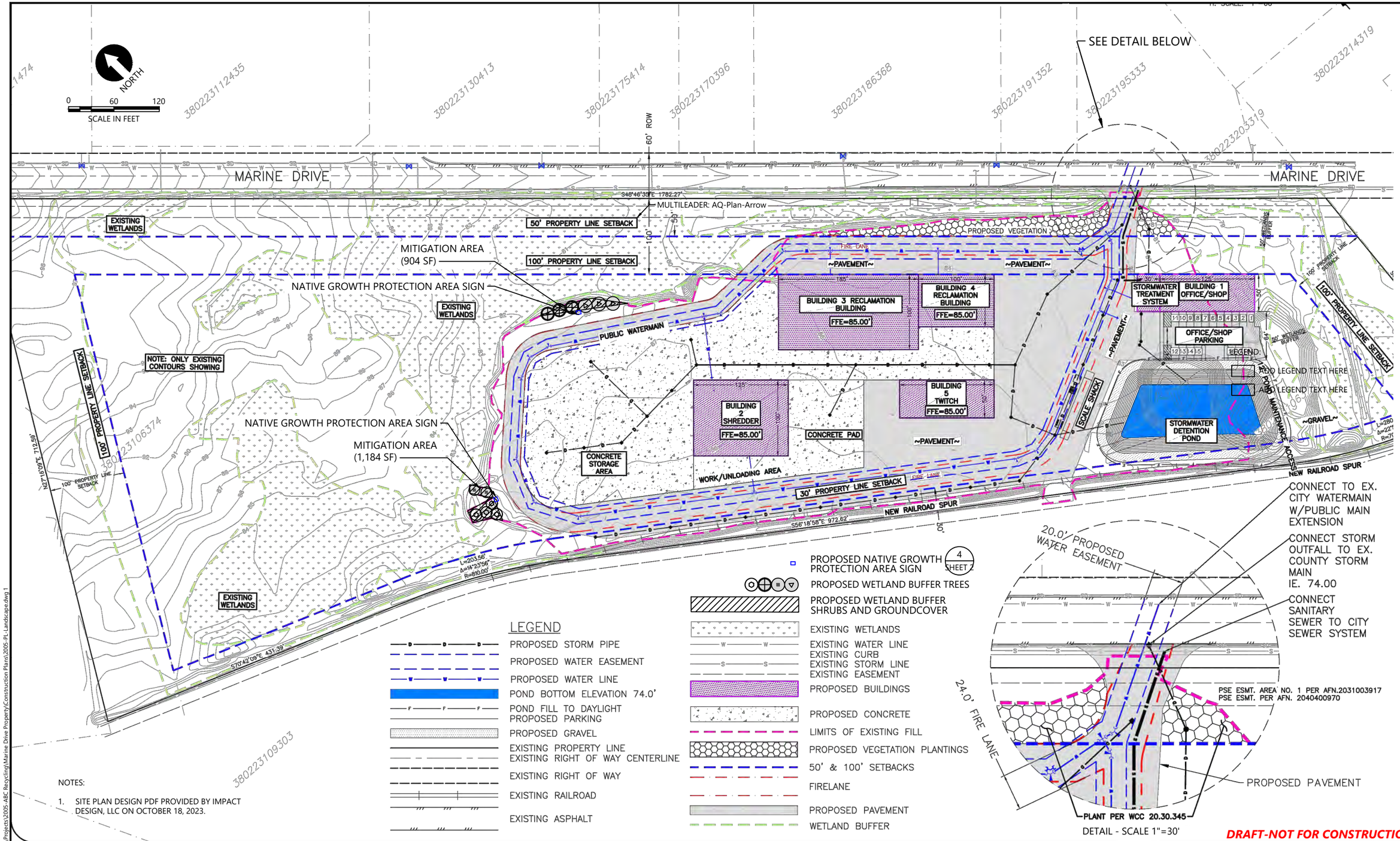
ABC RECYCLING
OVERALL SITE PLAN
PRELIMINARY
741 MARINE DRIVE
BELLINGHAM, WASHINGTON 98226

