Bellingham Mitigation Bank

Mitigation Banking Instrument

July 28, 2026



City of Bellingham
Public Works Department
Natural Resources Division
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MITIGATION BANKING INSTRUMENT

Bellingham Mitigation Bank

This Mitigation Banking Instrument (hereinafter, the "Instrument") regarding the establishment, use, operation, and maintenance of the Bellingham Mitigation Bank (hereinafter, the "Bank") is made and entered into by and among the City of Bellingham (hereinafter, the "Sponsor"), the U.S. Army Corps of Engineers (hereinafter, the "Corps"), and the Washington State Department of Ecology (hereinafter, "Ecology") (hereinafter, collectively, the "Parties"), with reference to the following:

I. PREAMBLE

A. Purpose: The purpose of this Instrument is to specify responsibilities for the establishment, use, operation, and maintenance of the Bank. It consists of this "Basic Agreement" establishing the central obligations assumed and consideration provided by each Party, as well as Appendices (hereinafter, the "Appendices") that establish the detailed Bank implementation plan, including site-specific conditions, standards and procedural requirements applicable to the Bank. The terms and provisions of the Appendices are incorporated into the Instrument. The Bank will provide compensatory mitigation for unavoidable impacts to waters of the United States and waters of the State, including wetlands, aquatic habitat, and to other natural resources that result from activities authorized by Federal, State, and local authorities, when use of the Bank has been specifically approved by the appropriate regulatory agencies.

B. Location and Ownership of Parcels: Whereas, the Sponsor owns approximately 98.65 acres of land adjacent to Northwest Drive, Thomas Road, and Stuart Road and along Bear and West Bear Creeks in the City of Bellingham and Whatcom County, Whatcom County, Washington within portions of Sections 2 and 11, Township 38N, Range 2E of the Willamette Meridian. The Bank is comprised of multiple parcels made up of three separate sites, identified as Sites A, B, and C (**Table 1**). See Appendix A for a detailed description and map. All real property to be included within the Bank site is more completely described in the legal description attached as Exhibit A to this Instrument.

Table 1. Property Information and Summary

Bank Site	Property Owner	Parcel Numbers	Zoning	Parcel Area (acres)	Bank Area (acres)
A	City of Bellingham	380202209221	Rural - 1 unit/5 acres (R5A)	23.79	23.54
B	City of Bellingham	380202064077	Light Impact Industrial (LII)	35.99	35.99
C	City of Bellingham	380211165469 380211231475 380211200375	Light Impact Industrial (LII)	39.17	39.12
			Total Parcel Area	98.95	
				Total Bank Area	98.65
Easements in the Bank Area					
Site B	10' Waterline Easement	380202064077	---	0.86	0.86
Site C	10' Waterline Easement	380211165469	---	0.28	0.28
Site C	10' Waterline Easement	380211231475	---	0.55	0.55
			Total Bank Easements	1.69	1.69

C. <u>Project Description</u>: Whereas, the Sponsor has expressed intent to enhance and preserve approximately 98.65 acres of aquatic and associated upland habitat in accordance with the provisions of this Instrument, and to then maintain the Bank in accordance with the provisions of this Instrument. The Bank is projected to, among other purposes, provide the preservation of 42.39 acres of wetland and 13.43 acres of upland, for a total of 55.82 acres. In addition, enhancement of 42.83 acres will be provided as part of the project, consisting of 16.93 acres of wetland and 25.90 acres of upland (including the forested uplands and riparian upland areas combined). Both preservation and enhancement mitigation methods are detailed in Appendices A and B of this Instrument.

The Bank site includes areas that shall not generate credits, which consist of a utility easement and perimeter buffers around Sites A, B, and C. The perimeter buffer widths range from 0 to 100 feet and are based upon current and anticipated land-use intensities on adjacent properties and the risk of impacts to the Bank from those activities. The Bank area totals 98.65 acres and includes 1.69 acres within a utility corridor easement and 24.69 acres of non-credit generating perimeter buffer. Of the total 1.69 acres of utility easement area that is non-credit generating, 0.22 acres lies outside of the perimeter buffer in the credit generating area, with the remaining 1.47 acres of easement area encompassed within the 24.69 acres of non-credit generating perimeter buffer. This results in a total non-credible area of 24.91 acres, consisting of the 0.22 acres of easement outside the perimeter buffer, and 24.69 acres of perimeter buffer. This leaves 73.74 acres of the total 98.65 acres of Bank area available for credit generation.

The project will preserve headwater wetlands, streams, riparian, and interconnected upland habitat to protect high-quality, interconnected wetland and forested upland habitats within the Bank that are a part of a regionally important undeveloped biodiversity corridor. Ecosystem functions will be permanently protected within the Bank by implementing the Instrument and providing protection in

perpetuity through execution of a conservation easement. Wetlands and forested uplands will be enhanced with native conifers to accelerate the Bank's ecological succession to a self-sustaining mixed deciduous-coniferous forest, assist in competition with invasive plants, and improve species diversity, habitat structure, and large woody material recruitment over existing conditions.

The Bank is expected to enhance and protect the existing and proposed habitat types described in **Table 2.**

Table 2. Proposed Mitigation Methods and Areas by Site and Proposed Habitat Types

Proposed Habitat Type[1]		Credit Generating Area (acres)				Non-credit Generating Area (acres)					TOTAL AREA (acres)
						Perimeter Buffer[2]			Ease-ment[3]		
		Site A	Site B	Site C	Total	Site A	Site B	Site C	Site C	Total	
Enhancement	Riparian Upland (Riparian UPL)	0.83	-	-	0.83	0.15	-	-	-	0.15	0.98
	Palustrine Forested Wetland (PFO WET)	3.11	2.65	7.14	12.90	1.24	0.28	2.47	0.04	4.03	16.93
	Forested Upland (FO UPL)	2.83	8.65	7.49	18.97	1.84	1.65	2.39	0.07	5.95	24.92
	Enhancement Subtotal	**6.77**	**11.30**	**14.63**	**32.70**	**3.23**	**1.93**	**4.86**	**0.11**	**10.13**	**42.83**
Preservation	Palustrine Forested Wetland (PFO WET)	5.37	14.63	11.78	31.78	3.35	3.56	3.60	0.10	10.61	42.39
	Forested Upland (FO UPL)	2.16	3.26	3.84	9.26	2.66	1.31	0.19	0.01	4.17	13.43
	Preservation Subtotal	**7.53**	**17.89**	**15.62**	**41.04**	**6.01**	**4.87**	**3.79**	**0.11**	**14.78**	**55.82**
	TOTALS	**14.30**	**29.19**	**30.25**	**73.74**	**9.24**	**6.80**	**8.65**	**0.22**	**24.91**	**98.65**

[1] According to Cowardin classifications for the proposed wetland habitat types (FGDC 2013).
[2] Perimeter buffer encompasses portions of the utility easements on Sites B and C.
[3] Portion of utility easement that lies outside of the perimeter buffer on south boundary of Site C .

D. <u>Bank Overview</u>: Whereas, the general goals of Bank establishment are to enhance wetlands and forested and riparian uplands to provide species diversity, increase wildlife habitat function and complexity, and to preserve and protect headwater wetlands, streams, riparian and interconnected upland habitat. The Bank design will provide improvement in the forest community structure, development of multiple age-classes over the long-term, species richness, year-round shading, habitat interspersion, wildlife habitat, and large woody material recruitment.

The Bank is located within Water Resource Inventory Area (WRIA) 1 (Nooksack) in the Silver Creek watershed. Portions of the Cities of Bellingham and Ferndale and their associated UGA boundaries are within the watershed. The Bank is further located within the Bear Creek sub-watershed of the Silver Creek watershed. Both the watershed and subwatershed are made up of small- to medium-sized tributaries, originating from seeps, springs, and wetlands, that coalesce into larger and deeper channels as drainages flow generally north and west. The Silver Creek watershed and Bear Creek sub-watershed are characterized by a variety of landscapes and land uses. Small- to medium-scale forestry and agriculture are predominant, with a patchwork of forest mixed with small-acreage agricultural fields.

Three main streams flow through the Bank: Bear Creek, West Bear Creek, and an unnamed tributary to West Bear Creek. In addition to the main stream channels that flow through Sites A, B, and C, multiple smaller tributaries and drainages connecting wetlands to the streams are also present. Collectively, Bear Creek and West Bear Creek provide known or presumed habitat and/or directly support multiple species and runs of salmonids and steelhead, with West Bear Creek and its unnamed tributary mapped as gradient accessible for salmonid and steelhead species. Sites B and C are part of a large, 400+ acre contiguous forest block that extends north and south of the Bank. Of the overall 98.65 acres within the Bank, 59.33 acres are primarily composed of forested and scrub-shrub wetlands. The remaining 39.32 acres consists of upland forest and riparian areas. Timber harvest occurred circa late 1980s-early 1990s on portions of Sites B and C, which has developed into a +/- 35-year-old stand on significant portions of both Sites. On Site A, older timber harvests have characterized the mix of conifers and deciduous trees found on the site.

The bank site design will balance the age and size distribution of trees over the existing forest community, which has been degraded from historic logging. Prior to widespread logging within the Bank, soils on site were able to support the continued growth and maintenance of old-growth and mature conifer trees. Undisturbed native soils and a robust old-growth and mature coniferous forest would have reduced colonization by early successional, fast-growing deciduous species and the widespread establishment of invasive plants. Valuable ecological lift will be gained by establishing a conifer replacement cohort and recruitment potential, which will better balance the age and size distribution of trees to a more stable forest community, especially in the drier upland and shallow wetland areas, where gaps in the overstory canopy have led to invasive plant infestations.

The bank project design proposes to enhance and preserve wetlands, streams, forested uplands, and riparian habitat. Existing wetland, riparian, and upland areas will be planted with trees and shrubs to enhance the existing forested and scrub-shrub vegetation communities. In most areas, these future forested and scrub-shrub communities will become interspersed within the existing riparian, emergent, and aquatic bed habitat to create a mosaic of different habitat classes that were present throughout the site prior to historic logging practices.

E. <u>Interagency Review Team</u>: Whereas, in consideration of the establishment and maintenance of the Bank, the Interagency Review Team (IRT) is willing to award compensatory mitigation credits in accordance with the procedures outlined in this Instrument. These Bank credits will be made available to serve as compensatory mitigation pursuant to applicable Federal and Washington State laws and regulations. The Corps and Ecology serve as Co-Chairs of the IRT. The IRT is the group of Federal, State, Tribal, and local agencies that has reviewed and will advise the Co-Chairs regarding the establishment and management of the Bank pursuant to the provisions of the Instrument.

NOW, THEREFORE, the Parties agree to the following:

II. LEGAL AUTHORITIES

A. <u>Authorities</u>: The establishment, use, operation, and maintenance of the Bank shall be carried out in accordance with the following principal authorities.

1. Federal:
    a. Clean Water Act (33 USC §§ 1251 et seq.)
    b. Rivers and Harbors Act of 1899 (33 USC § 403)

c. Regulatory Programs of the Corps of Engineers, Final Rule (33 CFR Parts 320-332)

d. U.S. Army Corps of Engineers Regulatory Guidance Letter 05-1, *Guidance on Use of Financial Assurances, and Suggested Language for Special Conditions for Department of the Army Permits Requiring Performance Bonds*, U.S. Army Corps of Engineers, February 14, 2005

e. Guidelines for the Specification of Disposal Sites for Dredged and Fill Material ("404(b)(1) Guidelines," 40 CFR Part 230)

f. National Environmental Policy Act (42 USC §§ 4321 et seq.)

h. Executive Order 11990 (Protection of Wetlands)

i. Executive Order 11988 (Protection of Floodplains)

j. Executive Order 13112 (Invasive Species)

k. Fish and Wildlife Coordination Act (16 USC §§ 661 et seq.)

l. Fish and Wildlife Service Mitigation Policy (88 FR31000, 2023)

m. Endangered Species Act (16 USC §§ 1531 et seq.)

n. Magnuson-Stevens Fishery Conservation and Management Act (16 USC §§ 1801 et seq.)

o. National Historic Preservation Act, as amended (16 USC § 470)

p. Coastal Zone Management Act (16 USC § 1451 et seq.)

2. State of Washington:

a. Washington Water Pollution Control Act, RCW 90.48 et seq.

b. State of Washington Wetlands Mitigation Banking Statute (RCW 90.84)

c. Washington State Rule on Wetland Mitigation Banking (WAC 173-700, Wetland Mitigation Banks)

d. Washington State Environmental Policy Act ("SEPA" RCW 43.21C and WAC 197-11)

e. Growth Management Act (RCW 36.70A)

f. Washington State Hydraulic Code (RCW 77.55, WAC 220-110, and Hydraulic Permit Approval)

g. Washington State Shoreline Management Act (RCW 90.58, WAC 173-27 as amended)

h. Washington State Salmon Recovery Act (RCW 77.85)

i. Washington State Aquatic Resources Act (RCW 90.74)

j. Executive orders 89-10 and 90-04, Protection of Wetlands

III. ESTABLISHMENT OF THE BANK

A. Permits: The Sponsor shall obtain all appropriate environmental documentation, permits and other authorizations needed to establish and maintain the Bank, prior to the award of any Bank credits. Compliance with this Instrument does not fulfill the requirement, or substitute, for such authorizations. Local authorizations and permits include, but are not limited to, City of Bellingham and Whatcom County approvals, permits, and authorizations issued under the statutory and regulatory provisions listed in the Appendices of this Instrument.

B. Bank Establishment: The Sponsor agrees to establish the Bank as described in Appendix B and to satisfactorily accomplish all performance standards reflected in Appendix C. In recognition thereof, compensatory mitigation credits will be awarded to the Sponsor in accordance with the procedures and schedules prescribed in the Appendices, particularly in Appendices C and D. In establishing the Bank, deviations from the prescribed Bank development plan and design, including deviations from any performance standards, may only be made with the prior approval of the Corps and Ecology, in consultation with the IRT. To propose modifications to the Bank development plan, the Sponsor shall submit a written request to the Corps and Ecology. Documentation of implemented modifications shall be made consistent with Article VI.B.2. of this Instrument. The Establishment Period of the Bank is defined in Article IV.K.

C. Financial Assurance Requirements: The Sponsor agrees to satisfy its obligations under this Instrument by obtaining sufficient funding to carry out all its acquisition, design, development, monitoring, and maintenance responsibilities underlying the establishment and initial functionality of the Bank, as well as its Long-Term Management and Maintenance actions prescribed in Article IV.M.1 and the Sponsor hereby provides an unqualified commitment to obtain, budget, and expend all necessary funding to fulfill these obligations, including any applicable contingency activities and remedial actions pursuant to Article IV.H. and Appendix F, Section F.5. This funding commitment is unconstrained by any considerations of restriction on future commitment of appropriated public funds that the Sponsor may apply to the obligations arising under this Instrument. No mitigation credit sale revenue may be expended in execution of any of the Sponsor's obligations prescribed under this Instrument, to include without limitation Bank establishment, management, or remedial action activities. Notwithstanding the foregoing, mitigation credit sale revenue may be expended on Long-Term Management and Maintenance.

D. Real Estate Provisions: All real property to be included within the Bank is presently owned in fee simple by the Sponsor. The Sponsor shall burden the title to the Bank real property through the grant of a conservation easement, pursuant to the provisions of Appendix G, Section G.1. The conservation easement must be approved, initiated, and recorded pursuant to Appendix G, Section G.1, prior to the award of any Bank credits and before any construction or implementation activities may be conducted on-site during the establishment period of the Bank, as defined in Article IV.K. Any construction or implementation activities conducted on-site prior to the inception of the establishment period must cease as of the effective date of this Instrument pursuant to Article VI.B.1., until an approved conservation easement is recorded. The Corps and Ecology will notify the Sponsor that construction and implementation activities are authorized to commence, by granting the initial award of bank credits in recognition of meeting all performance standards under Objective 1, pursuant to Appendix D.

IV. OPERATION OF THE BANK

A. <u>Service Area</u>: The Bank is approved to provide compensatory mitigation for impacts to the waters of the United States and waters of the State, including wetlands and other aquatic habitat resources, within the Service Area. Impacts to critical area buffers for wetlands, streams, lakes and other critical habitat areas regulated by local jurisdictions within the Bank Service Area can be mitigated using Bank credits with the approval of the appropriate regulatory agencies. A detailed description and map of the Service Area is included in Appendix E.

1. The Service Area includes lowland headwater systems of coastal drainages that run from east to west, through the City of Bellingham, flowing into Bellingham Bay. In addition to these coastal drainages, the Service Area includes Silver Creek, where the Bank is located, and Ten Mile Creek, both of which drain to the Nooksack River before its outlet to Bellingham Bay. The Service Area ranges in elevation from near sea level to 2,000 feet and includes the majority of the City of Bellingham and its Urban Growth Area (UGA) and portions of rural Whatcom County. The Service Area excludes the Lake Whatcom Watershed, Lynden North and Lower Mainstem Nooksack basins, and the Samish Bay Watershed. The extents of the Service Area are summarized in **Table 3.**

Table 3. Extent of Bellingham Mitigation Bank Service Area

	Service Area Limits of Bellingham Mitigation Bank
Northern Limits	Northern Extent of Ten Mile Creek Watershed
Western Limits	Western Extents of Silver Creek, Bellingham Bay, and Chuckanut Bay Watersheds
Eastern Limits	Eastern Extents of Ten Mile Creek, Squalicum Creek, Whatcom Creek, Padden Creek, Chuckanut Creek and Chuckanut Bay Watersheds
Southern Limits	Southern Extents of Chuckanut Creek and Chuckanut Bay Watersheds

The Bank may be used to compensate for an impact that occurs within the Service Area if specifically approved by the regulatory agency(ies) that have jurisdiction over that impact, pursuant to the procedures and criteria prescribed in Appendix E.

2. In exceptional situations, the Bank may be used to compensate for an impact that occurs outside of the Service Area if specifically approved by the regulatory agency(ies) having jurisdiction over that impact and by the Corps and Ecology, in consultation with the IRT, pursuant to the procedures and criteria prescribed in Appendix E, Section E.2. If the Corps and/or Ecology determine that the Sponsor has sold, used, or transferred Bank credits at any time to provide compensatory mitigation outside of the Service Area without prior approval, the Corps and/or Ecology, in consultation with the IRT, may direct that the sale, use or other transfer of Bank credits immediately cease, and will determine, in consultation with the IRT, the Sponsor, and the appropriate regulatory authority, what remedial actions are necessary to correct the situation and will direct their performance prior to the award of any additional Bank credits. Notwithstanding the fact that ceasing sale, use or other transfer of Bank credits may have been required, unless this Instrument is terminated pursuant to Article IV.J. or VI.B., the Sponsor shall remain responsible for the timely and effective achievement of all the Objectives and Performance Standards mandated in Appendix C.

B. Access to the Bank Site: The Sponsor will allow, or otherwise provide for, access to the Bank site by members of the IRT or their agents or designees, as reasonably necessary for the purpose of inspection, compliance monitoring, and remediation consistent with the terms and conditions of this Instrument and the Appendices, throughout the periods of Bank establishment, operational life, and long-term management and maintenance. Inspecting parties shall provide the Sponsor reasonable prior notice of a scheduled inspection and shall not unreasonably disrupt or disturb activities on the property.

C. Availability and Sale, Transfer, or Use of Bank Credits: Subject to the documentation and scheduling provisions of Appendix D, the Sponsor may submit to the IRT written evidence that particular performance standards have been achieved. If the Corps and Ecology, after consulting with the IRT and the Sponsor, concur that certain performance standards have been achieved in full, the Corps and Ecology will respond in writing to the Sponsor that the Bank credits associated with those performance standards are available for sale, transfer, or use by the Sponsor as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment. Each instance of sale or any other transfer of Bank credits to a third party shall be reflected in a credit transaction agreement, retained by the Sponsor and provided to the Corps and/or Ecology. Each such credit transaction agreement must include the name, address, and telephone number of the purchaser or transferee. Each transaction agreement that is associated with a permit must also indicate the permit number of the impacting project, the number of Bank credits involved in the transaction, and must expressly specify that the Sponsor, and its successors and assigns, assume legal responsibility for accomplishment and maintenance of the transferee's compensatory mitigation requirements associated with the impacting project, upon completion of the credit transaction.

D. Credit Deficit or Fraudulent Transactions: If the Corps and/or Ecology determine at any point that the Bank is operating at a deficit, or has engaged in fraudulent transactions in the sale, use, or other transfer of Bank credits, the Corps and/or Ecology will cease the award of, and will direct the Sponsor to immediately cease sale, use or other transfer of, Bank credits. The Corps and/or Ecology will determine, in consultation with the IRT and the Sponsor, what remedial actions are necessary to correct the situation and will direct their performance prior to the award of any additional Bank credits.