REV	DATE	BY	DESCRIPTION

PROJECT NUMBER: 21029
DESIGNED/DRAWN BY: BLS
CHECKED BY: SIG
ISSUE DATE: 10-16-2023

Z:\Shared\PROJECTS\21029 741 Marine Dr (ABC Recycling)\DWG\21029_ABC_Recycling_Site_Plan_2.dwg Oct 16, 2023-11:05am

Appendix B-1
Planting Plan, Schedule, and Details



NOTES:

1. SITE PLAN DESIGN PDF PROVIDED BY IMPACT DESIGN, LLC ON OCTOBER 18, 2023.

DRAFT-NOT FOR CONSTRUCTION

K:\Projects\2005-ABC Recycling\Marine Drive Property\Construction Plans\2005-PL-Landscape.dwg 1

Oct 23, 2023 11:57am cwee

ANCHOR QEA

ABC Recycling
741 Marine Drive
Bellingham, Wa 98225

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: IMPACT DESIGN
DRAWN BY: IMPACT DESIGN, CW
CHECKED BY: CS, MK
APPROVED BY: CS, MK
SCALE: AS NOTED
DATE: OCTOBER 2023

MARINE DRIVE FACILITY DEVELOPMENT PROJECT
MITIGATION PLAN

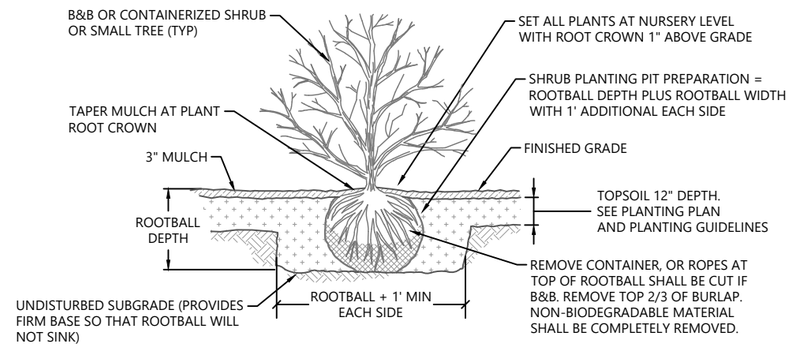
PLANTING PLAN

SHEET 1

PLANTING SCHEDULE					
COMMON NAME	SPECIES NAME	SIZE	SPACING	QUANTITY	REMARKS
NATIVE TREES					
Red alder	*Alnus rubra*	2 gal.	As Shown	4	1 / -
Big-leaf maple	*Acer macrophyllum*	2 gal.	As Shown	3	
Shore Pine	*Pinus contorta var. contorta*	2 gal.	As Shown	2	
Western red cedar	*Thuja plicata*	2 gal.	As Shown	3	
NATIVE SHRUBS AND GROUNDCOVER					
Salal	*Gaultheria shallon*	1 gal.	6' O.C.	13	PLANT IN EQUAL MIX OF SPECIES IN GROUPS OF 3 TO 5 PLANTS PER GROUP; 1 / - , 2 / - , 3 / -
Snowberry	*Symphoricarpos albus*	1 gal.	6' O.C.	13	
Nootka rose	*Rosa nutkana*	1 gal.	6' O.C.	13	
Indian plum	*Oemleria cerasiformis*	1 gal.	6' O.C.	13	
Coastal strawberry	*Fragaria chiloensis*	4 inch pot	4' O.C.	30	
Kinnikinnick	*Arctostaphylos uva-ursi*	4 inch pot	4' O.C.	30	

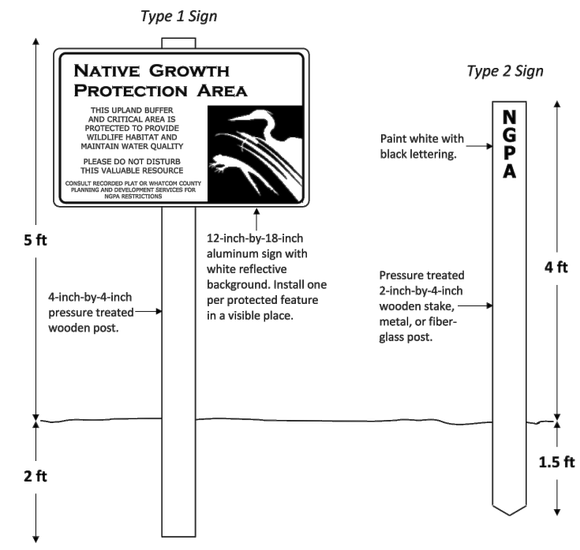
NOTES:

1. Refer to planting guidelines for topsoil and mulch placement within planting area.

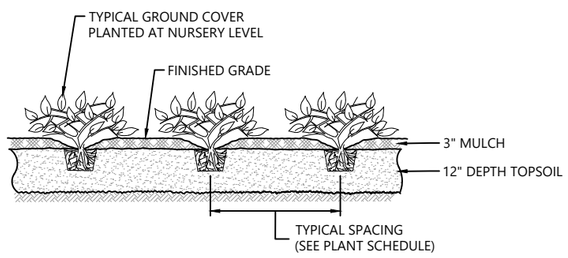


1 / - SMALL TREE OR SHRUB PLANTING DETAIL – SECTION
SCALE: NOT TO SCALE

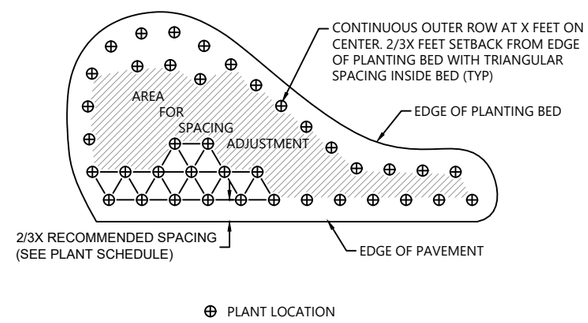
WHATCOM COUNTY PLANNING & DEVELOPMENT SERVICES
NATIVE GROWTH PROTECION AREA SIGN INSTALLATION GUIDELINES



1. Place NGPA signs at least every 200 ft around the perimeter of the NGPA. Minimum placement shall include one Type 1 sign per wetland or critical area.
2. All signs must be secure and permanent. Type 2 signs may be used in conjunction with Type 1 signs at the discretion of the Whatcom County technical administrator.
3. Sign placement shall be subject to the approval of Whatcom County. Alternative designs maybe submitted to Whatcom County for approval.



2 / - TYPICAL GROUNDCOVER PLANTING DETAIL
SCALE: NOT TO SCALE



3 / - SHRUB AND GROUNDCOVER PLANTING LAYOUT DETAIL – PLAN
SCALE: NOT TO SCALE

4 / - NATIVE GROWTH PROTECTION AREA SIGN
SCALE:NTS

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

DRAFT-NOT FOR CONSTRUCTION

ANCHOR QEA

ABC Recycling
741 Marine Drive
Bellingham, Wa 98225

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: CW
DRAWN BY: CW
CHECKED BY: CS, MK
APPROVED BY: CS, MK
SCALE: AS NOTED
DATE: OCTOBER 2023

MARINE DRIVE FACILITY DEVELOPMENT PROJECT MITIGATION PLAN

PLANTING SCHEDULE AND DETAILS

SHEET 2

K:\Projects\2005-ABC Recycling\Marine Drive Property\Construction Plans\2005-PL-Landscape.dwg 2
Oct 23, 2023 11:57am cwee

Appendix B-2
Planting Guidelines

PART 1 – SITE CLEARING

1.01 CLEARING VEGETATION

A. Install silt fencing along the Wetland A and Wetland B boundaries within the property boundary. No work shall occur within wetlands.

B. Mark the clearing limits for approval by the Owner prior to commencing clearing.

C. Avoid damage to native trees and shrubs in the clearing area. Any native tree and shrub more than 6 inches diameter at breast height (DBH) that is damaged by construction and no longer viable shall be replaced in the wetland buffer at a ratio of 3:1, at no additional cost to the Owner.

D. Preserve and provide protection for:

1. Adjacent facilities: Exercise extreme care to prevent damage to adjacent facilities that are to remain.

2. Flag existing vegetation to remain: The Contractor will notify the Biologist 1 week prior to beginning clearing or grading activities. The Biologist will flag existing trees/vegetation to remain within the clearing limits.

3. Existing trees and vegetation to remain: Install and maintain tree protection fencing around drip-line of trees to remain. Protect trees and shrubs in accordance with Article 1.04 of this section.