E. Provisions For Use of the Mitigation Bank Area: The Corps and/or Ecology may consider the Sponsor as being in material default of a provision of this Instrument and proceed accordingly under Article IV.J. should the Corps and/or Ecology, in consultation with the IRT, determine that either of the following has occurred:

1. The grant of additional easements, rights of way, or any other property interest in the Bank site without written notification to the Corps and Ecology in accordance with Article IV.N.

2. The use, or authorization of the use, or suffering the use of any areas within the Bank for any purpose that is contrary to the provisions of this Instrument or the conservation easement, or which interferes with the conservation purposes of the Bank.

F. Maintenance Provisions: Following achievement of the performance standards, the Sponsor agrees to perform all necessary work to maintain those standards as prescribed in Appendix F, Section F.6.

G. Monitoring Provisions: The Sponsor agrees to perform all necessary work, pursuant to Appendix F, to monitor the Bank during the establishment period to demonstrate compliance with the performance standards established in Appendix C.

H. Contingency Plans/Remedial Actions: In the event the Bank fails to achieve one or more of the performance standards within the specific time schedule delineated in Appendix D, the Sponsor shall develop necessary contingency plans and implement appropriate remedial and monitoring actions for the Bank as specified in Appendix F, Section F.5, to attain those project objectives and performance standards. Prior to implementing any remediation, supplemental monitoring, or other corrective measures, the Sponsor shall obtain approval of the contingency plans from the Corps and Ecology. The Corps and Ecology shall consult with the IRT prior to approval of the plans. All appropriate environmental documentation, permits, and other authorizations needed to implement the contingency plan or take remedial action shall be obtained by the Sponsor. In the event the Sponsor fails to implement necessary contingency actions within the period prescribed by the Corps and Ecology in the notification of approval of the contingency plan, the Corps and/or Ecology, in consultation with the Sponsor and the IRT, will direct remedial, corrective, and/or sanctioning action in accordance with the procedures specified in Appendix F, Section F.5.

I. Force Majeure: The Sponsor may request pursuant to Article III.B., and the Corps and Ecology may approve, changes to the construction, operation, objectives, performance standards, timelines, or credit generation and award schedule of the Bank, pursuant to the standards and procedures specified in Appendix F, if all of the following occur: an act or event causes substantial damage such that it is determined to be a result of force majeure; such act or event has a significant adverse impact on the quality of the aquatic functions, native vegetation, or soils of the Bank site; and such act or event was beyond the reasonable control of the Sponsor, its agents, contractors, or consultants to prevent or mitigate.

1. The evaluation of the damage caused by force majeure and the resulting changes to mitigation requirements involve a communicative process. If the Sponsor asserts a Bank site has sustained significant adverse impacts due to an event or act which may be determined to be force majeure, the Sponsor shall give written notice to the Corps, Ecology and the IRT as soon as is reasonably practicable. After receiving written notice, the Corps and Ecology, in consultation with the Sponsor and the IRT, shall evaluate whether the event qualifies as force majeure. The Corps and Ecology, in consultation with the Sponsor and the IRT, will then evaluate whether significant adverse impacts have occurred to the site. If a force majeure event is determined to have occurred and significant adverse impacts are found to have occurred to the site, the Corps and Ecology, in consultation with the IRT and the Sponsor, will evaluate whether and to what extent changes to the Bank site will be in the best interest of the site and the aquatic environment, and may approve such changes as detailed above. The Corps and Ecology retain sole discretion over the final determination of whether an act or event constitutes force majeure, whether significant adverse impacts to the Bank site have occurred, and to what extent changes to the Bank site or its management will be permitted.

2. Force majeure events include natural or human-caused catastrophic events or deliberate and unlawful acts by third parties.

a. Examples of a natural catastrophic event include, but are not limited to: a flood equal to or greater in magnitude than the 100-year flood event; an earthquake of a force projected from an earthquake with a return period of 475 years; drought that is significantly longer than the periodic multi-year drought cycles that are typical of weather patterns in the Pacific Northwest; as well as events of the following type when they reach a substantially damaging nature: disease, wildfire, depredation, regional pest infestation, or significant fluviogeomorphic change.

b. Examples of a human-caused catastrophic event include, but are not limited to, substantial damage resulting from the following: war, insurrection, riot or other civil disorders, spill of a hazardous or toxic substance, or fire.

c. Examples of a deliberate and unlawful act include, but are not limited to, substantial damage resulting from the following: the dumping of a hazardous or toxic substance, as well as significant acts of vandalism or arson.

3. The consequences of any events of force majeure recognized as such by the Corps and Ecology shall not affect the status of previously released Bank credits, whether or not they have yet been sold, used, or transferred.

J. Default: Should the Corps and/or Ecology, in consultation with the IRT, determine that the Sponsor is in material default of any provision of this Instrument, the Corps and/or Ecology may cease award of Bank credits, and may notify the Sponsor that the award, sale, and/or transfer of Bank credits, or use by the Sponsor of Bank credits as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment, are suspended until the delineated deficiencies are rectified. Upon written notification of suspension, the Sponsor agrees to immediately cease any sale or transfer transactions not yet finally completed, and/or to cease any use by the Sponsor of Bank credits as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment where a Corps or Ecology permit or authorization, as required, has not yet been issued, until informed by the notifying agency that award, sale, use, or transfer of Bank credits may be resumed. Should the Sponsor remain in default for a period of 90 days, the Corps and Ecology, in consultation with the IRT, may terminate this Instrument and any subsequent banking operations. In the event such termination action is commenced, the Sponsor agrees to fulfill its pre-existing obligations to perform all establishment, monitoring, maintenance, management, and remediation responsibilities that arise directly from Bank credits that have already been awarded, sold, used, or transferred at the time of termination. In the event of termination, no further sale or transfer of Bank credits may occur, nor any use by the Sponsor of Bank credits as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment within the Service Area where a Corps or Ecology permit or authorization, as required, has not yet been issued.

K. Establishment Period of the Bank: The establishment period of the Bank will commence on the date the Instrument takes effect pursuant to Article VI.B.1. Prior to termination of the establishment period of the Bank, the Corps and Ecology, in consultation with the IRT, will perform a final compliance inspection to evaluate whether all performance standards have been achieved. The establishment period for the Bank will terminate, and the period of long-term management and maintenance will commence, when the Corps and Ecology determine, in consultation with the IRT and the Sponsor, that the following conditions have been met:

1. all applicable performance standards prescribed in Appendix C have been achieved;

2. all available Bank credits have been awarded, or the Corps and Ecology, in consultation with the IRT, have approved the Sponsor's written request to permanently cease banking activities;

3. the Sponsor, as the initial Long-Term Steward, or another approved Long-Term Steward, has executed a Long-Term Management and Maintenance Agreement that has been approved by the Corps and Ecology, pursuant to Article IV.M.1 and Appendix G, Section G.2;

4. the Sponsor has either: (i) assumed responsibilities for accomplishing the Long-Term Management and Maintenance Plan, in which case the Sponsor will fulfill the role of Long-Term Steward, or (ii) assigned those responsibilities to another Long-Term Steward pursuant to Article IV.M.2. of this Instrument;

5. the Bank has complied with the terms of this Instrument.

L. Operational Life of the Bank: The operational life of the Bank will commence on the date the Instrument takes effect pursuant to Article VI.B.1. Following the termination of the establishment period of the Bank, and (1) upon sale, transfer, or use by the Sponsor as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment, of all Bank credits, or (2) upon approval by the Corps and Ecology, in consultation with the IRT, of the Sponsors written request to permanently cease banking activities, the operational life of the Bank will terminate.

M. Long-Term Management and Maintenance:

1. The Sponsor shall execute a Long-Term Management and Maintenance Agreement consistent with the guidelines specified in Appendix G, Section G.2. The Long-Term Management and Maintenance Agreement shall include the Long-Term Management and Maintenance Plan revised from Appendix G.2.E prior to the end of the establishment period to reflect current site conditions. The Sponsor shall submit the Long-Term Management and Maintenance Agreement for approval by the Corps and Ecology, in consultation with the IRT. The Sponsor is responsible, as the initial Long-Term Steward, for implementation of the approved Long-Term Management and Maintenance Plan and will enter into a Long-Term Management and Maintenance Agreement with the Corps and Ecology, which will document the commitment on the part of the Long-Term Steward to adhere to the Long-Term Management and Maintenance Plan. The Long-Term Steward may only deviate from the approved Long-Term Management and Maintenance Agreement upon written approval by the Corps and Ecology, following consultation with the Long-Term Steward and the IRT. The Long-Term Management and Maintenance Agreement must be approved and executed before the credits associated with the Year 10 performance standards may be awarded.

2. The Sponsor may assign its long-term management and maintenance responsibilities to a third-party assignee, which will then serve as Long-Term Steward in place of the Sponsor. The identity of the assignee and the terms of the long-term management and maintenance assignment agreement between the Sponsor and the assignee must be approved by the Corps and Ecology, in consultation with the IRT, in advance of long-term management and maintenance assignment.

3. Any third-party assignee shall enter into a long-term management and maintenance assignment agreement with the Sponsor, Corps and Ecology, pursuant to Appendix G, Section G.2.C., which will document the commitment on the part of the assigned Long-Term Steward to adhere to the Long-Term Management and Maintenance Plan. Upon execution of a long-term management and maintenance assignment agreement and upon satisfaction of the remaining requirements for termination of the establishment period of the Bank under Article IV.K. of this Instrument, the Sponsor shall be relieved of all further long-term management and maintenance responsibilities under this Instrument.

N. Accomplishment of Sponsor Responsibilities; Transfer of Ownership of the Bank Site: The Sponsor shall remain responsible for complying with the provisions of this Instrument throughout the operational life of the Bank, regardless of the ownership status of the underlying real property, unless those responsibilities have been assigned pursuant to the provisions of Article VI.C. of this Instrument.

The Sponsor shall provide written notice at least 60 days in advance of any transfer of ownership of all or a portion of the Bank real property or rights to another party, by any owners of real property comprising the Bank site, or their successors or assigns.

V. RESPONSIBILITIES OF THE CORPS AND ECOLOGY

A. The Corps and Ecology agree to provide appropriate oversight in carrying out provisions of this Instrument.

B. The Corps and Ecology agree to review and provide comments on project plans, monitoring reports, contingency and remediation proposals, and similar submittals from the Sponsor in a timely manner. The Corps and Ecology will coordinate their review with the IRT.

C. The Corps and Ecology agree to review requests to modify the terms of this Instrument, determine achievement of performance standards in order to evaluate the award of Bank credits, or approve the Long-Term Management and Maintenance Agreement, and modify the Long-Term Management and Maintenance Plan. The Corps and Ecology will coordinate the review with the IRT so that a decision is rendered, or comments detailing deficiencies are provided, in a timely manner. The Corps and Ecology agree to not unreasonably withhold or delay decisions on such requests.

D. The Corps and Ecology agree to act in good faith when rendering decisions about the acceptability of financial assurances, requiring corrective or remedial actions, requiring long-term management and maintenance actions, and awarding Bank credits. Corps and Ecology approval of the identity of any assignee responsible for executing the Long-Term Management and Maintenance Agreement and Plan, and approval of the terms of any long-term management and maintenance assignment agreement, will not be unreasonably withheld.

E. The Corps and Ecology will periodically inspect the Bank site as necessary, in consultation with the IRT, to evaluate the achievement of performance standards, to assess the results of any corrective measures taken, to monitor implementation of the Long-Term Management and Maintenance Agreement and Plan, and, in general, to verify the Sponsor's compliance with the provisions of this Instrument.

F. Upon satisfaction of the requirements of Article IV.K. under this Instrument, the Corps and Ecology will jointly issue a letter certifying that the establishment period of the Bank has terminated, and that the period of long-term management and maintenance has begun, in consultation with the IRT. Upon satisfaction of the requirements of Article IV.L. of this Instrument, the Corps and Ecology will jointly issue a letter certifying that the operational life of the Bank has terminated.

VI. GENERAL PROVISIONS

A. <u>Decision Making by Consensus</u>: The Corps and Ecology will strive to achieve consensus among the IRT regarding issues that arise pertaining to the establishment, operation, maintenance, and management of the Bank. The Corps and Ecology will coordinate the review and oversight activities of the IRT to best facilitate opportunity to reach the desired consensus. Review and oversight decisions will take into account the views of the Sponsor to the maximum extent practicable. Where consensus cannot otherwise be reached within a reasonable timeframe, as described herein and following full consideration of the comments of the IRT and following consultation with the Sponsor, the Corps holds the responsibility and authority under Section 404 of the Clean Water Act, and Ecology holds independent responsibility

and authority under Section 401 of the Clean Water Act and ch. 90.48 RCW, to make final decisions regarding the application of the terms of this Instrument.

B. Entry into Effect, Modification or Amendment, and Termination of the Instrument:

1. This Instrument, consisting of both this Basic Agreement and the Appendices, will enter into effect upon the signature by authorized representatives of each of the Sponsor, Corps, Ecology, Whatcom County fulfilling its role as the "local jurisdiction" pursuant to RCW 90.84.040, as of the date of the last of these signatures.

2. This Basic Agreement portion of the Instrument may be amended or modified only with the written approval of the Sponsor, the Wetland Section Manager for Shorelands and Environmental Assistance on behalf of Ecology, and the Seattle District Engineer on behalf of the Corps, or their designees. Any such modifications or amendments will take effect following consultation with the IRT. Amendment or modification of the provisions of the Appendices may be effectuated through an exchange of letters signed by the Sponsor, the Mitigation Program Manager serving as Co-Chair on behalf of the Corps, and the Wetland Section Manager serving as Co-Chair on behalf of Ecology, following consultation with the IRT, provided the exchange of letters expresses mutual agreement as to the exact language to be deleted or modified, and the exact language to be inserted.

3. This Instrument may be terminated by the mutual agreement of the Sponsor, Corps, and Ecology, following consultation with the IRT, or may be terminated under the terms of Article IV.J. of this Instrument in the case of default by the Sponsor. In the event any termination action is commenced, the Sponsor agrees to fulfill its pre-existing obligations to perform all establishment, monitoring, maintenance, management, and remediation responsibilities that arise directly from Bank credits that have already been sold, used, or transferred at the time of termination.

4. Upon termination of the operational life of the Bank pursuant to Article IV.L., and certification to that effect pursuant to Article V.F., this Instrument shall terminate without further action by any Party. Thereafter, the Long-Term Management and Maintenance Plan developed, approved, and instituted in accordance with Article IV.M. shall govern the continuing obligations of the Sponsor, or its assignee as applicable.

C. Assignment of Obligations under this Instrument: The Sponsor may be permitted to assign its obligations, responsibilities, and entitlements under this Instrument to a third party. The Corps and Ecology, following consultation with the IRT, must approve the identity of the assignee in order for any assignment to effectively relieve the Sponsor of those obligations. In evaluating a prospective assignee, the Corps and Ecology may consider characteristics such as environmental mitigation expertise, wetlands mitigation project or analogous experience, and financial strength and stability. Approval of the identity of the assignee will not be unreasonably withheld. The assignee must execute a mitigation banking instrument with the Corps and Ecology under terms identical, to the extent practicable, to the present Instrument. In the event of such assignment, applicable financial assurances must be initiated. The obligations, responsibilities, and entitlements under this Instrument may reside in only a single entity at any one time, and may not be severed or transferred piecemeal. However, the physical ownership of the Bank site real property and the obligations, responsibilities, and entitlements under this Instrument are separate and distinct; thus, ownership may be transferred pursuant to the provisions of Article IV.N., independently of assignment of this Instrument. Once assignment of this Instrument has been properly accomplished, the Sponsor will be relieved of all its obligations and responsibilities under this Instrument.

Specific additional provisions pertaining to the assignment of long-term management and maintenance obligations are described in Article IV.M.

D. Specific Language of this Basic Agreement Shall Be Controlling: To the extent that specific provisions of this Basic Agreement portion of the Instrument are inconsistent with any terms and conditions contained in the Appendices, or inconsistent with other documents that are incorporated into this Instrument by reference and that are not legally binding, the specific language within this Basic Agreement shall be controlling.

E. Notice: Any notice required or permitted hereunder shall be deemed to have been given either (i) when delivered by hand, or (ii) three (3) days following the date deposited in the United States mail, postage prepaid, by registered or certified mail, return receipt requested, or (iii) when sent by Federal Express or similar next-day nationwide delivery system, addressed as follows (or addressed in such other manner as the party being notified shall have requested by written notice to the other party):

City of Bellingham

Public Works Department
Natural Resources Division
221 Pacific Street
Bellingham, WA 98229
360-778-8001

With Copy To:
Office of the City Attorney
210 Lottie Street
Bellingham, WA 98225

U.S. Army Corps of Engineers, Seattle District

Mitigation Banking Specialist/Co-Chair of the IRT
Regulatory Branch
Seattle District, Corps of Engineers
4735 E. Marginal Way South
P.O. Box 3755
Seattle, WA 98124-3755
206-764-3495

Washington State Department of Ecology

Mitigation Banking Specialist/Co-Chair of the IRT
Shorelands and Environmental Assistance Program
P.O. Box 47600
300 Desmond Drive
Olympia, WA 98504-7600
360-407-6000

F. Entire Agreement: This Instrument, consisting of both this Basic Agreement and the Appendices, constitutes the entire agreement between the Parties concerning the subject matter hereof.

G. Invalid Provisions: In the event any one or more of the provisions contained in this Instrument are held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions hereof, and this Instrument shall be construed as if such invalid, illegal or unenforceable provision had not been contained herein.

H. Effect of Agreement:

1. This Instrument does not in any manner affect statutory authorities and responsibilities of the signatory Parties. This Instrument is not intended, nor may it be relied upon, to create any rights in third parties enforceable in litigation with the United States or the State of Washington. This Instrument does not authorize, nor shall it be construed to permit, the establishment of any lien, encumbrance, or other claim with respect to the Bank site, with the sole exception of the right on the part of the Corps and Ecology to require the Sponsor to implement the provisions of this Instrument, including recording the conservation easement, required as a condition of approval of the crediting plan reflected in this Instrument and the issuance of any permits for discharges of dredged and fill material into waters of the United States associated with construction, operation and maintenance of the Bank.

2. Corps approval of this Instrument constitutes regulatory approval required for Bellingham Mitigation Bank to be used to provide compensatory mitigation for Department of the Army permits pursuant to 33 C.F.R. 332.8(a)(1). This Instrument is not a contract between the Sponsor or property owner and the Corps or any other agency of the Federal government. Any dispute arising under this Instrument will not give rise to any claim by the Sponsor or property owner for monetary damages. This provision is controlling notwithstanding any other provision or statement in the Instrument to the contrary.

I. Attorneys' Fees: If any action at law or equity, including any action for declaratory relief, is brought to enforce or interpret the provisions of this Instrument, each party to the litigation shall bear its own attorneys' fees and costs of litigation.

J. Availability of Funds: Implementation of this Instrument is subject to the requirements of the Anti-Deficiency Act, 32 U.S.C. § 1341, and the availability of appropriated funds. Nothing in this Instrument may be construed to require the obligation, appropriation, or expenditure of any money from the United States Treasury, in advance of an appropriation for that purpose.

K. Headings and Captions: Any paragraph heading or caption contained in this Instrument shall be for convenience of reference only and shall not affect the construction or interpretation of any provision of this Instrument.

L. Counterparts: This Instrument may be executed by the Parties in any combination, in one or more counterparts, all of which together shall constitute one and the same instrument.

M. Binding: This Instrument, consisting of both this Basic Agreement and the Appendices, shall be immediately, automatically, and irrevocably binding upon the Sponsor and its heirs, successors, assigns and legal representatives upon execution by the Sponsor, Ecology, Corps, and Whatcom County fulfilling its role as the "local jurisdiction" pursuant to RCW 90.84.040.

IN WITNESS WHEREOF, the Parties hereto have executed this Instrument on the date herein below last written.

PARTIES:

EXECUTED this _____ day of _____, 2026 for the Sponsor (City of Bellingham) by:

	Departmental Approval:
_____	_____
Mayor	Public Works Director
Attest:	Approved as to Form:
_____	_____
Finance Director	Office of the City Attorney

By the Corps:

_____ _____

Patrick Allen Atkins — Date
Chief, Regulatory Division
U.S. Army Corps of Engineers Seattle District

By Ecology:

_____ _____

Wendy Peterman — Date
Wetland Section Manager, Shorelands and Environmental Assistance Program
Washington State Department of Ecology

OTHER IRT MEMBERS:

Signature by other IRT members indicates assent on the part of the represented organization to the provisions of this Instrument, but does not give rise to any affirmative obligations, express or implied. This Instrument is not binding on the other IRT members.

_____ _____

Satpal Sidhu, County Executive — Date
Whatcom County

Bellingham Mitigation Bank

Appendices to the Mitigation Banking Instrument

City of Bellingham
Public Works Department
Natural Resources Division
221 Pacific Street
Bellingham, WA 98229

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APPENDIX A
GENERAL BANK INFORMATION

A.1 Purpose and Ecological Goals of the Bank

The purpose of the Bank is to generate mitigation credits for projects that will have an adverse impact on the aquatic environment and that need to compensate for those impacts as a condition of their permits or other regulatory requirements resulting from project impacts.