4. Manually Remove Invasive Species, such as Himalayan blackberry (*Rubus armeniacus*) and Protect Native Species: The Contractor will limit work to the use of hand tools, such as weed wrenches and maddux picks, to clear and grub invasive vegetation without damaging the above ground or below ground native vegetation. Use of mechanical equipment in these areas shall not occur without prior approval of the Engineer or Biologist.

5. Remove vegetation only as required. Do not do an initial general clearing and grubbing of site that leaves areas exposed that will not have immediate follow-up construction.

6. All temporary and erosion control measures must be in place prior to clearing and grubbing.

7. Contractor shall adhere to Whatcom County seasonal restrictions for land clearing.

E. Invasive trees and shrubs, in particular Himalayan blackberry and Scotch broom (*Cytisus scoparius*), shall be cleared and grubbed in the wetland buffer mitigation

area. It is the Contractor's responsibility to visit the site prior to bidding to generally ascertain vegetation to be removed for construction.

F. Clear areas outside the wetland buffer that is required for access to the work (except as noted in Paragraph 1.01.A). However, remove vegetation only as required; do not perform an initial general clearing and grubbing of site that leaves areas exposed that will not have immediate follow-up construction.

G. All temporary and erosion control measures shall be in place prior to clearing and grubbing. This includes silt fence placed along Wetlands A and B.

H. Contractor shall adhere to Whatcom County seasonal restrictions for land clearing.

1.02 GRUBBING VEGETATION

A. Remove stumps, roots, and vegetation deep enough to remove all roots of invasive shrubs using hand tools.

B. Any grubbed material containing non-native and invasive seed or plant material, such as Himalayan blackberry, shall be removed immediately from the site for disposal at an approved off-site location. This material shall not be stockpiled in areas outside of the identified landscape area. Care shall be taken to prevent the spread of weed seed and other vegetative material.

1.03 DISPOSAL OF CLEARED VEGETATION MATERIAL

A. Remove and legally dispose of all cleared material at an approved off-site location. The Contractor, in a manner consistent with all government regulations, shall dispose of the refuse resulting from clearing and grubbing. In no case shall refuse material be left on the Project site, or be buried in embankments or trenches on the Project site unless directed otherwise by the Owner.

1.04 TREE AND SHRUB PROTECTION

A. Provide temporary flagging at the limit of clearing and grading adjacent to trees and shrubs designated to remain. Do not operate vehicles or stockpile any material within the drip-line of existing trees unless specifically directed by the Owner. Protect trees with temporary construction fencing per the following:

1. Minimum 4-foot-tall orange construction fencing placed outside of the dripline of trees and shrubs to be protected.

B. Where existing trees and shrubs to remain are within the area of work, or where existing trees and shrubs outside the area of work have drip-lines extending into the area of work, the Contractor shall employ all methods to minimize adverse impact to these existing trees and shrubs, including limbs and roots. The

Contractor shall notify the Owner of any construction work within the drip-line of trees and shrubs at least 1 working day before the scheduled activity. The Contractor shall manually work within tree protection fencing areas and/or use an air spade to loosen soil without damaging tree roots. Additional methods to minimize adverse impacts may include, but are not limited to, the following:

1. Temporary chain link construction fencing.

2. Temporary tie-up of low limbs.

3. Application of a 4- to 6-inch-thick layer of mulch within the drip-line of trees.

4. Timber or steel planking for protection of surface roots from Equipment.

5. Tree root pruning or other tree root treatment as directed by the Owner.

C. No storage of equipment or materials shall be allowed within the drip-line of trees not designated for removal. Steel planking, or timber planking made of 4-inch-thick material, each plank covering a minimum of 8 square feet, shall be used to support backhoe and other Equipment stabilizers when set within the drip-line of a tree or sodded planting strip.

PART 2 – SOIL PREPARATION – PRODUCTS

2.01 TOPSOIL

A. Topsoil shall conform to WSDOT specification 9-14.1(2) Topsoil Type B or meet the following specifications:

B. Topsoil mix shall consist of 60% Sand and 40% Composted Organic Soil Amendment by volume.

1. The Sand Component shall meet the following specifications within reasonable variations and shall be free of phyto-toxic materials and viable seeds, rhizomes, or roots of state-listed noxious weeds:

Screen Size	Percent Passing
1/4 to 3/8”	100
#46	99
#10	65
#20 to #18	35
#40 #20 +#35	<30
#40 +#60	<15
#100	2-10%
#200	1-5%

2. Composted Organic Soil Amendment shall meet the requirements of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, current edition (hereafter Standard Specifications), Section 9-14.4(8), for Medium compost gradation.

C. Topsoil shall also have the following characteristics:

1. Mix shall contain 10% to 20% organic matter, by weight (loss on ignition).

2. The pH range shall be from 6.0 to 7.5.

3. Soluble salt contents shall be less than 3.0 mmhos/cm.

D. Topsoil shall contain sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.

PART 3 – SOIL PREPARATION AND PLACEMENT – EXECUTION

3.01 PREPARATION OF SUBGRADE

A. The Contractor shall excavate a minimum 6-inch depth of existing fill material within the planting area as specified on the Planting Plans.

B. Perform excavation in the dry to the extent possible.

C. Do not excavate in frozen material without the written approval of the Owner.

D. Scarification in buffer area: Scarify or till subgrade to a minimum depth of 6 inches. Entire surface should be disturbed by scarification. Do not scarify within drip-line of exiting trees and shrubs to be retained. Obtain Owner approval of scarified subgrade before placing topsoil.

3.02 PLACING TOPSOIL

A. Rototill 6 inches of topsoil into prepared subgrade in planting area. Install final 6-inch depth of topsoil and perform fine grading. Rake out all rocks, roots, sticks, and other debris larger than 1-inch diameter or sticks longer than 3 inches.

B. Installation of irrigation lines and equipment shall occur after completion of compost installation. Refer to Article 6.05 of these Planting Guidelines for additional information on irrigation.

PART 4 – PLANTING – GENERAL

4.01 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in such a manner as to prevent wetting and deterioration of the fertilizer.

B. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock. On arrival, the certificate shall be filed with the Owner. Protect all plants from desiccation. Wilt-proof or another antidessicant shall be applied only with approval of the Owner. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicles with a protective covering to prevent wind-burn.

D. Provide dry, loose soils for planting. Frozen or muddy soil is not acceptable.

E. Stock shall be handled by root ball only, not the trunks, stems, or tops.

4.02 PROJECT CONDITIONS

A. Work notification: notify the Owner at least 5 working days prior to the installation of plant material.

B. Protect existing utilities, paving, and other facilities from damage caused by planting operations.

C. Do not install plant material when ambient temperatures may drop below 35°F or rise above 80°F within 24 hours of work.

D. Do not install plants when wind velocity exceeds 30 miles per hour.

E. Confine work to designated areas. Do not disturb existing vegetation outside Project limits and protect all trees, shrubs, and ground covers within Project limits not designated to be removed. Do not permit vehicular traffic or materials storage under or around new or existing trees.

4.03 SEQUENCING AND SCHEDULING

A. Planting vegetation shall be performed during the period between October 1 and April 30. Planting at other times shall only by done by written permission by the

Owner and only if an irrigation system is available at the site at the time of planting.

4.04 WARRANTY

A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after the date of Substantial Completion. Inspection of plants will be made by the Owner at the completion of planting.

B. Replace all plants that are dead or, as determined by the Project Engineer, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at the Contractor's expense. Warrant all replacement plants for 1 year after Substantial Completion or installation, whichever is longer.

C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, freezing rains, lightning storms, or winds over 75 miles per hour, winter kill caused by extreme cold and severe winter conditions not typical of planting area, acts of vandalism, or negligence on the part of the Owner.

D. Remove and immediately replace all plants, as determined by the Project Engineer, to be unsatisfactory during the initial planting installation.

PART 5 – PLANTING – PRODUCTS

5.01 PLANT MATERIALS

A. Plants: Provide plants typical of their species or variety, with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from weeds, defects, disfiguring knots, sunscald injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, flush cuts, or stubs.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and absorbing root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the *American Standard for Nursery Stock*. Cracked or mushroomed balls are not acceptable.

2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.

a) No plants shall be loose in the container.

b) Container stock shall not be pot bound.