The primary ecological goals of the Bellingham Mitigation Bank (Bank) are:

- **Permanently protecting** ecosystem functions within the Bank by implementing the Instrument and providing protection in perpetuity through execution of a conservation easement;
- **Enhancing** wetlands and forested uplands with native conifers to accelerate the Bank's ecological succession to a self-sustaining mixed deciduous-coniferous forest, assist in competition with invasive plants, and improve species diversity, habitat structure, and large woody material recruitment over existing conditions;
- **Enhancing** riparian upland along a short segment of Bear Creek with a dense native forest and shrub plant community to assist in competition with invasive plants, increase habitat structure and species diversity, increase stream shade and moderate in-water temperatures, and provide overhanging vegetation for aquatic habitat cover, macroinvertebrates food sources, and organic material inputs to the stream; and
- **Preserving** headwater wetlands, streams, riparian, and interconnected upland habitat to protect high-quality, interconnected wetland and forested upland habitats within the Bank that are a part of a regionally important undeveloped biodiversity corridor[1].

Relevant documentation supporting the technical information in these appendices is included in a separate Resource Folder. The Resource Folder is not considered part of the Instrument but is prepared by the Sponsor and provided to all IRT members to serve as a reference source. The Resource Folder includes the wetland delineation report and wetland functions assessment, baseline conditions report, wildlife corridor analysis and technical assessment, and other technical information that was used to establish baseline conditions at the Bank and support the design.

A.2 Rationale for Site Selection

The rationale for the selection of the Bank as an overall suitable site to both protect and restore ecological processes is supported by its importance and relationship to both regional and local management goals. This rationale is supported by technical documents which characterize the existing regional and local watershed processes, as specified in the Federal Rule on *Compensatory Mitigation for Losses of Aquatic Resources* 33 CFR 332.3(d) (US Army Corps of Engineers and EPA 2008), Washington

[1] Although the area is not mapped by the Washington Department of Fish & Wildlife, it meets the WDFW definition of a Priority Habitat and Species Biodiversity Area and Corridor (2023), as cited in NES 2021.

Administrative Code (WAC) 173-700-303, and Ecology's S*electing Wetland Mitigation Sites Using a Watershed Approach* (Hruby *et al.* 2009).

The Bank's ecological goals are aligned with identified regional watershed and ecological processes recommended for both protection and restoration. These regional goals are summarized in the following technical documents: *Final Watershed Resources Inventory 1 (WRIA 1) Watershed Management Plan – Phase 1* (Blake and Peterson 2004), *Salmon and Steelhead Habitat Limiting Factors in WRIA 1, The Nooksack Basin* (Smith 2002), and the *WRIA 1 Salmonid Recovery Plan* (Nooksack Natural Resources 2005). The overarching goals identified in these documents are:

- **Habitat Restoration and Protection** – Prioritize areas for riparian restoration and protection which can improve stream base flow, reduce high flows, slow rates of stormwater inputs, and increase complexity of fish habitat;
- **Wetland Restoration and Protection** – Protect and restore floodplain and depressional wetlands to improve flood attenuation, improve stream low flow and high water temperatures through improving and maintaining water storage and ground water recharge and discharge;
- **Improve Water Quality and Quantity** – Protect and restore water quality and quantity to maintain and improve the health of fish and wildlife populations; and
- **Improve Channel Complexity** – Restore and protect channel complexity by increasing input and recruitment of large woody material through riparian restoration and protecting existing wooded riparian areas.

In addition to the overall regional watershed and ecological goals, these goals were also identified and characterized locally by the City of Bellingham (City) to assist with watershed restoration planning. In 2015, the City prepared the *Bellingham Habitat Restoration Technical Assessment (BHRTA)* that characterized eight watersheds within the southwestern portion of Watershed Resource Inventory Area (WRIA) 1, which included the areas within the City of Bellingham's city limits and its Urban Growth Area (UGA; **Figures A.1 and A.2**). The purpose of this document was to characterize the existing ecological conditions and functions and identify locations appropriate for effective restoration actions which have a high likelihood of improving ecological functions within the watersheds. In addition to the *BHRTA*, the City determined where potential impact sites would most likely be located within the watersheds studied in the previous technical assessment. These findings were described in the *Impact Analysis Technical Memorandum* (WLNRC 2017; City of Bellingham 2020).

The *BHRTA* identified the Bear Creek sub-watershed, the Bank's sub-watershed, as a Tier 1 or highest priority sub-watershed for restoration and protection actions. The *BHRTA* identified specific priority areas for wetland and riparian restoration and preservation within the Bear Creek sub-watershed, with a recommended focus on wetland protective actions (preservation) combined with wetland or riverine restorative actions (enhancement). This approach was recommended to assist in maintaining water quality and flow and improve wildlife habitat, while also preserving a corridor of forested uplands and wetlands in an area which is subject to increasing development pressure due to its location in the UGA between the Cities of Bellingham and Ferndale. Specifically, the *BHRTA* identified the wetlands in and around the Bank to be a priority for protection with some level of enhancement, as the wetlands within

this area scored higher for protection and restoration than those in the other sub-watersheds studied. Also, the value of the water quality functions provided by the Bank wetlands within the watershed is high because the downstream waters of Bear Creek and Silver Creek have been identified as impaired by Ecology, lending further support to the protection of the Bank areas.

More recently, the City completed an assessment of terrestrial wildlife habitat. The assessment documented in the *2021 Wildlife Corridor Analysis: Methods Summary & Results for City of Bellingham* (Diamond Head Consulting 2022) identified the Bank area as an Important Wildlife Habitat Area. These areas were identified as groupings of larger important habitat (hubs) for multiple species; therefore, reflect areas that are "expected to support the greatest diversity and number of wildlife species." These areas were also characterized as providing a "variety of habitat types and natural areas away from the influences of urban development."

Acquiring the Bank properties for the purpose of preservation and restoration would allow a larger contiguous forested corridor to remain and provide connectivity of wetland and riparian functions to the north and south. The Bank was selected as a potential bank site due to its location within this high priority habitat area. Two of the Bank's three sites (Sites B and C) are part of a large, 400+ acre contiguous forest block that extends north and south of the Sites. The *BHRTA* also identifies the Bank as part of a larger 250+ acre wetland block prioritized for wetland protection (2015). Additionally, most of the land within these forest and wetland blocks and adjacent to the Bank is protected by conservation easements or is in public ownership, augmenting the functional value of enhancement and preservation of the Bank.

One additional criterion in determining the suitability of a potential mitigation bank is whether impacts from development will occur within those same areas determined to be priority for wetland restoration or preservation. The City's Comprehensive Plan (2016) identifies the Bank and surrounding land as the UGA between the Cities of Bellingham and Ferndale, an area of planned growth. Several studies, including the *Impact Analysis Technical Memorandum* (WLNRC 2017) and the *City of Bellingham Technical Memorandum, Mitigation Program: Analysis of Potential Natural Resource Impacts* (2020), have also documented this planned growth in the north Bellingham area, which encompasses the Bellingham Airport, Interstate-5, and the surrounding areas. These areas are primarily zoned with land uses that support development, such as light industrial, commercial, and residential zoning. These studies analyzed projects that were either permitted or in the permitting process, as well as conceptual projects and areas identified for annexation to forecast future development patterns and what natural resources could be impacted as a result. Based on this information, the City concluded that the majority of analyzed impact projects within the larger Silver Creek watershed, which includes the Bear Creek sub-watershed, are expected to result in impacts to depressional palustrine emergent and palustrine forested wetlands in the areas that were designated as priority for wetland restoration and preservation. Specifically, the City's analysis showed that 79 projects were anticipated to directly impact approximately 45 acres of aquatic resources within WRIA 1. Of the 79 projects, the largest acreage of impacts to aquatic resources and their associated buffers were anticipated to occur in the Silver Creek watershed, with 53 percent (approximately 22 of the 45 total acres) being impacted. Additionally, the current zoning of the Bank and the past activities at the Bank, including logging and land clearing,

indicate the high threat of development possible as the northern extents of the City experience urban/suburban conversion.

Based on the Bank's location within a priority area for wetland restoration and preservation, which is anticipated to receive significant wetland and aquatic impacts from future development, the Bank meets the requirements of providing appropriate mitigation methods that will help protect or restore ecological processes that are important in the Silver Creek watershed, including the Bear Creek watershed, as well as on the Bank itself.

In addition, the technical recommendations outlined within the *BHRTA* for acquisition of a property were developed with "a goal of maintaining a contiguous forested wildlife corridor that provides north-south connectivity and contains functioning forested stream and wetlands within the corridor. Maximum effectiveness can be achieved through coordinating the specific locations of applied forest protection actions with wetland protection and enhancement locations and possible riparian buffer protection and enhancements on Bear Creek and West Bear Creek." This goal can be successfully obtained by performing both preservation and enhancement methods within the Bank, as the Bank provides a hydrologically connected corridor for multiple streams and wetlands supporting aquatic resources both onsite and downstream in the watershed.

A.3 Bank Location and Legal Description

The Bank encompasses four parcels totaling 98.65 acres, located northwest of the City of Bellingham in the northwest portion of Whatcom County. The parcels are identified in three sites, Sites A, B, and C; Sites A and B are located entirely in unincorporated Whatcom County, Washington, immediately north of Bellingham city limits. The majority of Site C is located in unincorporated Whatcom County, with a small portion adjacent to the entire southern boundary of Site C located within the City of Bellingham city limits (**Figure A.2**). Sites A, B, and C are located in Sections 2 and 11 of Township 38N, Range 2E of the Willamette Meridian. The Bank will encompass the majority of Whatcom County Parcel Numbers 380202209221 (Site A), and 380211231475 (Site C), a small portion of Parcel Number 380211200375 (Site C), and the entirety of Parcel Numbers 380202064077 (Site B) and 380211165469 (Site C); **Figures A.2 and A.3; Table A.1**). While surveying the boundaries of the individual sites to be included in Bank, three encroachments were discovered within Site A and Site C's parcel boundaries. These encroachments were excluded from the parcel boundaries for Site A and Site C, and the resulting individual Site and overall Bank acreages are shown in **Table A.1**.

Site A is just outside City's UGA in Whatcom County, and Sites B and C are located within the City's UGA (**Figures A.1 and A.2**). All three Sites are undeveloped with no facilities or structures onsite, except for an abandoned vehicle and two non-functioning culverts located on Site A that will be removed (**Figure A.5.a**). The written legal description and corresponding exhibit sketch of the Bank is in Exhibit A which follows Appendix A.

Table A.1. Property Information Summary

Bank Site	Property Owner	Parcel Numbers	Zoning	Parcel Area (acres)	Bank Area (acres)
A	City of Bellingham	380202209221	Rural - 1 unit/5 acres (R5A)	23.79	23.54
B	City of Bellingham	380202064077	Light Impact Industrial (LII)	35.99	35.99
C	City of Bellingham	380211165469 380211231475 380211200375	Light Impact Industrial (LII)	39.17	39.12
			Total Parcel Area	98.95	
				Total Bank Area	98.65
Easements in the Bank Area					
Site B	10’ Waterline Easement	380202064077	---	0.86	0.86
Site C	10’ Waterline Easement	380211165469	---	0.28	0.28
Site C	10’ Waterline Easement	380211231475	---	0.55	0.55
			Total Bank Easements	1.69	1.69

Sites A, B, and C are bordered by industrial and residential land uses, as well as forested open space and publicly and privately owned mitigation sites. Specific adjacent land uses to each individual site are provided in **Section A.4.1 Site Description**.

A.3.1 Easements and Title Encumbrances

There are several existing easements and title encumbrances associated with Sites B and C. Site B is subject to a utility easement, oil and gas lease agreements, and mineral rights. Site C is subject to a utility easement, sewer easement, oil and gas lease agreements, and mineral rights. The oil and gas lease agreements were reserved when the land was originally platted in 1937.

These easements and title encumbrances are listed as follows:

1. Reservation for Sewer Easement over Vacated Bennett Road (Site C). Document AF No. 901104.
2. Reservation for Easement for Utilities within 10’ strip adjacent to all roads (Site B). Document AF No. 767925.
3. Reservation for Easement for Utilities within 10’ strip adjacent to all roads (Site C). Document AF No. 808930.
4. Lease for Oil and Gas (Site B). Document AF No. 495191.
5. Lease for Oil and Gas (affects south half of Site C). Document AF No. 480692.
6. Lease for Oil and Gas (affects north half of Site C). Document AF No. 480404.
7. Mineral Rights Agreement (Sites B and C). Document AF No. 532668.

According to the City of Bellingham Public Works Development Manager, the reservation for sewer easement over vacated Bennett Road does not apply, as there are no existing sewer facilities within the easement area (AF No. 901104) on Site C. Furthermore, no new sewer facilities will be permitted within the easement area due to the City's Sewer Master Plan identifying the City sewer line to be located along Northwest Drive (east of the easement area).

With respect to any potential future exploration or production under the oil and gas leases or mineral rights reservations contained in the documents listed above on Sites B and C (AF No. 495191, 480692, 480404, 532668), development of these resources cannot be exercised until provisions have been made for payment in full of the fair market value of damages incurred from use of the land or any associated improvements. As such, this stated provision for full payment of damages, in advance of any development of these resources, should be sufficient to address any possible impacts from the execution of the leases and agreements within Sites B and C. In advance of any development of these resources, Sponsor will notify Corps and Ecology in consultation with the IRT.

All real property to be included within the Bank is fully described in the legal description attached as Exhibit A to this Instrument and is owned in fee simple by the City of Bellingham. The properties have been pledged for use in the Bank in a manner consistent with this Instrument. The Bank perimeter buffer areas and the 10-foot utility easement in the southern portion of Site C are the only non-creditable areas under this Instrument. The total Bank area is 98.65 acres, and the available area for credit generation is 73.74 acres, which excludes a portion of the 10-foot utility easement (AF No. 808930) on Site C and the perimeter buffer areas.

The inclusion of the aforementioned property in the Bank and the granting of a conservation easement restricting future land use for the benefit of the Bank shall not convey or establish any property interest on the part of any Party to this Instrument, nor convey or establish any interest in Bank credits. The Instrument does not authorize, nor shall it be construed to permit, the establishment of any lien, encumbrance, or other claim with respect to the property, with the sole exception of the right on the part of the Corps and Ecology to require the Sponsor to implement elements of this Instrument, including recording the conservation easement in exchange for Corps and Ecology approval of this Instrument and the program of development and use of mitigation credits delineated herein.

A.4 Project Overview and Land Use History

A.4.1 Site Description

The Bank is located within WRIA 1 (Nooksack) in the Silver Creek watershed (**Figure A.4**). Portions of the Cities of Bellingham and Ferndale and their associated UGA boundaries are within the watershed.

The Silver Creek watershed is part of a broad landscape that drains to the Nooksack River. It has undulating hills along its higher gradients more distant from the Nooksack River and a flat floodplain in its lower channel. Silver Creek is a tributary to the lower Nooksack River, and both consist of low gradient reaches near their river mouths that empty into Bellingham Bay of the Puget Sound/Salish Sea. The Bank is further located within the Bear Creek sub-watershed of the Silver Creek watershed. The Bear Creek sub-watershed, representing approximately 2,891 acres of the larger Silver Creek watershed,

encompasses the entire Bear Creek drainage network that consists of approximately 13.3 stream miles within the east, west, and mainstem Bear Creek riparian corridors and approximately 654 acres of National Wetland Inventory-mapped wetlands (as cited in WLNRC *et al.* 2018). The Bear Creek sub-watershed is the second largest sub-watershed within the Silver Creek watershed.

Both the watershed and subwatershed are made up of small- to medium-sized tributaries, originating from seeps, springs, and wetlands, that coalesce into larger and deeper channels as drainages flows generally north and west. Groundwater discharge and precipitation are the main sources of watershed hydrology.

The Silver Creek watershed and Bear Creek sub-watershed are characterized by a variety of landscapes and land uses. Small- to medium-scale forestry and agriculture are predominant with a patchwork of forest mixed with small acreage agricultural fields. Stream riparian corridors have a mix of vegetation ranging from mowed stream banks to well-vegetated forest with overhanging vegetation. Most streams are associated with or fed by slope wetlands or depressional beaver ponds. Some streams have been ditched for agriculture activities or road infrastructure. The watershed is gradually and continuously urbanizing, with the urban growth concentrated in the areas north of the City of Bellingham, and south of the City of Ferndale. Commercial, industrial, institutional, airport, high density housing, and recreational golf course are among the numerous land uses occurring within these watersheds in addition to agriculture and forestry.

Three main streams flow through the Bank: Bear Creek, West Bear Creek, and an unnamed tributary to West Bear Creek (**Figure A.5**). In addition to the main stream channels that flow through Sites A, B, and C, multiple smaller tributaries and drainages connecting wetlands to the streams are also present. Collectively, Sites A, B, and C encompass 98.65 acres, which includes 59.33 acres of wetland and 39.32 acres of upland. Bear Creek and West Bear Creek provide known or presumed habitat and/or directly support multiple species and runs of salmonids and steelhead, with West Bear Creek and its unnamed tributary mapped as gradient accessible for salmonid and steelhead species (NWIFC 2023; WDFW 2023b). Sites B and C are part of a large, 400+ acre contiguous forest block that extends north and south of the Site. Although the area is not mapped by Washington Department of Fish & Wildlife (WDFW), it meets the WDFW definition of a Priority Habitat and Species Biodiversity Area and Corridor (2023a). In addition, as mentioned above, the area is also identified as an Important Wildlife Habitat Area in the City's Wildlife Corridor Analysis (Diamond Head Consulting 2022) and as a high-priority area for restoration and protection in the City's *Bellingham Habitat Restoration Technical Assessment*.

Current zoning onsite and in the surrounding area is shown on **Figure A.2**. Site A is zoned Rural, 1 unit per 5 acres (R5A). Sites B and C are within the Light Impact Industrial zone (LII) and are located within the City's UGA.

Current land use for Sites A, B, and C is undeveloped vacant land that has been acquired by the City for the development of a mitigation bank. A resolution was passed in 2020 that establishes protection and use policies for Sites A, B, and C (City of Bellingham Resolution No. 2020-03) and directs City staff to follow these policies and protections to manage the properties. The resolution provides restrictions on activities that could impact aspects of the biological or chemical processes, including, but not limited to,

public access, hunting, and removal of resources. In compliance with the resolution, current use of the Bank is limited only to access for onsite fieldwork in support of the development of the Bank and limited invasive species removal.

A description of the current land use and zoning for the properties surrounding the Bank are listed below.

A.4.1.1 Site A

Site A is a 23.54-acre forested parcel located just outside the City's UGA (**Figures A.1 and A.2**). The parcel is bounded by the 30-foot Waldron Road right-of-way to the north, Northwest Drive and its associated 60-foot right-of-way to the west, the 30-foot Bennett Road right-of-way to the east, and the Cornwall Park Church of God Mitigation Site to the south. There is also a private residence adjacent to the southwestern corner of Site A (**Figures A.5 and A.5.a**). The zoning surrounding Parcel A is Rural (R5A) to the north, south, and east, and Light Impact Industrial (LII) to the west (**Figure A.2**).

The surrounding land use immediately to the north of Site A consists of the unimproved 30-foot Waldron Road right-of-way. This right-of-way includes an easement for the existing underground natural gas pipeline that runs east-west. The properties immediately to the north of the right-of-way are used as open space (City of Bellingham's Bear Creek Open Space) and existing residential land use. The 30-foot Bennett Road right-of-way is unimproved and abuts undeveloped private property to the east. The Cornwall Park Church of God Mitigation Site is located to the south of Site A and is protected from future development by a conservation easement (**Figures A.3 and A.5**).

A.4.1.2 Site B

Site B is a 35.99-acre parcel located within the City's UGA (**Figures A.1 and A.2**). It is bounded by the recently vacated 60-foot Horton Road right-of-way to the north, the vacated 60-foot Boxwood Road right-of-way to the west, protected mitigation sites, undeveloped residential land, commercial land uses to the east, and the 60-foot Thomas Road right-of-way to the south. The zoning surrounding Site B on all sides is Light Impact Industrial (LII; **Figure A.2**).

The land use surrounding Site B to the north is the undeveloped, vacated right-of-way of Horton Road[2] and an approximately 37-acre forested parcel with single-family residential use. A 60-foot-wide unimproved right-of-way for Thomas Road and undeveloped vacant forest land is located to the south of Site B. To the west of Site B, the vacated 60-foot-wide right-of-way for Boxwood Road[3] is immediately adjacent with industrial land use (**Figures A.5 and A.5.b**). Except for the extreme northeast corner and the southeast corner, the properties adjacent to the eastern boundary of Site B are used as wetland mitigation sites, which are owned by the City of Bellingham and Bellingham School District. These mitigation sites are covered by protective easements to preclude future development. These conservation easements and native growth protection easements are located between the eastern

[2] The vacation of Horton Road resulted in 30-feet of the 60-foot right-of-way being conveyed to the City, immediately adjacent to the north Bank boundary.