3. No pruning wounds shall be present with a diameter of more than 1/2 inch, and such wounds must show vigorous callous on all edges. Trees shall not be pruned within 6 months prior to delivery.

5.02 FERTILIZERS

A. Fertilizer shall meet the requirements of Standard Specifications Section 9-14.3.

B. Fertilizer shall conform to reference FS O-F-24D, Commercial Fertilizers and Washington State Department of Agriculture laws.

C. Fertilizer for all tree and shrub plantings shall be "BioPaks-16-6-8 plus minors and biostimulants," available from Reforestation Technologies International (RTI), 1-800-784-4769.

D. BioPak®, or approved equivalent, shall consist of: a 10-gram biodegradable planting packet containing a blend of 16.00% total nitrogen (N), 6.00% available phosphoric acid (P_2O_5), and 8.00% soluble potash (K_20). Also containing 6.92% combined sulfur (S), 0.52% zinc (Zn), 0.54% iron (Fe), 0.54% magnesium (Mg), 0.23% copper (Cu), 0.05% boron (B), and 0.56% manganese (Mn). The nitrogen, phosphorous, and potassium sources shall be coated with a polyurethane coating to provide 15.69% coated slow release nitrogen, 5.09% coated slow release available phosphate, and 6.80% available soluble potash. Also contains: 5.0% humic acid derived from rutile sands, 0.25% kelp extract, and 0.9% naphthalene acetic acid.

E. Supplemental Fertilizer: Shall consist of Mycor Tree Saver mycorrhizal fungal transplant inoculant for all trees and shrubs or approved equal consisting of:

Ectomycorrhizal Fungi	95 million spores/lb
Vesicular Arbuscular Mycorrhizal (VAM) Fungi	5,300 spores /lb
Rhizosphere Bacillus	324 million cfu/lb
Potassium polyacrylamide	33%
Formononetin	0.007%
Microbial Nutrients	39.4%
Inert Ingredients	27.3%

5.03 BARK OR WOOD CHIP MULCH

A. Bark or Wood Chip Mulch shall meet the requirement of Standard Specifications Section 9-14.4(3).

PART 6 – PLANTING – EXECUTION

6.01 INSPECTION

A. Finish grading shall be inspected and approved by the Owner prior to planting.

B. Plant material shall be inspected and approved by the Owner at the Project site. Provide 48 hours' notice prior to delivery to the Project site. Remove unsatisfactory material from the site immediately.

6.02 PREPARATION AND SEQUENCING

A. The Contractor shall locate plants by staking with stakes and flags as indicated on Planting Plan or as approved in the field. If obstructions are encountered that are not shown on Planting Plan, do not proceed until Owner has selected alternate plant locations.

B. Plant materials shall be installed after compost and irrigation have been installed and approved by the Owner.

6.03 FERTILIZER INSTALLATION

A. Fertilizer shall be placed at the time of planting. Owner or Owner's Representative shall be present during fertilizer installation.

6.04 PLANT INSTALLATION

A. Plants brought to the planting site shall be balled, and burlapped, or in containers, as specified on Planting Plan for the type of planting material. Plants shall not be planted during freezing weather or when the ground is frozen. Plants shall not be planted during excessively wet conditions. Plants shall not be placed on any day in which temperatures are forecast to exceed 80°F or drop below 35°F unless the Project Engineer approves otherwise. Plants shall not be placed in areas that are below finished grade.

B. Plants shall be removed from containers in a manner that prevents damage to the root system. Containers may require vertical cuts down the full depth of the container to accommodate removal. All circling roots shall be loosened to ensure natural directional growth after planting.

C. Excavate circular plant pits with scarified vertical sides, except for plants specifically indicated to be planted in beds. Provide planting pits at least twice the diameter of the root system or container. Depth of pit shall accommodate the entire root system. Scarify the bottom and sides of the pit to a depth of 4 inches. If groundwater is encountered upon excavation of planting holes, the Contractor shall promptly notify the Project Engineer.

D. Place specified planting soil for use around the balls and roots of the plants.

E. Install fertilizer packets around plant root balls based on plant size and manufacturer recommendations.

F. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set crown of plant material at the finish grade. No filling will be permitted around trunks or stems or above grafts on grafted trees. Backfill the planting pit with specified soil or amendment. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.

G. After balled and burlapped plants are set, water in soil mixture around bases of balls and fill all voids.

1. Remove all burlap, or plastic wrapping materials, twine, and wires, and wire baskets from root balls.

2. If burlap has been chemically treated (green color), remove from the planting pit.

H. Bark or Wood Chip Mulch Installation:

1. Mulch tree, shrub, and groundcover planting beds with required mulching material immediately after planting, as shown in Appendix B-1, Sheet 2. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

I. Pruning: Prune trees only to remove broken or damaged branches, or for aesthetic purposes as directed by the Owner. Branches will be pruned at the branch collar. Neither stubs nor flush cuts will be acceptable.

6.05 WATERING

A. A temporary irrigation system must be installed prior to planting within wetland buffers.

B. The temporary irrigation system shall be Contractor design/build, as described in Section 8.03 of the Standard Specifications. The system shall be designed to provide irrigation for installed trees and shrub area.

C. Planted areas within wetland buffers shall receive a minimum of 1 inch of water each week from June-September for Year 1, from the temporary irrigation system or natural rainfall.

6.06 MAINTENANCE

A. Maintain planting until Substantial Completion and as directed by the Project Engineer.

B. Maintenance shall include cultivating, weeding, watering, pruning (prune only as directed by Owner), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease. Insecticide and fungicides shall only be applied by a licensed pesticide applicator and as approved by the Owner.

1. Reset settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.

2. Straighten, repair, and adjust guy wires and stakes as required.

3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.

4. Water trees and shrub within the first 24 hours of initial planting, and not less than twice per week (including rain) until Substantial Completion.

6.07 SUBSTANTIAL COMPLETION

A. Inspection to determine Substantial Completion of planted areas will be made by the Owner, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.

1. Planted areas will be accepted provided all requirements, including the maintenance period, have been complied with and plant materials are alive and in a healthy, vigorous condition.

B. Upon Substantial Completion, the Owner will assume plant maintenance.

6.08 CLEANING

A. Perform cleaning during installation of the Work and upon completion of the Work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

PART 7 – SIGNS – PRODUCTS AND EXECUTION

7.01 SIGN MATERIALS

A. Permanent signs shall be made of durable material and vandal-resistant, and shall be attached to a metal post or other material of equal durability.

7.02 SIGN INSTALLATION

A. Permanent signs must be posted at an interval of 200 feet or less as shown on the drawings.

END OF PLANTING GUIDELINES

Appendix B-3
Bond Quantity Worksheet

Whatcom County
Planning and Development Services
5280 Northwest Drive
Bellingham, WA 98226-9097
360-778-5900 TTY 800-833-6384
360-778-5901 Fax

Mark Personius, AICP
Director

Critical Areas Mitigation
Bond Quantity Worksheet

Date: 10/23/2023
Project Name: **Marine Drive Facility Development**
Project Number:
Location: **741 Marine Drive Road, Bellingham, WA**
Project Description: Mitigation Plan

Prepared by: Cresha Wee, Anchor QEA
Applicant: **ABC Recycling**
Phone: **360-389-8138**