[3] The vacation of Boxwood Road resulted in 30-feet of the 60-foot right-of-way being conveyed to the City, immediately adjacent to the west Bank boundary.

boundary of Site B and Northwest Drive to the east (**Figures A.3 and A.5**). The land use on the parcel adjacent to the southeast corner of Site B is commercial, with the existing commercial development located approximately 600 feet to the east. The parcel diagonally to the southwest and upstream of Site B (Whatcom County Parcel Number 380210470508), was used as a municipal garbage incinerator from the early 1980s to 1989 (Stratum Group 2018a). Phase I and II Environmental Site Assessments indicated that the contamination from this past use had not impacted the sediment or surface waters within adjacent Site B, and did not pose a continued risk (Stratum Group 2018a,b).

A.4.1.3 Site C

Site C is a 39.12-acre parcel that abuts the Bellingham city limits and is in the City's UGA. Site C contains two internal vacated rights-of-way: the 30-foot-wide Bennett Road ROW along the eastern boundary and the 60-foot-wide Stuart Road ROW along the southern boundary. It is bounded to the north by a 30-foot right-of-way associated with Thomas Road and west by privately owned forestland. Private residential parcels abut Site C to the east, and the City's North End Regional Pond (NERP) Mitigation Site lies to the south (**Figures A.5 and A.5.c**). Zoning surrounding Site C is Light Impact Industrial (LII) to the north, west, and south, and Urban Residential Mixed Use (URMX) to the east (**Figure A.2**).

Surrounding land uses to the north are the undeveloped right-of-way of Thomas Road and undeveloped forestland with an existing commercial development. Land use to the west is undeveloped forestland, and to the east is large-lot residential with associated single-family residences. The property to the south is the City's North End Regional Pond (NERP) Mitigation Site, which is used for critical areas mitigation and is protected by a conservation covenant (**Figures A.5 and A.5.c**).

Overall, the zoning and current/predicted land use for the areas surrounding Sites A, B, and C should not have significant deleterious effects on the functions of the Bank. The areas of the Bank with the most potential impact from surrounding land use are those that are adjacent to Light Impact Industrial zoned properties, which include the west side of Site A, the north, west, and south sides of Site B, and the north and west sides of Site C. While these industrial zoned properties could have a significant impact on the Bank's function in the future, in most cases, these properties are encumbered by significant wetland areas or streams, which hinder development immediately adjacent to the Bank with difficult, if not impossible, environmental permitting. In the case of the industrial zoned property to the west of Site A, functions have already been impacted due to the development of Northwest Drive, and any further development should be no more disruptive than what has already occurred with the road. Moderate impacts could be experienced from the residential zoned properties surrounding Site A; however, those to the north and south have already been developed and would likely remain large lot residential land use. Any future development of the residential-zoned properties to the east of Site A would likely be constrained by the wetlands along the current Bennett Road right-of-way, which would limit access to the properties along the Site's boundary. Residential impacts would also be lessened by the zoning designation, which requires large-lot residential densities. A modifying factor offsetting the potential impacts to the overall function of the Bank from industrial or residential land use is the presence of open space and properties protected by conservation or native growth protective easements surrounding the Bank. These properties afford protection from future impacts to the north and south

portions of Site A, the east side of Site B, and the south side of Site C, which is advantageous to the continued function of the Bank.

A.4.2 Land Use History

The cultural resource survey report describes that the wetlands onsite are identified in the 1860 Government Land Office (GLO) survey of the area (Jacobs 2019). Aerial maps from the 1940s to present confirm the consistent presence of forest and open water wetlands within Sites A, B, and C over time. The Bank has been selectively logged over the years, primarily in the drier upland and shallow wetland areas. The selective logging removed some of the old growth or mature trees in areas that were accessible to traditional, ground-based logging equipment. Although all three Sites have historically been logged, Sites B and C were most recently logged and not replanted based on the existing 30- to 40-year-old red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera*) that dominate Sites B and C. The logged areas of Sites A, B, and C also exhibit mixed soil conditions and lack of typical wood fiber debris, suggesting the areas were cleared of tree stumps and other large wood after logging occurred (See **Section A.5.6 Soils** and **Section A.5.7 Vegetation** for more details on logging impacts to soils and vegetation). Conversely, the portions of the Bank that are more inaccessible to logging due to stream and wetland areas support an older, deciduous forest with some conifers than the more recently logged portions. These areas include the northeast corner of Site A, east of Bear Creek, a diagonal swath through the center of Site A, the north and west extents of Site B where beaver ponds make access limited, and portions of the east side of Site C. The interspersions of different age-classes of forest vegetation and remnant tree stumps within these areas suggest no intensive land clearing occurred, instead periodic selective tree harvest occurred.

In 2018, the City acquired five parcels that comprise the Bank through fee simple acquisition with the intent of establishing a mitigation bank. The City purchased the five parcels to protect their high priority habitat value from increasing risk of development. Prior to 2018, the City had conducted extensive analysis to determine an appropriate permit pathway to support a programmatic approach to mitigation to offset permitted impacts from both public and private projects in the City and the region. This analysis included:

- Detailed research on existing ecological conditions, development patterns, and growth projections within the City and region;
- Identification of specific project impacts to wetland and aquatic resources and their buffers;
- Quantification of those impacts by watershed, landscape position within the watershed, and impacts to wetland and aquatic resource functions; and
- Site selection and rationale, as well as conceptual designs and anticipated credit ratios for the Bank.

As mentioned in the Rationale for Site Selection, the Bank was selected and purchased as a potential bank site due to its location within a high priority habitat area (BHRTA 2015; Diamond Head Consulting 2022).

A.5 Baseline Conditions

A.5.1 Overview of Site Conditions

The upper watershed of the Bank is part of a key wildlife corridor connecting north-south across an area of expanding urban development. Adjoining properties to the north and south are already used for compensatory wetland mitigation and have been preserved with legal protections. Wildlife species, including beaver, will use all the adjoining properties for their habitat. Wherever ponded areas, other wetlands, and streams bisect properties, the same fish and wildlife will use the connected water courses for access, migration, and residence. Similarly true for the intervening uplands, wildlife will move freely between them regardless of legal property lines. The interaction between wetland, stream, and upland habitats creates edges that offer a unique combination of resources and environmental conditions. This increases species richness, diversity, productivity, and overall ecosystem functioning.

The Bank's vegetation type is predominantly a deciduous forest, dominated by red alder, with some older forested areas that are mixed deciduous and coniferous trees. The different age-classes of forest are a result of the Bank's varied logging history. Timber harvest occurred circa late 1980s-early 1990s on portions of Sites B and C, which has developed into a +/- 35-year-old stand on significant portions of both Sites. Areas not logged at that time contain a mix of older conifers and deciduous trees, as typified on Site A by the forest in the northeast quadrant and diagonal swath through the center. Similar older deciduous forest with some conifers occurs on the west and north extents of Site B and portions of the southeast side of Site C. These areas were logged in the more distant past but definitive records are absent. Across Sites A, B, and C, there are openings in the forested canopy, especially within the older forested areas, due to beaver ponds, stream courses, and some native and non-native shrub-dominated thickets. Topographically, Sites A, B, and C have rolling or undulating terrain, interspersed with forested wetlands, beaver-created ponds bordered by scrub-shrub and emergent wetlands, and stream-associated wetlands of all vegetation types. The uplands adjoining these wetlands are primarily dominated by deciduous trees, with some remnant mature conifer and deciduous trees, including Douglas-fir (*Pseudotsuga menziesii*), black cottonwood, and red alder, in areas that were not logged as recently.

The wetlands and uplands throughout Sites A, B, and C are highly interspersed, forming a complex, interconnected habitat that is challenging to identify wetlands from uplands, similar in pattern to interdunal wetland and upland habitat found in Washington coastal areas. Within the areas of older forest that were logged more distantly in the past, the interspersion of wetlands and uplands provides the highest quality habitat across the Bank. The beaver-influenced wetlands support varying and dynamic water depths and flow directions due to ongoing beaver activity. The adjacent uplands support tree growth for beaver forage and a source of material for dam and den construction. The shorelines of beaver-created ponds provide important habitat for mammals, birds, and amphibians that rely on both inundated ponded areas and dry uplands to support their life cycles. Beaver activity creates downed logs and standing snags around the perimeter of ponds, which provide important refuge for small mammals, birds, amphibians, and insects. Fish habitat is also available in the beaver-created ponds for such species as coho salmon that prefer residence in upper watershed ponds during their growth from fry to smolt.

In areas where timber harvest occurred circa 1980-1990s, logging and scarification removed most of the organic matter, resulting in an absence of large woody material. Poorly applied scarification techniques following logging overly compacts soils, reduces pore space, and limits the movement of air, water, and nutrients through the soil (Crawford *et al*. 2021; Nash *et al.* 2021). It also interrupts soil microorganisms in naturally building healthy forest soils. The resulting soils lack nutrients and structure, allowing early colonizers like red alder and invasive plants such as Himalayan blackberry (*Rubus armeniacus*) to readily establish. At the Bank, these early colonizers have impeded the regrowth and establishment of a more diverse native plant community. Red alder has colonized so densely that it is now declining due to intense competition for light, water, and nutrients from other red alder and invasive plants such as Himalayan blackberry. This degraded condition of the +/- 35 year age-class forest is occurring in both wetlands and uplands across the Bank, resulting in less diversity, structure, and quality of wildlife habitat in the more recently logged areas. While the +/-35 year age-class forest areas are not as diverse in species and habitat types as the older forest areas, with time and assistance, the younger forest has the potential to develop similarly, due to the complex interspersion of wetlands and uplands on the Bank.

A.5.2 Topography

The Bank has rolling or undulating terrain with ridges and intervening depressions, which vary 10-25 feet in elevation from crest of ridge to the lowest point of the adjacent depression (**Figure A.6**). Overall, the average elevation trends slightly lower in elevation moving north across Sites A, B, and C, which mirrors the northerly flowing surface water drainage. The only exception to the undulating topography is on the north of Site A, where Bear Creek flows through a more well-defined channel with adjoining side slopes as it flows north and then westerly and offsite. The highest topographic elevations are in the southwest corner of Site C (approximately 120 feet above mean sea level (amsl) and the southwest corner of Site B (approximately 120 feet amsl). The wetland and stream areas on the Bank are between 80 feet and 110 feet amsl. These areas include the northeast corner of Site A east of Bear Creek, a diagonal swath through the center of Site A, the north and west extents of Site B, where beaver ponds make access limited, and portions of the southeast side of Site C.

Site A is characterized by lower elevation wetlands interspersed with higher elevation upland hummocks and ridges, with the highest elevation upland areas in the western quadrant (**Figure A.6.a**). On Site A, the Bear Creek stream channel consists of a wider channel within a broader floodplain in its southern and lower gradient portion, transitioning to a narrower, incised channel with steeper slopes as it flows to the north boundary.

Like Site A, Sites B and C have scattered upland hummocks and ridges both within and surrounding the wetlands (**Figures A.6.b and A.6.c**). Site B has the highest elevation uplands in its southeast quadrant, with the lowest elevation uplands to the north, with the upland topography only slightly higher than the surrounding wetlands. Like Site B, Site C's lower elevation uplands are on its northern portion and are not much higher in elevation than the surrounding wetlands. The higher elevation uplands are along the western one-third of Site C. Sites B and C have similar topography in that the streams do not flow through steep channels but rather flow through the lower elevation wetlands.

A.5.3 Streams

Bear Creek, West Bear Creek, and the unnamed tributary to West Bear Creek flow through Sites A, B, and C, and additionally, there are small drainages throughout that connect wetlands to wetland complexes and streams (**Figures A.5, A.5.a, A.5.b, and A.5.c**). Surface water drainage across Sites A, B, and C is generally from the southwest draining through Bear Creek, West Bear Creek, and unnamed tributaries through Sites B and C, flowing into the mainstem of Bear Creek, which drains generally to the north and northeast across Sites A and B, and turns westerly to the north and offsite of Site A.

The riparian area along the mainstem of Bear Creek is distinct through Site A and has a defined channel and ordinary high-water mark as identified by NW Ecological Services (NES) in 2021. The northern extent of the stream is in a well-defined deep ravine with steep slopes and is surrounded by dense forest vegetation that protects the water from thermal exposure and limits invasive species. The southern extent of the stream is characterized by a wider, shallower floodplain. Portions of the stream in this area are dominated by reed canarygrass (*Phalaris arundinacea*) with scattered native shrubs. The southern stream channel is also highly incised. Large woody material and overhanging vegetation are present throughout most of the onsite segment, except the southern portion, which is dominated by reed canarygrass (NES 2021). There are two approximately 18-inch corrugated plastic culverts located in the southern portion of the stream but outside of the active stream channel (**Figure A.5.a**). These culverts are partially filled with soil and debris and are no longer conveying any flow in the stream. They will be removed during the initiation of mitigation methods on Site A.

The riparian areas adjacent to Bear Creek, West Bear Creek, and unnamed tributary to West Bear Creek within Sites B and C are less distinct but are generally defined by lower elevations within which water collects and flows downstream. Sections of the streams and smaller unnamed drainages within Sites B and C are impounded by beaver dams, forming depressional/riverine wetlands. Smaller drainages on these Sites are either surrounded entirely by wetland or function as short conveyances connecting upslope and downslope wetlands. Beaver activity regularly alters stream flow-paths, resulting in dynamic hydrology. Therefore, the ordinary high-water marks of these drainages were not delineated separately from surrounding wetlands, but the location of these drainages are identified on **Figures A.5, A.5.b, and A.5.c**.

A.5.4 Wetlands

A total of 18 wetlands encompassing 59.33 acres were identified on Sites A, B, and C that comprise the Bank (NES 2021). The wetlands are described in detail in the *Critical Areas Assessment (Critical Areas Assessment) for the City of Bellingham Mitigation Bank Instrument Bear Creek Corridor Mitigation Bank Site* (NES 2021) in the Resource Folder, and this document includes photographs, rating system forms, and data sheets for all wetlands. The wetland information found in the *Critical Areas Assessment* (NES 2021) is summarized below:

A.5.4.1 Site A

NW Ecological Services identified a total of six wetlands (Wetlands A-F) on Site A (**Figure A.5.a**; NES 2021), which are summarized in **Table A.2**. The wetlands encompass 13.07 acres of the total 23.54 acres on Site A. All Site A's wetlands are depressional wetlands that drain directly to Bear Creek, which flows northly through the eastern side of Site A. While these wetland areas are distinct, Site A functions as a contiguous wetland ecosystem due to the interconnected nature of the streams, wetlands, uplands (including riparian areas), and the overall extent of wetland habitat.

Table A.2. Site A Wetland Classification Summary

Wetland	Hydrogeomorphic Class[1]	Cowardin Classification[2,3]	Ecology Category	Onsite Area[4] (acres)
A	Depressional- outflow	PFO1E, PSS1E	II	9.72
B	Depressional- outflow	PFO1E	II	0.21
C	Depressional- outflow	PFO1E, PSS1E, PEM1E	II	0.85
D	Depressional- outflow	PFO1E, PSS1E, PEM1E	II	0.19
E	Depressional/Riverine	PFO1E, PSS1E, PEM1E, RSS1E, REM1E	II	1.92
F	Depressional- outflow	PFO1E, PSS1E	II	0.18
			Total Wetland Area	**13.07**
			Total Upland Area	**10.47**
			Total Site Area	**23.54**

[1]Federal Geographic Data Committee (FGDC) 2013
[2]Smith, R.D., A. Ammann, C. Bartoldus, and M.M. Brinson 1995
[3]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, 1: broad-leaved deciduous, E: seasonally flooded/saturated
[4]All wetlands extend offsite

A.5.4.2 Site B

NW Ecological Services identified a total of seven wetlands (J, K, L, M, N, P, and Q) on Site B (**Figure A.5.b**; NES 2021), which are summarized on **Table A.3**. Wetland J, a Category I wetland, encompasses over half of Site B and contains a large beaver pond complex associated with West Bear Creek and its unnamed tributary. Several forested upland areas are located among the beaver-influenced wetlands. The wetlands encompass 21.12 acres of the total 35.99 acres on Site B. While these wetland areas are distinct, Site B functions as a contiguous wetland ecosystem due to the interconnected nature of the streams, wetlands, uplands, wetland mosaics, and the overall extent of wetland habitat.

Table A.3. Site B Wetland Classification Summary

Wetland	Hydrogeomorphic Class[1]	Cowardin Classification[2,3]	Ecology Category	On-Site Area (acres)
J	Depressional/Riverine	PFO1E, PSS1EHb, PAB3Hb	I	19.46[4]
K	Depressional- outflow	PFO1E	III	0.08
L	Depressional- outflow	PFO1E	III	0.02
M	Depressional/Slope	PFO1E	III	0.83[4]
N	Depressional- outflow	PFO1E	III	0.60[4]
P	Depressional- outflow	PFO1E	III	0.07[4]
Q	Depressional/Slope	PFO1E	III	0.07[4]
			Total Wetland Area	**21.12**
			Total Upland Area	**14.87**
			Total Site Area	**35.99**

[1]Federal Geographic Data Committee (FGDC) 2013
[2]Smith, R.D., A. Ammann, C. Bartoldus, and M.M. Brinson 1995
[3]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, AB: aquatic bed 1: broad-leaved deciduous, 3: rooted vascular, E: seasonally flooded/saturated, H: permanently flooded, b: beaver
[4]Wetland extends offsite

A.5.4.3 Site C

NW Ecological Services identified a total of five wetlands (R, S, U, V and W) on Site C (**Figure A.5.c**; NES 2021), which are summarized on **Table A.4**. Wetland S, a Category I wetland, comprises the majority of the wetland acreage, and contains a series of deeper beaver-created ponds. The southeastern portion is characterized by a beaver-pond complex, which is associated with Bear Creek and a short, unnamed drainage flowing from the southwest onto Site C. As a whole, the wetlands encompass 25.13 acres of the total 39.12 acres on Site C. While these wetland areas are distinct, Site C is functioning as a contiguous wetland system due to the interconnected nature of the streams, wetlands, uplands, and the overall extent of wetland habitat.

Table A.4. Site C Wetland Classification Summary

Wetland	Hydrogeomorphic Class[1]	Cowardin Classification[2,3]	Ecology Category	On-Site Area (acres)
R	Slope	PFO1E	III	0.16[4]
S	Depressional- outflow	PFO1Eb, PSS1Ehb	I	24.83[4]
U	Depressional- closed	PFO1E	III	0.05
V	Depressional- closed	PFO1E	III	0.01
W	Depressional- outflow	PFO1E	III	0.08
			Total Wetland Area	**25.13**
			Total Upland Area	**13.99**
			Total Site Area	**39.12**

[1]Federal Geographic Data Committee (FGDC) 2013
[2]Smith, R.D., A. Ammann, C. Bartoldus, and M.M. Brinson 1995
[3]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, 1: broad-leaved deciduous, E: seasonally flooded/saturated, H: permanently flooded, b: beaver
[4]Wetland extends offsite

A.5.5 Hydrology

The hydrology throughout the Bank varies based on the characteristics of each individual Site. Therefore, the distinct hydrologic features found at each is described for Sites A, B, and C below, based on the information detailed in the *Critical Areas Assessment* (NES 2021).

A.5.5.1 Site A

The wetlands on Site A are seasonally saturated with areas of shallow seasonal inundation. Sources of wetland hydrology include direct precipitation and seasonally perched groundwater. Typical of the Whatcom-LaBounty mapped soil series, the subsoil is denser than the surface soil, resulting in a saturated topsoil overlying a denser, restrictive unsaturated subsoil. During extended periods of rain and cool weather, ponding within the wetlands increases due to retarded evaporation rates and slow infiltration. Ponding observed in the wetlands was generally less than 6 inches deep.

A.5.5.2 Site B

West Bear Creek flows into the largest Site B wetland (Wetland J) from the west and becomes impounded by several beaver dams throughout the wetland complex. Additionally, an unnamed tributary to West Bear Creek flows into the complex near the southwest corner of the property. Ponding exceeds 4 feet in depth in some areas during the winter and early spring months. The northwestern portion of Wetland J outflows over an extensive beaver dam near the north property boundary. This outflow is the continuation and rechanneling of West Bear Creek due to ongoing beaver activity, which supports dynamic hydrologic conditions. The central portion of Wetland J flows northeast via a series of smaller beaver dams. The remainder of wetlands on Site B are seasonally saturated and contain pockets of shallow seasonal inundation. Sources of wetland hydrology include direct precipitation, surface runoff, and seasonally perched groundwater. As typically seen in the Whatcom-LaBounty soil series, surface soils were saturated, whereas the subsoils were dense and restrictive, causing perched hydrology. Ponding observed in these wetlands was generally less than 6 inches deep.