PLANT MATERIALS (includes labor cost for plant installation)					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
PLANTS: Potted, 4" diameter, medium soil	5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	11.50	Each	52.00		$ 598.00
PLANTS: Container, 2 gallon, medium soil	20.00	Each	12.00		$ 240.00
PLANTS: Container, 5 gallon, medium soil	36.00	Each			$ -
PLANTS: Seeding, by hand	0.50	SY			$ -
PLANTS: Flats/plugs, Stakes, Slips	2.00	Each	60.00		$ 120.00
				Sub Total	**$ 958.00**
INSTALLATION COSTS (additional labor, equipment, & overhead)					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Compost or mulch, delivered and spread	38.00	CY	20.00		$ 760.00
Decompacting till/hardpan, medium, to 6" depth	1.57	CY			$ -
Decompacting till/hardpan, medium, to 12" depth	1.57	CY			$ -
Hydroseeding	0.51	SY			$ -
Labor, general (landscaping other than plant installation)	40.00	HR			$ -
Labor, general (construction)	40.00	HR	16.00		$ 640.00
Labor: Consultant, supervising	55.00	HR	16.00		$ 880.00
Labor: Consultant, on-site re-design	95.00	HR			$ -
Rental of decompacting machinery & operator	70.00	HR			$ -
Sand, coarse builder's, delivered and spread	42.00	CY			$ -
Staking material (set per tree)	7.00	Each			$ -
Surveying, line & grade	250.00	HR	8.00		$ 2,000.00
Surveying, topographical	250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	3.62	MSF			$ -
Irrigation - temporary	3,000.00	Acre	0.05		$ 150.00
Irrigation - buried	4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	1.02	SY	239.00		$ 243.78
				Sub Total	**$ 4,673.78**
HABITIAT STRUCTURES (includes delivery & installation)					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Fascines (willow)	2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	460.00	Each			$ -
Rocks, one-man	60.00	Each			$ -
Rocks, two-man	120.00	Each			$ -
Root wads	163.00	Each			$ -
Spawning gravel, type A	22.00	CY			$ -
Weir - log	1,500.00	Each			$ -
Weir - adjustable	2,000.00	Each			$ -
Woody debris, large	163.00	Each			$ -
Snags - anchored	400.00	Each			$ -
Snags - on site	50.00	Each			$ -
Snags - imported	800.00	Each			$ -
				Sub Total	**$ -**
EROSION CONTROL					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Backfill and Compaction-embankment	4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	30.00	CY			$ -
Ditching	7.03	CY			$ -
Excavation, bulk	4.00	CY			$ -
Fence, silt	1.60	LF			$ -
Jute Mesh	1.26	SY			$ -
Mulch, by hand, straw, 2" deep	1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	3.25	SY			$ -
Mulch, by machine, straw, 1" deep	0.32	SY			$ -
Piping, temporary, CPP, 6"	9.30	LF			$ -
Piping, temporary, CPP, 8"	14.00	LF			$ -
Piping, temporary, CPP, 12"	18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	2.00	SY			$ -
Rip Rap, machine placed, slopes	33.98	CY			$ -
Rock Constr. Entrance 100'x15'x1'	3,000.00	Each			$ -
Rock Constr. Entrance 50'x15'x1'	1,500.00	Each			$ -
Sediment pond riser assembly	1,695.11	Each			$ -
Sediment trap, 5' high berm	15.57	LF			$ -
Sediment trap, 5' high berm w/spillway incl. riprap	59.60	LF			$ -
Sodding, 1" deep, level ground	5.24	SY			$ -
Sodding, 1" deep, sloped ground	6.48	SY			$ -
Straw bales, place and remove	600.00	TON			$ -
Hauling and disposal	20.00	CY	80.00		$ 1,600.00
Topsoil, delivered and spread	35.73	CY	80.00		$ 2,858.40
				Sub Total	**$ 4,458.40**
GENERAL ITEMS					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Fencing, split rail, 3' high (2-rail)	12.00	LF			$ -
Fencing, temporary	1.20	LF			$ -
Signs, critical area boundary (inc. backing, post, install)	48.50	Each	2.00		$ 97.00
				Sub Total	**$ 97.00**
MAINTENANCE, ANNUAL (by owner or consultant)					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Less than or equal to 1,000 sq. ft.	180.00	per year		(4 hrs @ $45/hr)	$ -
Larger than 1,000 sq. ft. and ≤ 1 acre	360.00	per year	10.00	(8 hrs @ $45/hr)	$ 3,600.00
Larger than 1 acre	720.00	per year		(16 hrs @ $45/hr)	$ -
				Sub Total	**$ 3,600.00**
MONITORING, ANNUAL (by owner or consultant)					
Type	*Unit Cost*	*Unit*	*Quantity*	*Description*	*Cost*
Less than or equal to 1,000 sq. ft.	360.00	per year		(4 hrs @ 90/hr)	$ -
Larger than 1,000 sq. ft. and ≤ 1 acre	720.00	per year	5.00	(8 hrs @ $90/hr)	$ 3,600.00
Larger than 1 acre	1,440.00	per year		(16 hrs @ $90/hr)	$ -
				Sub Total	**$ 3,600.00**
				PROJECT COST	**$ 17,387.18**
				25% CONTINGENCY	$ 4,346.80
				TOTAL	**$ 21,733.98**