A.5.5.3 Site C

Except for the southern portion of the largest wetland in Site C (Wetland S), the wetlands are primarily seasonally saturated with areas of shallow inundation. Wetland S contains a series of deeper beaver-created ponds, and the mainstem of Bear Creek flows into the wetland mid-site from the adjacent property to the east. Wetland S also receives water from a seasonal drainage and a ditch along the southern property boundary. Additional hydrologic sources to Wetland S include surface runoff and direct precipitation. All Site C wetlands drain either directly or indirectly into the mainstem of Bear Creek, which flows north through the Site.

A.5.6 Soils

The soils within areas that had been historically logged circa the 1980s or early 1990s, primarily within Sites B and C, exhibit mixed soil conditions indicating significant disturbance to the soil profile (the logging practices and its effects on soils are discussed in **Section A.5.6.1 Soil Impacts from Historic Logging**). The mineral soils have remained intact in other areas not impacted by logging or scarification

(such as deeply ponded areas that were not accessible by logging equipment), or areas of older historic logging where debris and stumps were not cleared, which occurred on Site A.

The soil type throughout Sites A, B, and C is homogenous, with one soil unit being mapped throughout. According to the Natural Resource Conservation Service (NRCS) *Soil Survey of Whatcom County Area, Washington* (2021), the soil found on Sites A, B, and C is Whatcom-Labounty silt loam, 0 to 8 percent slopes (#182). Whatcom silt loam is a moderately well-drained soil containing between 10 and 20 percent hydric soil components. Labounty silt loam is commonly found as an inclusion in depressions with Whatcom soils. This soil is poorly drained, containing 94 percent hydric soil components. Detailed soil descriptions are included in the *Critical Areas Assessment* (NES 2021), contained in the Resource Folder.

A.5.6.1 Soil Impacts from Historic Logging

The logged areas of Sites B and C exhibit impacted soil conditions due to timber harvest methods that used ground-based equipment such as a bulldozer, skidder, and shovel harvester (hydraulic excavator), also termed "cat logging." Unlike high-lead logging, where harvest is mostly with cables and chokers done over a slope with a tower and logs suspended in the air, cat logging requires every log to be pulled, or "skidded" across the ground with a heavy machine with caterpillar tracks or wheels. Such equipment compresses the soil, and well-traveled skid roads become highly compacted, especially when the ground is wet, as is typical in rainy western Washington. Topsoil and duff become mixed with subsoil that is pulled to the surface by the repeated tracking of the equipment. Further tracking by equipment occurred after logs were harvested and when tree stumps, roots, underbrush, and remaining logging debris were removed to scarify the land, presumably for intended future development. Such scarification compacts the soil profile, further mixes the soil, brings subsoil to the surface, removes microorganisms, and pulverizes the duff layer that occurred under the pre-harvested forest. The removed tree stumps, tree limbs, and understory (termed "slash") are typically stacked into piles by the equipment and burned (termed "slash-burning"), which releases nutrients to the soil in the immediate area to the pile but can also burn so hot it sterilizes the soil surface.

When all logging and scarification practices, including slash-burning, are complete, the soils are left in a highly disturbed condition (Crawford *et al.* 2021; Nash *et al.* 2021). The subsoil that was pulled to the surface has less organic material and can often form a crust-like covering over the ground, repelling rainwater, impeding infiltration, and promoting runoff. As the organic-rich duff layer was pulverized and blended with the mineral soils, the rapid breakdown of organic matter robs nitrogen from the soil, stunts re-growth of plants, and reduces the concentration of soil microorganisms. The well-developed subsurface network of soil mycorrhiza and fungal mycelium, and numerous insects, worms, soil bacteria, and other living organisms in forest soils are also disturbed, and their life cycles interrupted. With poorly applied scarification and compaction from heavy logging equipment, much of the potentially re-sprouting plant material was removed and the soil organisms destroyed, requiring many years for a healthy forest soil environment to recover after such a disturbance (Crawford *et al.* 2021; Nash *et al.* 2021.

A.5.7 Vegetation

The diversity of plant species varies throughout the Bank, so the vegetation found on Sites A, B, and C in both the upland and wetlands is identified separately in this section, based on the information provided in the *Critical Areas Assessment* (NES 2021).

A.5.7.1 Site A

Overall, the forest canopy of Site A is a deciduous forest community dominated by 75 to 80 percent young, leggy red alder with scattered black cottonwood. Portions of the forested community were impacted by logging that occurred in the late 1980s to early 1990s, and the logged areas were subsequently colonized by red alder and black cottonwood. The areas not impacted by this period of logging contain a more mature mix of deciduous and coniferous forests that are concentrated in the northeast quadrant and a diagonal swath through Site A. There are areas characterized by a scrub-shrub community along the southern extent of Bear Creek where the canopy is more open throughout the wider, shallower valley.

Site A wetlands are primarily forested with young red alder, black cottonwood, quaking aspen (*Populus tremuloides*), and a few paper birch (*Betula papyrifera*). The understory within the wetlands is a mix of salmonberry, red-osier dogwood (*Cornus sericea*), vine maple, snowberry, creeping buttercup (*Ranunculus repens*), and Himalayan blackberry.

Upland areas within Site A primarily consist of small, upland hummocks and ridges across the Site, and riparian areas surrounding Bear Creek. Some upland hummocks support coniferous species, such as Douglas-fir, with several of these areas situated west of Bear Creek. The understory is primarily vegetated with snowberry (*Symphoricarpos albus*), sword fern (*Polystichum munitum*), trailing blackberry (*Rubus ursinus*), bracken fern (*Pteridium aquilinum*), salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), dull Oregon grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), and red elderberry (*Sambucus racemosa*). At least 23 old-growth trees measuring greater than 32 inches diameter at breast height (DBH) are present, with the highest concentrations in the northeast corner. WDFW Priority snags and logs are also present in the eastern portion of Site A.

A.5.7.2 Site B

Like Site A, the primary vegetation class within Site B consists of a forested class impacted by logging in the late 1980s to early 1990s. Older forested communities are located in the north and west extents, associated with beaver-created ponds and streams. Wetland vegetation is varied by the types of hydrology present, with those areas influenced by ponding from beaver dams (western portion within Wetland J) expressing a difference in vegetation from the southern, more depressional-outflow wetlands. Vegetation observed within the beaver-influenced western portion of Wetland J included: reed canarygrass (*Phalaris arundinacea*), hardhack (*Spiraea douglasii*), black twinberry (*Lonicera involucrata*), salmonberry, red-osier dogwood, Pacific willow (*Salix lucida*), yellow pond lily (*Nuphar luteum* ssp. *polysepala*), and common cattail (*Typha latifolia*). The eastern portion of Wetland J functions differently due to the lack of beaver dams. The plant community reflects this difference and is comprised of leggy red alder and black cottonwood, black twinberry, swamp gooseberry (*Ribes lacustre*),

red-osier dogwood, western crabapple (*Malus fusca*), American skunk cabbage (*Lysichiton americanus*), American brookelime (*Veronica americana*), water parsley (*Oenanthe sarmentosa*), Dewey's sedge (*Carex deweyana*), and slough sedge (*Carex obnupta*). The wetlands in the southeastern portion of Site B (Wetlands K, L, M, N, and P, and Q) are primarily small, palustrine forested depressional-outflow wetlands. Vegetation within these wetlands is dominated by young red alder, salmonberry, Himalayan blackberry, hardhack, creeping buttercup, stinging nettle, and isolated patches of slough sedge. Many windthrown and wind-broken young red alders are located throughout the southeast portion.

Upland areas within Wetland J (the large beaver-influenced wetland) contain conifers (western redcedar (*Thuja plicata*), Douglas-fir, and western hemlock (*Tsuga heterophylla*)) that were not cut during the most recent logging activity, likely from inaccessibility due to inundation. Understory diversity is also greater in these areas. Species observed included: false lily-of-the-valley (*Maianthemum dilatatum*), bleeding heart (*Dicentra formosa*), trillium (*Trillium ovatum*), vanilla-leaf (*Achlys triphylla*), and woodland strawberry (*Fragaria virginiana*). Upland areas in the southeastern portion of the Site and not associated with Wetland J primarily contain an overstory of red alder and cottonwood, with scattered patches of Douglas-fir.

A.5.7.3 Site C

Like Sites A and B, logging practices have impacted the dominant forest class occurring on Site C. Plant species and structural diversity throughout most of Site C are limited due to past logging activities. The forest canopy in the upland areas consist primarily of red alder and black cottonwood, with a few areas of maturing western redcedar and grand fir (*Abies grandis*). These conifer species are primarily found in the southeast uplands associated with a large beaver complex. The wetlands are dominated by red alder with some black cottonwood and a few scattered paper birch. Wetland understory species include salmonberry, red-osier dogwood, slough sedge, mannagrass (*Glyceria* sp.), reed canarygrass, and creeping buttercup. Stands of mannagrass are also present along the riparian areas of Site C. The understory in most of the upland areas within Site C is dominated by snowberry and vine maple, with scattered Indian plum (*Oemleria cerasiformis*), clustered rose (*Rosa pisocarpa*), and sword fern (*Polystichum munitum*).

A.5.7.4 Vegetation Impacts from Historic Logging

Historic logging in the late 1980s to early 1990s on portions of the Bank included scarifying the soils to remove woody debris, which contributed to disturbed soils, reduced microorganisms and nutrients, provided an avenue for invasive plants, and promoted the overstocked, deciduous tree-dominated overstory. After scarification, the exposed soil is colonized by early successional, fast-growing species such as red alder, black cottonwood, and invasive plants, such as Himalayan blackberry, Canada thistle (*Cirsium arvense*), and English hawthorn (*Crataegus monogyna*). The alders have established so densely on the Bank, they are declining through natural overstocking. Additionally, parts of the Bank are dominated by dense thickets of Himalayan blackberry. Red alder and black cottonwood do not provide perennial shade at sufficient levels to suppress the blackberry, as would the shade provided by a more developed coniferous forest. In the absence of a coniferous canopy, invading blackberry often becomes dominant, robs the soil nutrients required for tree growth, and restricts native vegetation from

becoming established. Himalayan blackberry displaces native vegetation by overtopping and outcompeting them for space, light, and nutrients. Furthermore, diverse soil organisms that are found in a healthy forest soil will not re-establish under dense blackberry thickets due to it being a heavy feeder on soil nutrients.

Without intervention and establishment of a diverse forested vegetation class, dominance by invasive plants could also impact the wetland hydrology, water quality, and wildlife habitat. Lack of tree cover in shrub or vine-dominated plant communities will discourage beaver habitat and activity, interrupting the natural pond-building cycle of beavers and their benefits to upper watershed water storage and the creation of varied edge habitat. Decline of the tree canopy will increase sun exposure and increase surface water temperatures. Furthermore, dominance by only a few plants, such as Himalayan blackberry, impacts wildlife species in both wetlands and adjoining uplands through a decline in diverse habitats, including edge habitat, and constraint on plant species diversity.

A.5.8 Invasive Species

Himalayan blackberry and reed canarygrass are the dominant invasive species throughout Sites A, B, and C, with scattered individual occurrences of giant knotweed (*Fallopia sachalinense*), English ivy (*Hedera helix*), English hawthorn, English holly (*Ilex aquifolium*), tansy ragwort (*Senecio jacobaea*), traveler's-joy (*Clematis vitalba*), horse chestnut (*Aesculus hippocastanum*), and bittersweet nightshade (*Solanum dulcamara*). Concentrations of Himalayan blackberry occur primarily in the western side of Site A, the eastern side of Site B, and the northern extent of Site C. Reed canarygrass is most concentrated in the riparian corridor of Site A, with the highest concentration where the canopy is open along central and southern Bear Creek channel. Reed canarygrass is most prevalent in the western portion of Site B surrounding the ponded areas, and the north-central portion of Site C.

A.5.9 Fish and Wildlife Habitat

No Threatened, Endangered, or Candidate species or associated habitats (other than the wetlands) were observed within the Bank during site visits and field work in winter 2019 according to the *Baseline Conditions Report* (NES 2022); however, no targeted species or habitat surveys were completed during the course of the field work. Sites A, B, and C have the potential to provide habitat for a variety of wildlife species that inhabit forested, riparian, and wetland environments. Project biologists observed evidence of deer, songbirds, ducks, bald eagle, red-tailed hawk, pileated woodpecker, great blue heron, beavers, and bear (a bear print was identified east of Site A during the winter 2019). Sites B and C have active beaver presence in the streams and wetlands. Project biologists observed no active beaver dams on Site A, although evidence of recent activity in the form of small scattered downed tree branches with evidence of recent chew was observed in 2023. The beaver ponds on Sites B and C provide suitable amphibian habitat.

The Northwest Indian Fisheries Commission *Statewide Integrated Fish Distribution* (SWIFD) database (NWIFC 2023) shows Bear Creek and West Bear Creek as known or presumed habitat for coho (*Oncorhynchus kisutch*), resident coastal cutthroat (*O. clarki clarki*), and Dolly Varden/bull trout (*Salvelinus malma/S. confluentus*). Bull trout are a federally Threatened and a state Candidate species.

Bear Creek, West Bear Creek, and the unnamed tributary to West Bear Creek are mapped as gradient accessible for fall chum (*O. keta)* and winter steelhead (*O. mykiss*; NWIFC 2023 and WDFW 2023b). Puget Sound steelhead are a federally Threatened species (WDFW 2023b). Fish passage to Sites B and C were constrained by a Whatcom County-owned partial fish passage barrier under Northwest Drive (WDFW ID 370421), but Whatcom County restored full fish passage under Northwest Drive during summer 2020. One barrier to fish passage remains along the eastern boundary of Northwest Drive (WDFW ID 128024).

Sites B and C are part of a large, 400+ acre contiguous forest block that extends north and south of the Sites. Although the area is not mapped by WDFW, it meets the definition of a Priority Habitat and Species Biodiversity Corridor and Area by WDFW (2023). Site B contains several WDFW Priority snags around Wetland J in the northwest corner of Site B. Pileated woodpecker, a state Candidate Species, excavations were observed in multiple snags on Site B (NES 2022).

More recently, the City completed an assessment of terrestrial wildlife habitat. As mentioned previously, the assessment documented in the *2021 Wildlife Corridor Analysis: Methods Summary & Results for City of Bellingham* (Diamond Head Consulting 2022) identified the Bank area as an Important Wildlife Habitat Area (**Figure A.8**).

A.5.10 Cultural Resources

A cultural resources inventory survey and report was completed for the Bank to comply with assessing potential impacts to cultural resources under Section 106 of the National Historic Preservation Act (NHPA; Part 800 of Title 36 of the Code of Federal Regulations as cited in Jacobs 2019). Consistent with a request by Lummi Nation Cultural Resources Department, the cultural resources study of the Bank consisted of a pedestrian survey augmented by subsurface testing that included excavating 120 shovel test pits. The cultural resources consultant recommended a finding of no historic properties affected and that an inadvertent discovery plan be composed for any future ground disturbing work (Jacobs 2019).

A.6 Functional Assessment

A.6.1 Existing Wetland Functional Assessment

NW Ecological Services categorized the identified wetlands using the Ecology *Wetland Rating System for Western Washington*: 2014 Update (2014 Rating System; Hruby 2014) and the associated wetland rating form (NES 2021). The following functional assessment is a summary from the *Critical Areas Assessment* (NES 2021), which is provided in the Resource Folder.

The 2014 Rating System categorizes wetlands based on specific attributes based on rarity, sensitivity to disturbance, and the functions they provide. This methodology identifies and quantifies the potential of various functions operating within a wetland. This determination is based on the physical characteristics of water quality, hydrologic, and habitat functions in the wetland and its buffers. Using this system, wetlands are given a score based on the functions provided by the wetland and are classified as

Category I (highest) through Category IV (lowest). A Category I rating is assigned to wetlands that have the highest value, opportunity, and potential to provide functions, and are most difficult to replace.

The 2014 Rating System scores wetland functions for three groups: water quality, hydrology, and habitat. Each functional category is rated for site potential, landscape potential, and value. Rating scores are given as either "High," "Moderate," and "Low." The Rating System results are summarized in the text and the ratings and scores in tables for Sites A, B, and C.

A.6.1.1 Site A

Site A wetlands have moderate potential to perform water quality improvement functions. The wetlands are densely forested with vegetation capable of providing sediment and pollutant filtration and uptake. However, except for Wetland E and the southwest portion of Wetland A adjacent to an adjoining residential property, the wetlands do not receive polluted runoff from adjacent land uses. Wetland E receives water from Bear Creek, which receives runoff from upstream roads, houses, commercial, and industrial land uses. Wetland E contains dense herbaceous (reed canarygrass) and shrubby vegetation capable of providing water filtration and pollutant uptake. Water quality functions provided by Site A wetlands are valuable within the watershed because the downstream waters of Bear Creek and Silver Creek have been identified as impaired by Ecology.

Site A wetlands have moderate potential to perform hydrologic functions. The land uses and vegetation types within the contributing basins of Wetlands C and E produce excess runoff. Ponding within these wetlands provides some desynchronization of floodwater during storm events. However, ponded areas within Site A are shallow and account for less than 25 percent of the wetland area. Nonetheless, water storage functions serve to dampen peak flows within the watershed. There are flooding issues downstream along Silver Creek, which have damaged houses and infrastructure. Therefore, the hydrologic functions afforded by the Site A wetlands are beneficial within the watershed.

Site A wetlands have moderate to high potential to support fish and wildlife habitat functions. Due to past logging practices, the wetlands have minimal biodiversity and structural diversity. However, direct association with Bear Creek provides an opportunity for the wetlands to supply large woody material input, prey resources, and thermal protection from overhanging vegetation. Additionally, WDFW PHS snags and logs onsite provide habitat structure and diversity.

The 2014 Ecology rating and scores for Site A are summarized in **Table A.5**.

Table A.5. Site A Wetland Rating and Functional Assessment

Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
A	M/M/H (7)	M/M/M (6)	M/H/H (8)	21	II
B	M/M/H (7)	M/L/M (5)	M/H/H (8)	20	II
C	M/L/H (6)	M/M/M (6)	M/H/H (8)	20	II
D	M/L/H (6)	M/M/M (6)	M/H/H (8)	20	II
E	M/M/H (7)	L/H/M (6)	M/H/H (8)	21	II
F	M/L/H (6)	M/M/M (6)	M/H/H (8)	20	II

Site potential score/landscape potential score/value score (total points for function) L=Low; M=Moderate, H=High

A.6.1.2 Site B

Site B wetlands have moderate potential to perform water quality improvement functions. Most of the wetlands are densely forested with vegetation capable of providing sediment and pollutant filtration and uptake. However, except for Wetland J, the wetlands do not currently appear to receive polluted runoff from adjacent land uses. Wetland J receives water from West Bear Creek, which receives runoff from roads, houses, commercial, and industrial land uses. Wetland J contains large areas of aquatic and herbaceous vegetation, which perform water quality improvement functions at a high level.

Site B wetlands have moderate potential to perform hydrologic functions. Upstream land uses, including the Bellingham International Airport within Wetland J's contributing basin, produce excess runoff. Ponding within the onsite wetlands provides desynchronization of floodwater during storm events. The extensive network of beaver dams within Wetland J stores water that is released slowly into West Bear Creek. This attenuates downstream flooding during the winter and provides baseflow to West Bear Creek during the drier summer and fall months.

The onsite wetlands have high potential to support fish and wildlife habitat functions. The wetlands in the eastern portion have minimal biodiversity and structural diversity due to past logging practices. Site B does not appear to have been replanted after the most recent logging activity. Instead, vegetation in the logged areas is dominated by a monotypic stand of leggy red alders and black cottonwood with patches of Himalayan blackberry in the understory. Opportunity for habitat functional lift by way of vegetation supplementation to increase diversity and structure exists throughout the logged portion of Site B. The western portion of Site B, largely occupied by Wetland J, contains greater habitat diversity and interspersion resulting from the beaver dam complex within West Bear Creek and its unnamed tributary. Wetland J is designated by the Washington Department of Natural Resources (WDNR) as a Wetland of High Conservation Value (ID: 528; WDNR 2023). It is identified as a Vancouverian shrub basin swamp/ wet shrubland (WDNR 2021). Habitat created and actively maintained by beavers supports mammals, waterfowl, and bird species, including raptors, and fish, including salmonids, although surveys of current fish use have not been conducted. This aquatic habitat is more accessible to fish following the

removal of downstream barriers to fish passage under Northwest Drive, completed in summer 2020. The association with West Bear Creek provides an opportunity for vegetation within the wetlands to supply large woody material input and thermal protection. Additionally, there are WDFW Priority snags and logs onsite, which provide habitat structure for wildlife using Site B.

The 2014 Ecology rating and scores for Site B are summarized in **Table A.6**.

Table A.6. Site B Wetland Rating and Functional Assessment

Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
J	L/H/H (7)	H/M/M (7)	H/H/H (9)	23	I
K	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
L	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
M	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
N	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
P	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
Q	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III

Site potential score/landscape potential score/value score (total points for function) L=Low; M=Moderate, H=High

A.6.1.3 Site C

Site C wetlands have moderate potential to perform water quality improvement functions. The wetlands are forested with vegetation capable of providing sediment and pollutant filtration and uptake. However, except for Wetland S, the wetlands do not receive polluted runoff from adjacent land uses. Wetland S receives water from commercial and industrial land uses southwest of Site C. Ponded areas, including beaver ponds within Wetland S, provide an opportunity for settling of sediment and pollutant filtration and uptake by vegetation.

Site C wetlands have moderate potential to perform hydrologic functions. Overall, the ponding within the wetlands is limited. Wetland S contains depressions capable of detaining floodwater during high flows and beaver dams within the southern portion of the wetland store water that is released slowly to Bear Creek, which attenuates downstream flooding during the winter and provides baseflow during the drier summer and fall months.

The wetlands have moderate to high potential to support fish and wildlife habitat functions. Most of the wetlands have minimal biodiversity and structural diversity due to past logging practices. Site C does not appear to have been replanted after the most recent logging. Instead, vegetation in the logged areas is dominated by a monotypic stand of leggy red alders and black cottonwood with patches of Himalayan blackberry in the understory. Opportunity for habitat functional lift by way of vegetation supplementation to increase diversity and structure exists throughout the logged portion of Site C. Despite the current low level of species diversity onsite, the association with Bear Creek provides an opportunity for the wetlands to supply large woody material and thermal protection.

The 2014 Ecology rating and scores for Site C are shown in **Table A.7**.

Table A.7. Site C Wetland Rating and Functional Assessment

Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
R	L/L/H (5)	M/L/M (5)	L/H/H (7)	17	III
S	L/H/H (7)	H/H/M (8)	M/H/H (8)	23	I
U	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
V	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III
W	M/L/H (6)	M/L/M (5)	L/H/H (7)	18	III

Site potential score/landscape potential score/value score (total points for function) L=Low; M=Moderate, H=High

A.7 Summary

Mitigation activities, described in Appendix B of this Instrument, have the potential to improve the existing conditions of the wetland, uplands, streams, and riparian habitat found within the Bank. Specifically, the proposed mitigation will enhance 0.98 acres of the Bear Creek riparian corridor on Site A by establishing a dense, native tree and shrub stratum where a monoculture of reed canarygrass currently exists. On Sites A, B, and C, 41.85 acres of existing forested upland and wetland habitat will be enhanced with native conifers within the currently deciduous-dominated forest to increase species diversity, benefit stand structure, and improve habitat interspersion.

A total of 55.82 acres of high functioning wetlands, including headwater wetland and beaver ponds, streams, and interconnected upland habitat along the Bear Creek riparian corridor, will be preserved on Sites A, B, and C, providing protection from the increasing development pressure experienced within the north portions of the City. Preservation will also remove the potential impacts sustained to wetlands, uplands, and the riparian corridors from continued logging (including constructing logging roads and removing trees). The overall preservation and enhancement of Sites A, B, and C will also serve to both protect and improve the habitat within the larger, 400+ acre contiguous forest block that extends north and south of the Bank.

Following the completion of the mitigation methods, the Bank will experience a regeneration in forest stand complexity, transitioning from a primarily single age-class deciduous forest to a more complex mix of coniferous and deciduous species and forest age-classes. The improved forest stand complexity will allow for the benefits of species diversity to be realized, by providing a more stable forest community and greater wildlife habitat, while discouraging the continued spread of invasive plants. Additionally, the Bank will improve the riparian corridor by establishing woody vegetative structure and reducing invasive plants along the stream banks, which will help moderate and reduce in-stream water temperatures and stabilize the floodplain. Lower stream temperatures and increases in woody riparian habitat will provide improved habitat for the existing resident fish and salmonid species, as well as aquatic-dependent plants and animals.

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City of Ferndale

Silver Creek Watershed

Bear Creek Sub-watershed

SITE A

SITE B

SITE C

City of Bellingham

Bellingham Bay

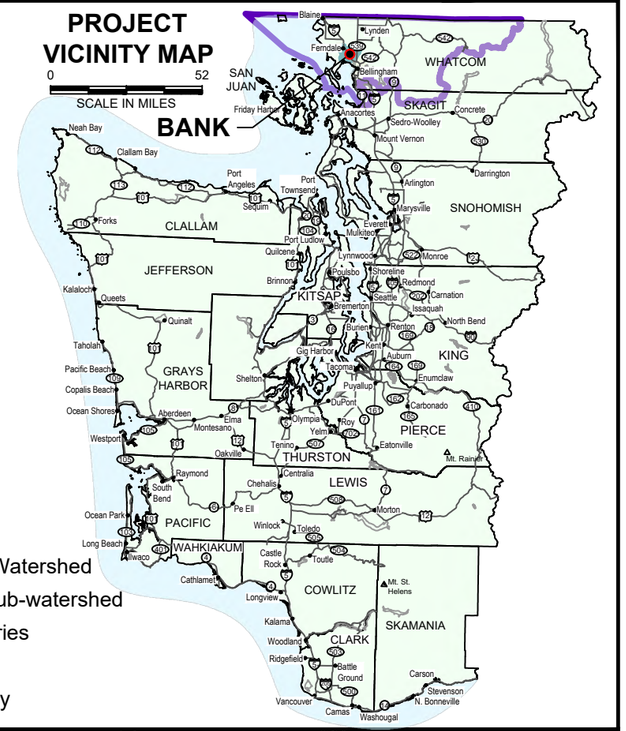
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Thornton St
Main St
Church Rd
Malloy Ave
Portal Way
2nd Ave
Ulrich Rd
Jackson Rd
Hovander Homestead Park
Brennan
Slater Rd
Hannan Way
Lummi
Nooksack River
MARIETTA
Marietta
Marine Dr
Lummi Shore Rd
Lummi Reservation
W Axton Rd
Northwest Dr
Larsen Mobile Manor
W Smith Rd
Guide Meridian
Hannegan Rd
E Smith Rd
Tenmile
Laurel
Victor
Van Wyck
Bellingham International Airport
Bakerview Rd
E Bakerview Rd
MERIDIAN
Bellis Fair
IRONGATE
MT. BAKER
BARKLEY
Parkview
Mt Baker Hwy
E Sunset Dr
Sunset Square
BIRCHWOOD
Cedarwood Ave
CORNWALL PARK
Squalicum Way
Barkley Blvd
W Illinois St
COLUMBIA
ALABAMA HILL
Alabama St
Eureka
SUNNYLAND
Bellingham
Ohio St
Iowa St
Fraser St
CITY CENTER
Woburn St
Yew St
Electric Ave
James St
Orleans St
Elm St
Meridian St
Bennett Dr
Patton St
Cornwall Ave
Bridge Ave
Roeder Ave
State St
Ellis St
Dewey
Lake Whatcom
Sehome
Lars

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PROJECT VICINITY MAP

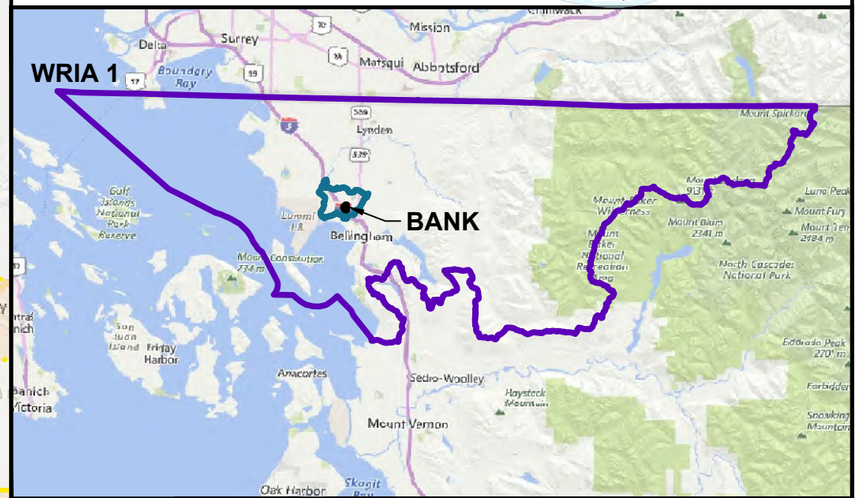
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BANK



LEGEND:

- WRIA 1
- Silver Creek Watershed
- Bear Creek Sub-watershed
- Bank Boundaries
- City Limits
- UGA Boundary



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DWN: JLL
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PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.1
VICINITY MAP
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

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SCALE IN FEET

Ecological Land Services
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LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- Areas Within the UGA Boundary
- Parcel Boundary

Whatcom County Zoning:

- Airport Operations (AO)
- Light Impact Industrial (LII)
- Rural-1 Unit/5 Acres (R5A)
- Urban Res.-Mixed Use (URMX)

City of Bellingham Zoning:

- Residential Single (RSO)
- Industrial (I)

R5A

UGA Boundary

Northwest Drive

SITE A

LII

SITE B

UGA Boundary

SITE C

URMX

City Limits

AO

I

RS

N

W E

S

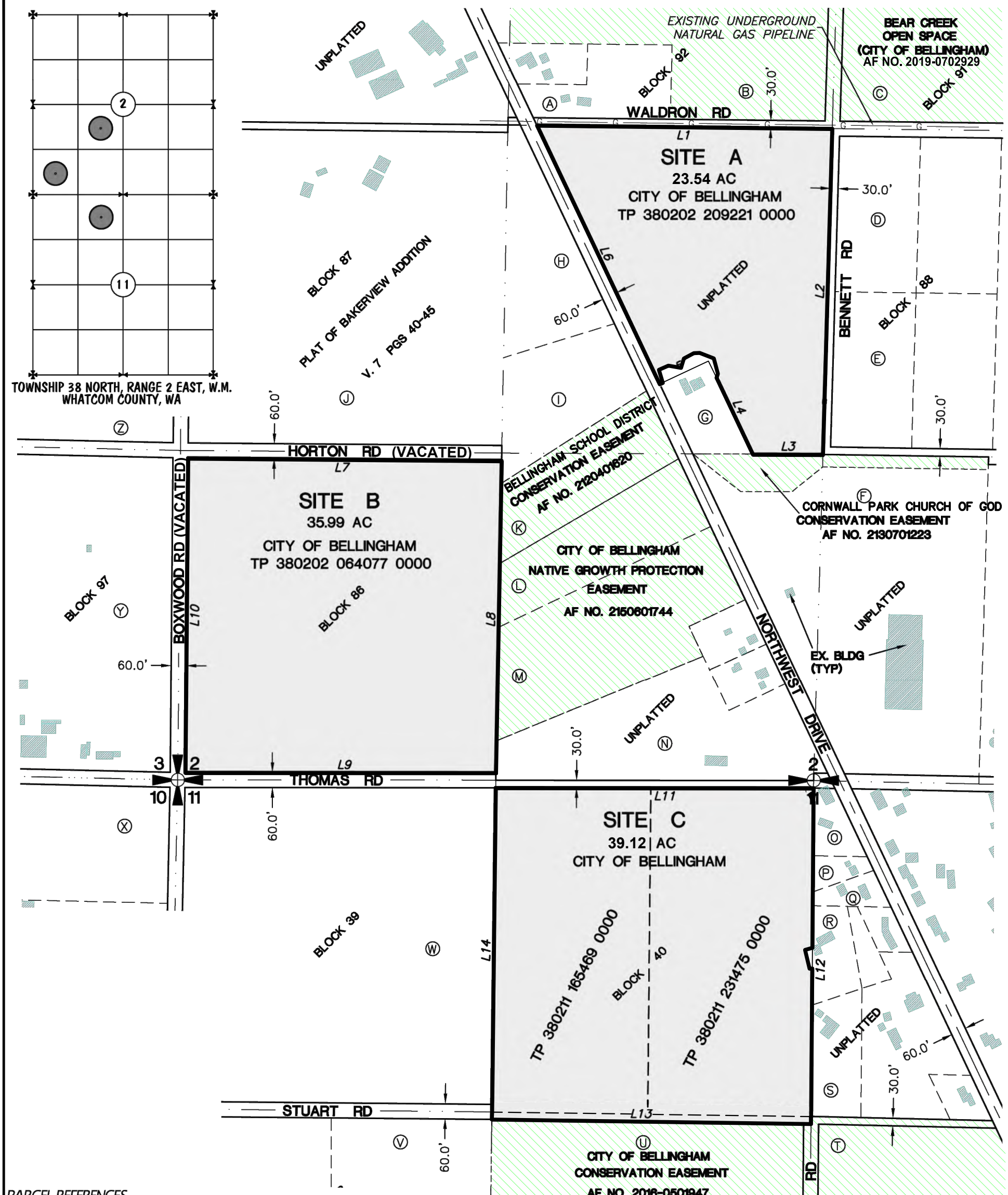
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Figure A.2
ZONING AND ADJACENT LAND USE
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.



PARCEL REFERENCES

LABEL	TAX PARCEL #	OWNER
Ⓐ	380202 173283	MONTGOMERY
Ⓑ	380202 150361	CITY OF BELLINGHAM
Ⓒ	380202 333346	CITY OF BELLINGHAM
Ⓓ	380202 281234	ARNHOLT LIVING TRUST
Ⓔ	380202 281171	ARNHOLT LIVING TRUST
Ⓕ	380202 282077	CORNWALL PARK CHURCH
Ⓖ	380202 214154	NEVAREZ
Ⓗ	380202 148213	GUNDERSON
Ⓘ	380202 160157	GUNDERSON
Ⓙ	380202 065211	NWROAD PROP. LLC
Ⓚ	380202 168123	BELLINGHAM SCHOOL DIST.
Ⓛ	380202 173095	CITY OF BELLINGHAM
Ⓜ	380202 179057	CITY OF BELLINGHAM

LABEL	TAX PARCEL #	OWNER
Ⓝ	380202 197020	IMHOF
Ⓞ	380211 307551	MEYER
Ⓟ	380211 305530	SMITH
Ⓠ	380211 315525	TROWSE
Ⓡ	380211 307500	BROSNAN/VIERLING
Ⓢ	380211 311459	DELAURA REV. TRUST
Ⓣ	380211 340415	MERSEY LLC
Ⓤ	380211 200375	CITY OF BELLINGHAM
Ⓥ	380211 098376	WARNER
Ⓦ	380211 063478	ELITE DEVELOPMENTS INC
Ⓧ	380210 470508	CYMBALUK
Ⓨ	380203 500077	DDJ INVESTMENTS LLC
Ⓩ	380203 425205	PORT OF BELLINGHAM

LEGEND:

Bank Boundaries 98.65 ac.

Parcel Boundary

Protected Mitigation Areas

NOTE(S):

1. Original figure referenced in the City of Bellingham Mitigation Bank, Bear Creek Corridor Mitigation Bank Site Baseline Conditions Report, prepared for the City of Bellingham by Water & Land Natural Resource Consulting, LLC, in collaboration with NW Ecological Services, Pacific Surveying and Engineering, and Essency Environmental, March 2022.

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Water & Land Natural Resource Consulting, LLC

PSE Pacific Surveying & Engineering

Essency Environmental

NW ECOLOGICAL SERVICES

DATE: 7/28/26
DWN: JLL
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PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.3
MITIGATION BANK BOUNDARY
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

CANADA

WRIA 1

Drayton Harbor

Birch Bay

Birch Bay

Nooksack River

Lower Nooksack Subbasin

Sumas River Subbasin

Canyon Cr

North Fork Nooksack

North Fork Subbasin

Chilliwack River Subbasin

Chilliwack River

Bank Boundaries

Lummi Bay Watershed

Silver Creek Watershed

Middle Fork Subbasin

Middle Fork Nooksack

MT BAKER

Bellingham Bay

Bellingham Bay

Lake Whatcom

South Fork Nooksack

South Fork Subbasin

Baker Lake

WHATCOM COUNTY

SKAGIT COUNTY

Samish Bay

Lake Shannon

LEGEND:

- WRIA 1
- Silver Creek Watershed
- Bank Boundaries
- Major Streams

Data Credits:
[Hydrology] WC / WA DNR
[Imagery] Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

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Feet

Watersheds

Bertrand	Kamm	Scott
Deer	Lower Anderson	Silver
Fazon	Nooksack Channel (water)	Smith
Fishtrap	Nooksack Deming to Everson	South Fork Anderson
Fourmile	North Fork Anderson	Ten Mile
	Schneider	Wiser Lake/Cougar Creek

NOTE(S):

1. Original figure referenced in the City of Bellingham Mitigation Bank, Bear Creek Corridor Mitigation Bank Site Baseline Conditions Report, prepared for the City of Bellingham by Water & Land Natural Resource Consulting, LLC, in collaboration with NW Ecological Services, Pacific Surveying and Engineering, and Essency Environmental, March 2022.

N W E S

SCALE AS SHOWN

Water & Land Natural Resource Consulting, LLC; PSE Pacific Surveying & Engineering; Essency Environmental; NW Ecological Services

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PROJECT NO: 3815.01

Figure A.4
WATERSHED MAP
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

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LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- Parcel Boundary
- Underground Natural Gas Pipeline
- OHWM
- Stream with Flow Direction
- Culvert
- Beaver Deceivers
- Protected Mitigation Areas
- Internal ROW Boundary (Vacated)
- 10' Utility Easement

NOTE(S):

1. Aerial from Google Earth™ (2022).
2. Wetland, Habitat and Streams from NES 2021.
3. Internal right-of-way (ROW) widths are measured off of Site C's Bank Boundaries (for vacated Bennett and Stuart Roads) and are represented in the legend and Site C by a red dashed line.
4. The 10' wide utility easement line is offset 10' from the Bennett and Stuart Road vacated ROW boundaries. All other 10' utility easement lines (southern boundary of Site B and northern boundary of Site C) are offset from the boundary of Thomas Road.

SITE A
Wetland Area - 13.07 ac.
Upland Area - 10.47 ac.
Total Site Area - 23.54 ac.

SITE B
Wetland Area - 21.12 ac.
Upland Area - 14.87 ac.
Total Site Area - 35.99 ac.

SITE C
Wetland Area - 25.13 ac.
Upland Area - 13.99 ac.
Total Site Area - 39.12 ac.

EXISTING CONDITIONS
Total Wetland Area - 59.33 ac.
Total Upland Area - 39.32 ac.
Total Site Area - 98.65 ac.

Existing Underground Natural Gas Pipeline
Bear Creek
City of Bellingham Bear Creek Open Space
Waldron Road ROW 30'
Northwest Drive ROW 60'
Bennett Road ROW 30'
Bear Creek
West Bear Creek
Horton Road ROW (Vacated) 60'
Utility Easement
10'
West Bear Creek
Unnamed Tributary to West Bear Creek
Boxwood Road ROW (Vacated) 60'
Utility Easement
Utility Easement
10'
Thomas Road ROW 60'
Bellingham School District Mitigation Site
Cornwall Park Church of God Mitigation Site
Bear Creek
Costco Mitigation Site (Land Owner: City of Bellingham)
Unnamed Tributary to Bear Creek
Thomas Road ROW 30'
10'
Utility Easement
10'
Utility Easement
Bear Creek
Bennett Road ROW (Vacated) 30'
See Notes 3 & 4
Utility Easement
10'
60' Stuart Road ROW (Vacated)
City Limits
Stuart Road ROW 60'
City of Bellingham Mitigation Site (NERP)
Mersey Mitigation Site

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Figure A.5
EXISTING CONDITIONS - OVERALL SITES
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

City of Bellingham
Bear Creek Open Space

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

Bennett Road ROW 30'

Northwest Drive ROW 60'

Bear Creek

Bellingham School District Mitigation Site

A

B

C

D

E

F

LEGEND:

- Bank Boundary: Site A - 23.54 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Wetland Area - 13.07 ac. (with Wetland Identifier)
- Upland Area - 10.47 ac.
- Stream with Flow Direction
- OHWM
- Culvert
- Protected Mitigation Areas
- Old Growth Trees
- Priority Snag
- Priority Log

NOTE(S):

1. Aerial from Google Earth™ (2022).
2. Wetlands, habitats and streams from NES 2021.
3. Parcel data from Whatcom County.

Site A Wetland Classification Summary

Wetland	Hydrogeomorphic Class	Cowardin Classification[1]	Ecology Category	Onsite Area[2] (acres)
A	Depressional- outflow	PFO1E, PSS1E	II	9.72
B	Depressional- outflow	PFO1E	II	0.21
C	Depressional- outflow	PFO1E, PSS1E, PEM1E	II	0.85
D	Depressional- outflow	PFO1E, PSS1E, PEM1E	II	0.19
E	Depressional/Riverine	PFO1E, PSS1E, PEM1E RSS1E, REM1E	II	1.92
F	Depressional- outflow	PFO1E, PSS1E	II	0.18
		Total Wetland Area		**13.07**
		Total Upland Area		**10.47**
		Total Site Area		**23.54**

[1]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, 1: broad-leaved deciduous, E: seasonally flooded/saturated

[2]All wetlands extend offsite.

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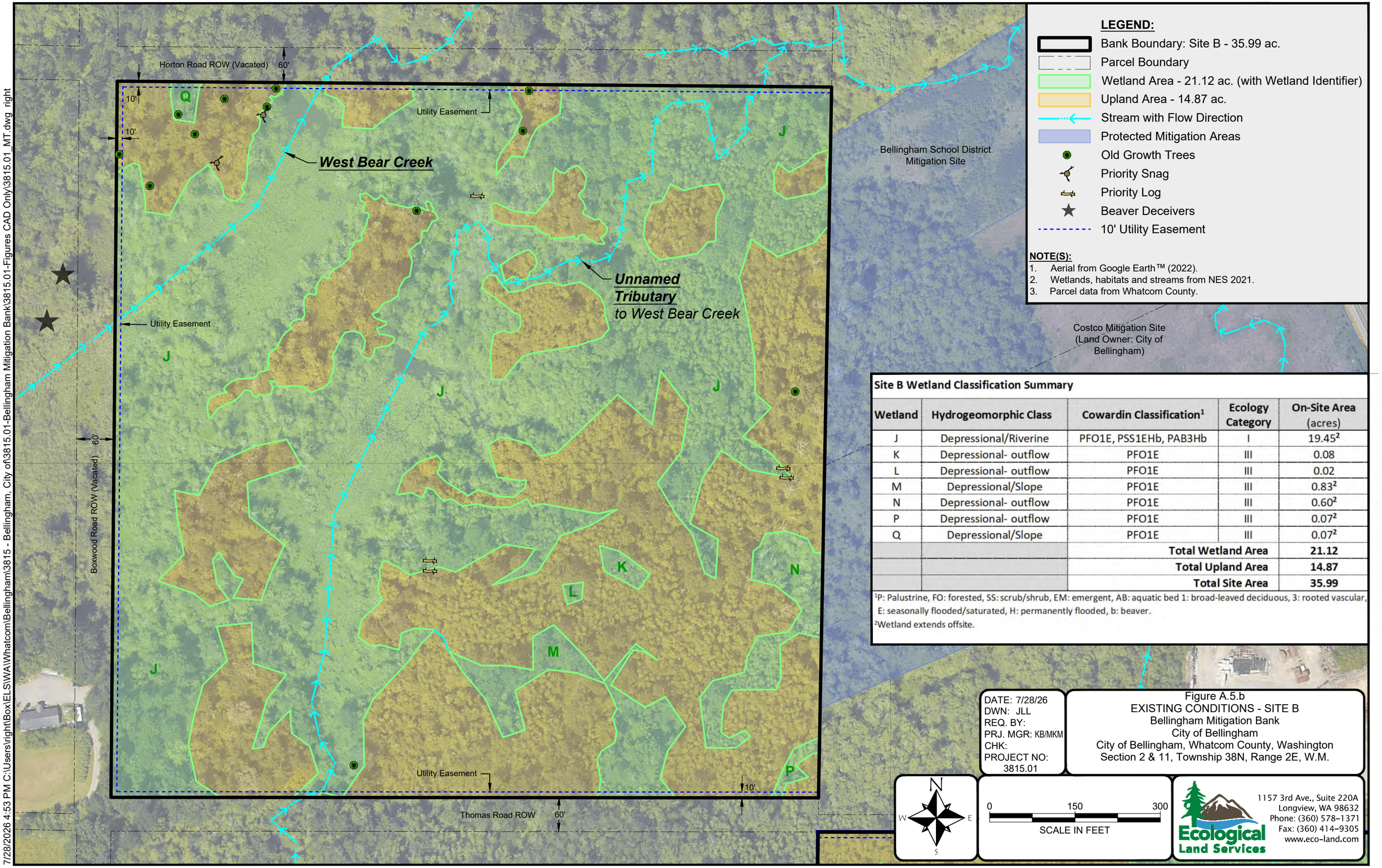
Figure A.5.a
EXISTING CONDITIONS - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

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Site B Wetland Classification Summary

Wetland	Hydrogeomorphic Class	Cowardin Classification[1]	Ecology Category	On-Site Area (acres)
J	Depressional/Riverine	PFO1E, PSS1EHb, PAB3Hb	I	19.45[2]
K	Depressional- outflow	PFO1E	III	0.08
L	Depressional- outflow	PFO1E	III	0.02
M	Depressional/Slope	PFO1E	III	0.83[2]
N	Depressional- outflow	PFO1E	III	0.60[2]
P	Depressional- outflow	PFO1E	III	0.07[2]
Q	Depressional/Slope	PFO1E	III	0.07[2]
		Total Wetland Area		**21.12**
		Total Upland Area		**14.87**
		Total Site Area		**35.99**

[1]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, AB: aquatic bed 1: broad-leaved deciduous, 3: rooted vascular, E: seasonally flooded/saturated, H: permanently flooded, b: beaver.

[2]Wetland extends offsite.

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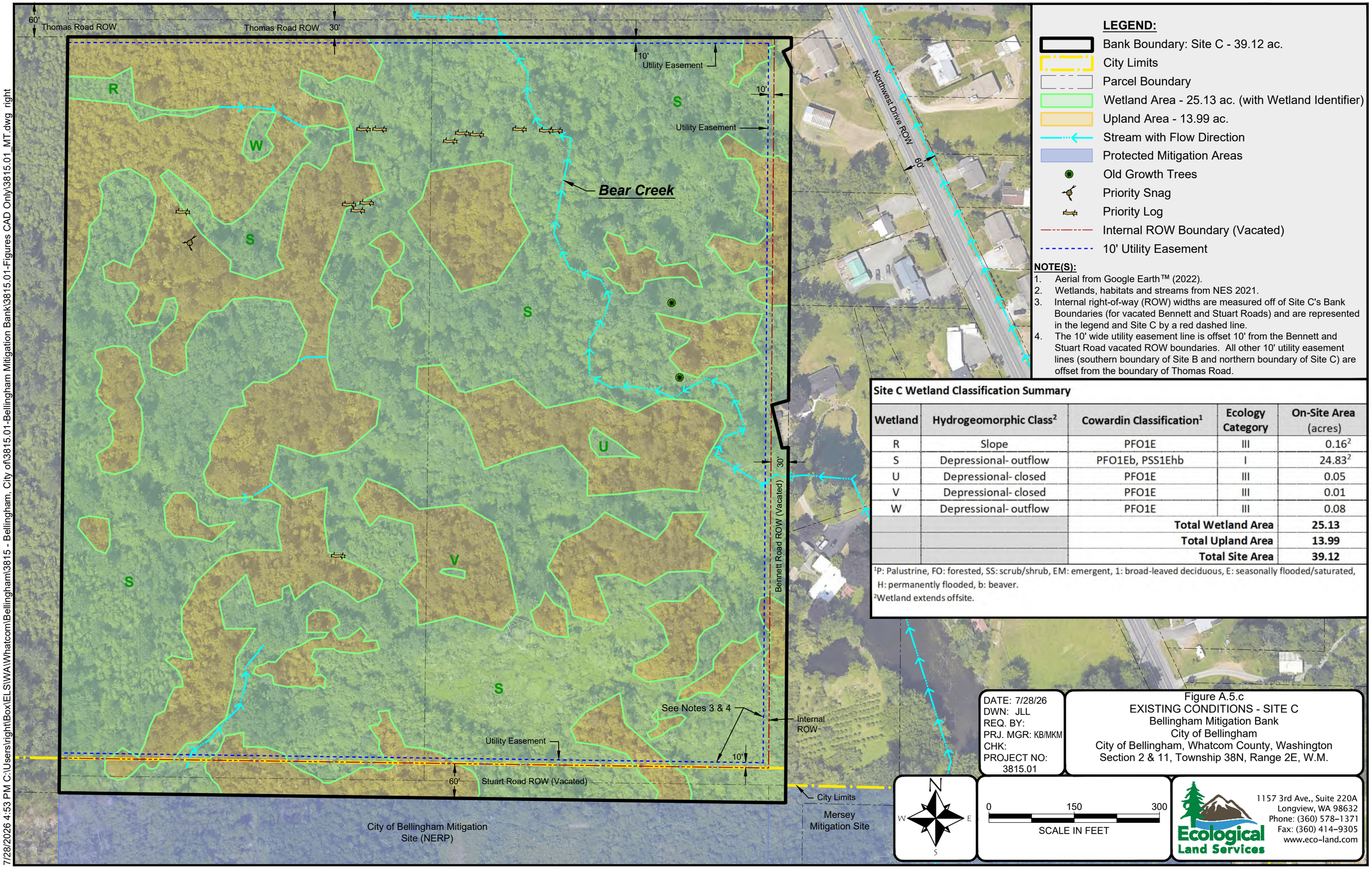
Figure A.5.b
EXISTING CONDITIONS - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

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LEGEND:

- Bank Boundary: Site C - 39.12 ac.
- City Limits
- Parcel Boundary
- Wetland Area - 25.13 ac. (with Wetland Identifier)
- Upland Area - 13.99 ac.
- Stream with Flow Direction
- Protected Mitigation Areas
- Old Growth Trees
- Priority Snag
- Priority Log
- Internal ROW Boundary (Vacated)
- 10' Utility Easement

NOTE(S):

1. Aerial from Google Earth™ (2022).
2. Wetlands, habitats and streams from NES 2021.
3. Internal right-of-way (ROW) widths are measured off of Site C's Bank Boundaries (for vacated Bennett and Stuart Roads) and are represented in the legend and Site C by a red dashed line.
4. The 10' wide utility easement line is offset 10' from the Bennett and Stuart Road vacated ROW boundaries. All other 10' utility easement lines (southern boundary of Site B and northern boundary of Site C) are offset from the boundary of Thomas Road.

Site C Wetland Classification Summary

Wetland	Hydrogeomorphic Class[2]	Cowardin Classification[1]	Ecology Category	On-Site Area (acres)
R	Slope	PFO1E	III	0.16[2]
S	Depressional- outflow	PFO1Eb, PSS1Ehb	I	24.83[2]
U	Depressional- closed	PFO1E	III	0.05
V	Depressional- closed	PFO1E	III	0.01
W	Depressional- outflow	PFO1E	III	0.08
		Total Wetland Area		**25.13**
		Total Upland Area		**13.99**
		Total Site Area		**39.12**

[1]P: Palustrine, FO: forested, SS: scrub/shrub, EM: emergent, 1: broad-leaved deciduous, E: seasonally flooded/saturated, H: permanently flooded, b: beaver.
[2]Wetland extends offsite.

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Figure A.5.c
EXISTING CONDITIONS - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

Ecological Land Services
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LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- Parcel Boundary
- Underground Natural Gas Pipeline
- OHWM
- Stream with Flow Direction
- Culvert
- Beaver Deceivers
- Internal ROW Boundary (Vacated)
- 10' Utility Easement
- 5' Contours

SITE A
Wetland Area - 13.07 ac.
Upland Area - 10.47 ac.
Total Site Area - 23.54 ac.

SITE B
Wetland Area - 21.12 ac.
Upland Area - 14.87 ac.
Total Site Area - 35.99 ac.

SITE C
Wetland Area - 25.13 ac.
Upland Area - 13.99 ac.
Total Site Area - 39.12 ac.

EXISTING CONDITIONS
Total Wetland Area - 59.33 ac.
Total Upland Area - 39.32 ac.
Total Site Area - 98.65 ac.

Existing Underground Natural Gas Pipeline
Waldron Road ROW 30'
Bear Creek
Northwest Drive ROW 60'
Bennett Road ROW 30'
West Bear Creek
Horton Road ROW (Vacated) 60'
Boxwood Road ROW (Vacated) 60'
Unnamed Tributary to West Bear Creek
Unnamed Tributary to Bear Creek
Thomas Road ROW 60'
Thomas Road ROW 30'
Bennett Road ROW (Vacated) 30'
City Limits
Stuart Road ROW 60'
60' Stuart Road ROW (Vacated)

150' 140' 130' 120' 110' 100' 90' 80' 70'

NOTE(S):
1. Wetland, Habitat and Streams from NES 2021.
2. Lidar from City of Bellingham, 2013.

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Figure A.6
OVERALL TOPOGRAPHY
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

Northwest Drive ROW 60'

Bennett Road ROW 30'

Bear Creek

A

B

C

D

E

F

90'

LEGEND:

- Bank Boundary: Site A - 23.54 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Wetland Area - 13.07 ac. (with Wetland Identifier)
- Upland Area - 10.47 ac.
- Stream with Flow Direction
- OHWM
- Culvert
- Old Growth Trees
- Priority Snag
- Priority Log

NOTE(S):

1. Wetlands, habitats and streams from NES 2021.
2. Parcel data from Whatcom County.

150'
140'
130'
120'
110'
100'
90'
80'
70'

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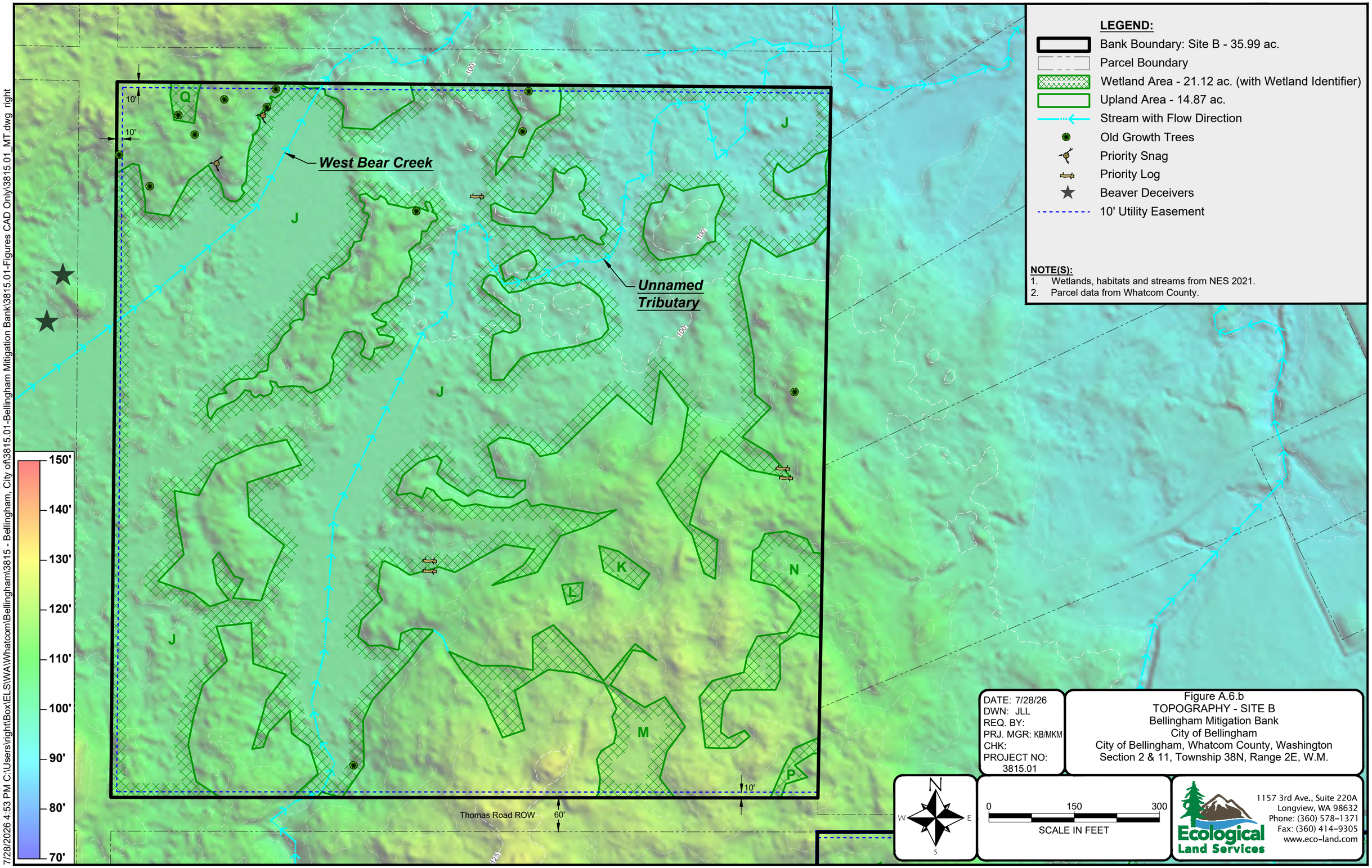
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SCALE IN FEET

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.6.a
TOPOGRAPHY - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

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LEGEND:
Bank Boundary: Site B - 35.99 ac.
Parcel Boundary
Wetland Area - 21.12 ac. (with Wetland Identifier)
Upland Area - 14.87 ac.
Stream with Flow Direction
Old Growth Trees
Priority Snag
Priority Log
Beaver Deceivers
10' Utility Easement
NOTE(S):
1. Wetlands, habitats and streams from NES 2021.
2. Parcel data from Whatcom County.
West Bear Creek
Unnamed Tributary
Q
J
K
L
M
N
P
10'
100'
Thomas Road ROW
60'
150'
140'
130'
120'
110'
100'
90'
80'
70'
DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01
Figure A.6.b
TOPOGRAPHY - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.
N
W
E
S
0
150
300
SCALE IN FEET
Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
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60' Thomas Road ROW

Thomas Road ROW 30'

10'

10'

95'

95'

95'

Northwest Drive ROW

60'

R

W

S

S

S

S

V

U

100'

100'

115'

Bear Creek

30'

Bennett Road ROW (Vacated)

Internal ROW

10'

60'

Stuart Road ROW (Vacated)

City Limits

LEGEND:

- Bank Boundary: Site C - 39.12 ac.
- City Limits
- Parcel Boundary
- Wetland Area - 25.13 ac. (with Wetland Identifier)
- Upland Area 13.99 ac.
- Stream with Flow Direction
- Old Growth Trees
- Priority Snag
- Priority Log
- Internal ROW Boundary (Vacated)
- 10' Utility Easement

NOTE(S):

1. Wetlands, habitats and streams from NES 2021.
2. Parcel data from Whatcom County.

150'
140'
130'
120'
110'
100'
90'
80'
70'

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SCALE IN FEET

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.6.c
TOPOGRAPHY - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

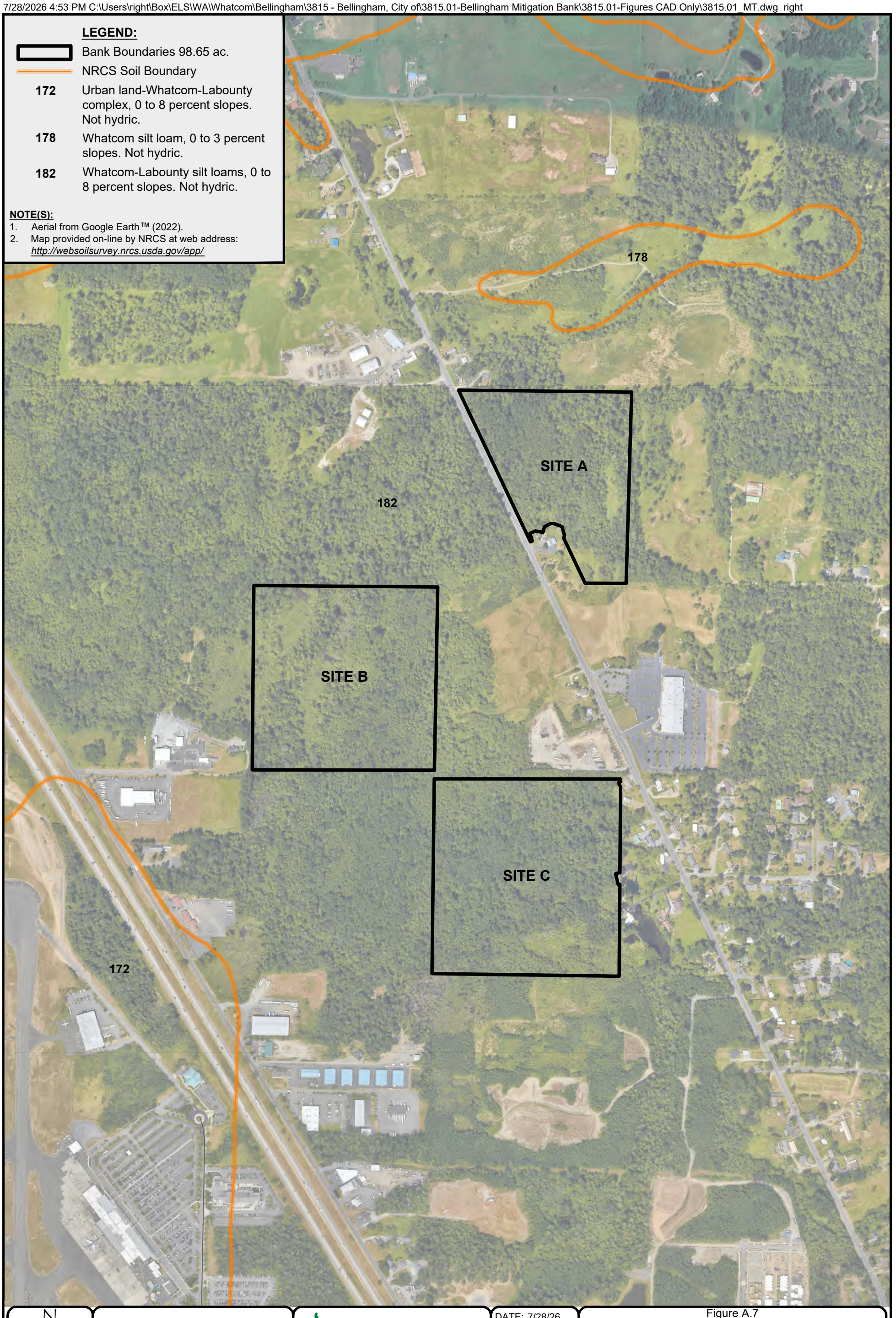
Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

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LEGEND:

	Bank Boundaries 98.65 ac.
	NRCS Soil Boundary
172	Urban land-Whatcom-Labounty complex, 0 to 8 percent slopes. Not hydric.
178	Whatcom silt loam, 0 to 3 percent slopes. Not hydric.
182	Whatcom-Labounty silt loams, 0 to 8 percent slopes. Not hydric.

NOTE(S):
1. Aerial from Google Earth™ (2022).
2. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*



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0 600 1200
SCALE IN FEET

Ecological Land Services
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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.7
NRCS SOIL SURVEY
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- UGA Boundary
- Important Wildlife Habitat Areas
- Movement Barriers
- Important Wildlife Corridors

NOTE(S):

1. Aerial from Google Earth™ (2022).
2. Wildlife features from 2021 Wildlife Corridor Analysis: Methods Summary & Results for City of Bellingham, prepared by Diamond Head Consulting.

UGA Boundary

SITE A

SITE B

SITE C

UGA Boundary

City Limits

City Limits

N

W E

S

0 600 1200

SCALE IN FEET

Ecological Land Services
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Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.8
WILDLIFE HABITAT AREAS AND HABITAT HUBS
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- UGA Boundary
- >60 yr old Deciduous Forest with some Conifers
- >45 yr old Deciduous Forest
- +/- 35 yr old Deciduous Forest

NOTE(S):

1. Aerial from City of Bellingham (1997).

UGA Boundary

>45 yr old Deciduous Forest

>60 yr old Deciduous Forest with some Conifers

SITE A

>60 yr old Deciduous Forest with some Conifers

SITE B

+/- 35 yr old Deciduous Forest

>60 yr old Deciduous Forest with some Conifers

SITE C

+/- 35 yr old Deciduous Forest

City Limits

N W E S

0 300 600

SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure A.9
FOREST AGE CLASSES
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

EXHIBIT A

Legal Description and Survey Exhibits

LEGAL DESCRIPTION
OF
BELLINGHAM MITIGATION BANK BOUNDARY DESCRIPTION

SITE A

THAT PORTION OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST OF W.M., LYING NORTHEASTERLY OF THE NORTHWEST DIAGONAL ROAD, NOW KNOWN AS NORTHWEST DRIVE, EXCEPT THE RIGHT-OF-WAY OF SAID NORTHWEST DRIVE.

EXCEPT THEREFROM THE FOLLOWING DESCRIBED TRACT:

BEGINNING AT A POINT WHERE THE NORTHEASTERLY RIGHT-OF-WAY LINE OF THE NORTHWEST DIAGONAL ROAD, NOW KNOWN AS NORTHWEST DRIVE, CROSSES THE SOUTH LINE OF SAID NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 2; THENCE NORTHWESTERLY ALONG SAID NORTHEASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 310 FEET; THENCE NORTHEASTERLY, PERPENDICULAR TO SAID NORTHWEST DIAGONAL ROAD, A DISTANCE OF 217 FEET; THENCE SOUTHEASTERLY ALONG A LINE PARALLEL WITH THE NORTHEASTERLY RIGHT-OF-WAY LINE OF SAID NORTHWEST DIAGONAL ROAD TO A POINT ON THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 2; THENCE WESTERLY ALONG THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 2, TO THE POINT OF BEGINNING.

ALSO EXCEPT AN AREA OF ENCROACHMENT OF A PRIVATE FENCE, PORTIONS OF A PRIVATE LAWN, AND A PRIVATE SHED WITHIN A PORTION OF ABOVE DESCRIBED SITE MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHWEST CORNER OF SAID SITE A, BEING ALSO A POINT ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF NORTHWEST DRIVE;
THENCE DEPARTING SAID NORTHEASTERLY RIGHT-OF-WAY LINE BEARING NORTH 64°37'16" EAST ALONG THE BOUNDARY LINE OF SAID SITE A, A DISTANCE OF 13.51 FEET (L1) TO THE **POINT OF BEGINNING**;
THENCE NORTH 16°27'11" WEST A DISTANCE OF 54.85 FEET (L2);
THENCE NORTH 66°29'30" EAST A DISTANCE OF 41.35 FEET (L3);
THENCE SOUTH 79°58'23" EAST A DISTANCE OF 51.24 FEET (L4);
THENCE NORTH 16°49'57" EAST A DISTANCE OF 39.33 FEET (L5);
THENCE NORTH 61°54'51" EAST A DISTANCE OF 45.50 FEET (L6);
THENCE NORTH 88°08'44" EAST A DISTANCE OF 23.12 FEET (L7);
THENCE SOUTH 69°04'08" EAST A DISTANCE OF 60.67 FEET (L8);
THENCE SOUTH 14°58'05" EAST A DISTANCE OF 63.78 FEET (L9);
THENCE SOUTH 18°41'40" WEST A DISTANCE OF 16.98 FEET (L10) TO THE SOUTHWESTERLY SHARED LOT LINE BETWEEN SITE A AND THAT ABUTTING PARCEL OF LAND AS DESCRIBED IN S.W.D RECORDED UNDER WHATCOM COUNTY AUDITOR'S FILE NO. 2120903076.;
THENCE NORTH ALONG SAID SOUTHWESTERLY LINE OF SITE A BEARING NORTH 25°22'23" WEST, MORE OR LESS, A DISTANCE OF 73.60 FEET (L11), TO AN INTERIOR CORNER OF SITE A, BEING ALSO THE NORTHERLY CORNER OF SAID ABUTTING PARCEL OF LAND, AS DESCRIBED IN S.W.D RECORDED UNDER WHATCOM COUNTY AUDITOR'S FILE NO. 2120903076.;
THENCE SOUTH 64°37'16" WEST A DISTANCE OF 203.24 FEET (L12), MORE OR LESS, TO THE **POINT OF BEGINNING**;

SITUATE IN WHATCOM COUNTY, WASHINGTON.

ENCROACHMENT AREA CONTAINING APPROXIMATELY 10,624 SQ. FT.
OVERALL SITE A BANK BOUNDARY NOT INCLUDING ENCROACHMENT AREA **23.54 ACRES**

SITE B

BLOCK 86, PLAT OF BAKER VIEW ADDITION TO THE CITY OF BELLINGHAM, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 7 OF PLATS, PAGES 40 TO 45, INCLUSIVE, RECORDS OF WHATCOM COUNTY, WASHINGTON.

SITUATE IN WHATCOM COUNTY, WASHINGTON.
OVERALL SITE B BANK BOUNDARY **35.99 ACRES**

SITE C

BLOCK 40, PLAT OF BAKER VIEW ADDITION TO THE CITY OF BELLINGHAM, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 7 OF PLATS, PAGES 40 TO 45, INCLUSIVE, RECORDS OF WHATCOM COUNTY, WASHINGTON;

TOGETHER WITH VACATED BENNETT STREET ABUTTING, AS WOULD ATTACH BY OPERATION OF LAW, AND AS VACATED UNDER VOLUME 42 OF WHATCOM COUNTY COMMISSIONER'S PROCEEDINGS, PAGE 563.

TOGETHER WITH ALL THAT PORTION OF STUART ROAD (FULL 60' IN WIDTH) AS VACATED THROUGH OPERATION OF LAW, BY CITY OF BELLINGHAM ORDINANCE NO. 2021-09-034 RECORDED UNDER AUDITOR'S FILE NO. 2021-1002455, RECORDS OF WHATCOM COUNTY, WASHINGTON.

EXCEPT AN AREA OF ENCROACHMENT OF A PRIVATE FENCE WITHIN A PORTION OF ABOVE DESCRIBED SITE C, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT THE NORTHEAST CORNER OF SAID SITE C;
THENCE SOUTH ALONG THE EASTERLY LINE OF SAID SITE C, BEARING SOUTH 0°26'06" WEST A DISTANCE OF 17.53 FEET TO A POINT ON THE EASTERLY LINE OF SAID SITE C, BEING ALSO THE **POINT OF BEGINNING**;
THENCE DEPARTING SAID EASTERLY LINE BEARING SOUTH 63°38'29" WEST A DISTANCE OF 16.11 FEET;
THENCE SOUTH 26°07'38" EAST A DISTANCE OF 32.16 FEET, MORE OR LESS, TO SAID EASTERLY LINE OF SITE C;
THENCE NORTH 0°26'06" EAST ALONG SAID EASTERLY LINE A DISTANCE OF 36.03 FEET, MORE OR LESS, TO THE **POINT OF BEGINNING**.

ALSO EXCEPT AN AREA OF ENCROACHMENT OF A PRIVATE FENCE, A PRIVATE SHED, AND A GRAVEL AREA WITHIN A PORTION OF ABOVE DESCRIBED SITE C, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT THE NORTHEAST CORNER OF SAID SITE C; THENCE SOUTH ALONG THE EASTERLY LINE OF SAID SITE C, BEARING SOUTH 00°26'06" WEST A DISTANCE OF 637.85 FEET TO A POINT ON THE EASTERLY LINE OF SAID SITE C, BEING ALSO THE **POINT OF BEGINNING**; THENCE DEPARTING SAID EASTERLY LINE BEARING SOUTH 74°08'59" WEST A DISTANCE OF 30.68 FEET;
THENCE SOUTH 13°23'30" EAST A DISTANCE OF 77.45 FEET;
THENCE NORTH 85°38'54" EAST A DISTANCE OF 10.97 FEET, MORE OR LESS, TO SAID EASTERLY LINE OF SITE C;
THENCE NORTH 00°26'06" EAST ALONG SAID EASTERLY LINE A DISTANCE OF 82.90 FEET, MORE OR LESS, TO THE **POINT OF BEGINNING**.

SITUATE IN WHATCOM COUNTY, WASHINGTON.

TOTAL ENCROACHMENT AREAS CONTAINING APPROXIMATELY 1,876 SQ. FT.
OVERALL SITE C BANK BOUNDARY NOT INCLUDING ENCROACHMENT AREAS **39.12 ACRES**

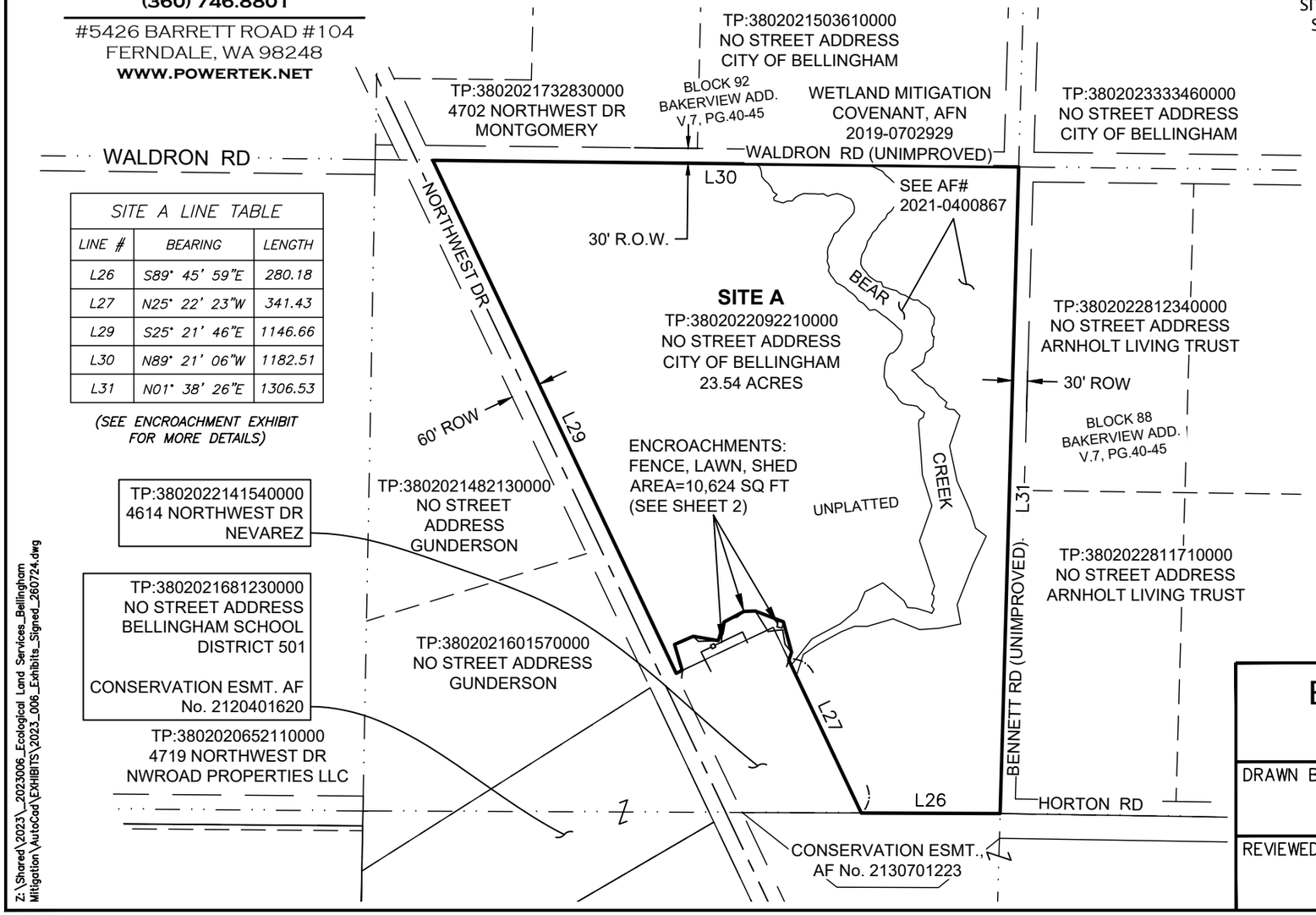
PowerTek Surveying
Job# 2023006
July 28, 2026

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(360) 746.8801
#5426 BARRETT ROAD #104
FERNDALE, WA 98248
WWW.POWERTEK.NET

BELLINGHAM MITIGATION BANK: SITE A

SITUATE IN A PORTION OF THE NE 1/4 OF THE SW 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON.





SITE A LINE TABLE		
LINE #	BEARING	LENGTH
L26	S89° 45' 59"E	280.18
L27	N25° 22' 23"W	341.43
L29	S25° 21' 46"E	1146.66
L30	N89° 21' 06"W	1182.51
L31	N01° 38' 26"E	1306.53

(SEE ENCROACHMENT EXHIBIT FOR MORE DETAILS)

SUBDIVISION GUARANTEE POLICY No. 81030-228366619, WLT ORDER No. W-186946 SCHEDULE "A" AFFECTING SITE "A" AUGUST 10, 2022

0 300 600

SCALE: 1" = 300'

BELLINGHAM MITIGATION BANK: SITE A

DRAWN BY:	DATE:	JOB NO.:
GDM	7/28/2026	2023_006
REVIEWED BY:	SCALE:	SHEET:
JJD	1" = 300'	1 OF 2 – SITE A

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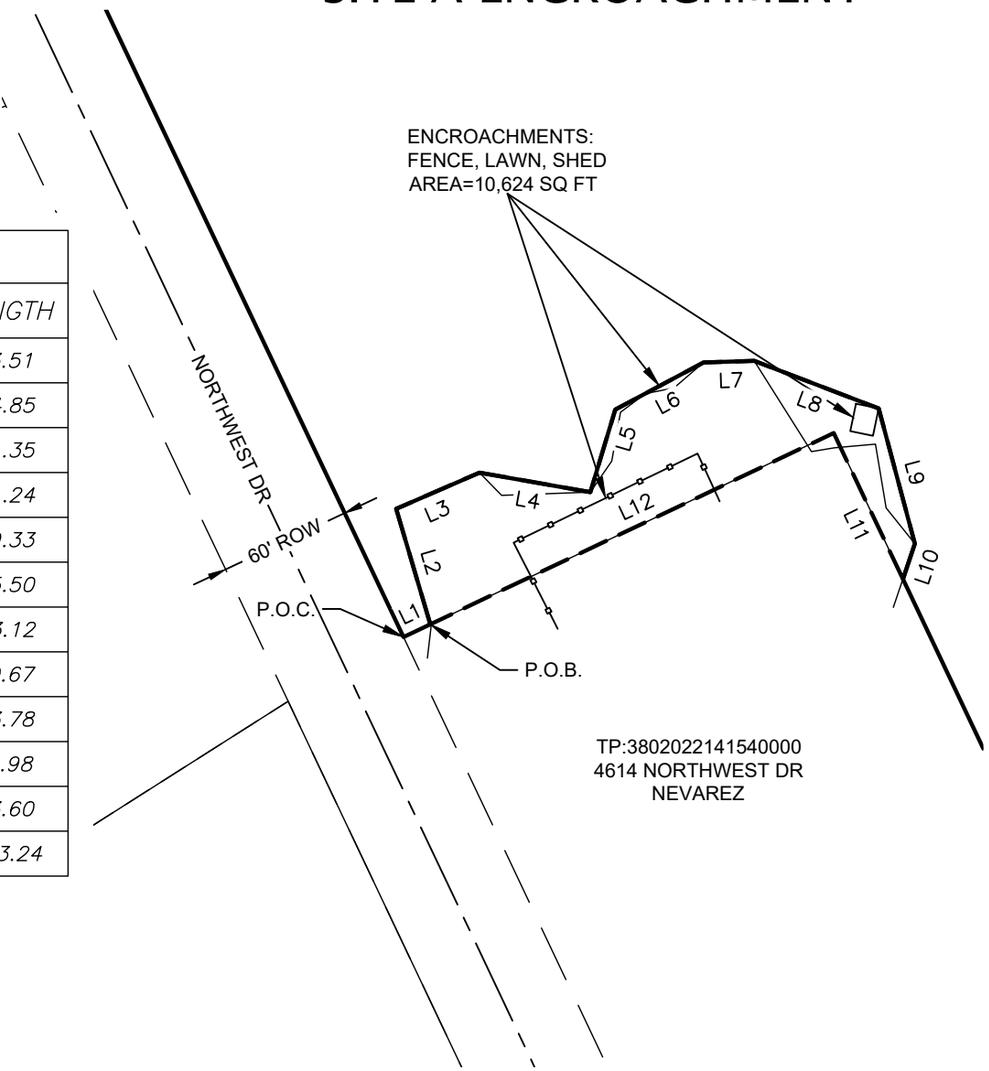
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"SITE A ENCROACHMENT"

BELLINGHAM MITIGATION BANK: SITE A

SITUATE IN A PORTION OF THE NE 1/4 OF THE SW 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON.

EXHIBIT LINE TABLE		
LINE #	BEARING	LENGTH
L1	N64° 37' 16"E	13.51
L2	N16° 27' 11"W	54.85
L3	N66° 29' 30"E	41.35
L4	S79° 58' 23"E	51.24
L5	N16° 49' 57"E	39.33
L6	N61° 54' 51"E	45.50
L7	N88° 08' 44"E	23.12
L8	S69° 04' 08"E	60.67
L9	S14° 58' 05"E	63.78
L10	S18° 41' 40"W	16.98
L11	N25° 22' 23"W	73.60
L12	S64° 37' 16"W	203.24



TP:3802022141540000
4614 NORTHWEST DR
NEVAREZ

JEREMY J. DISCH
STATE OF WASHINGTON
44629
REGISTERED
PROFESSIONAL LAND SURVEYOR
7/28/2026

N

0 80 160

SCALE: 1" = 80'

BELLINGHAM MITIGATION BANK: SITE A

DRAWN BY:	DATE:	JOB NO.:
GDM	7/28/2026	2023_006
REVIEWED BY:	SCALE:	SHEET:
JJD	1" = 80'	2 OF 2 – SITE A

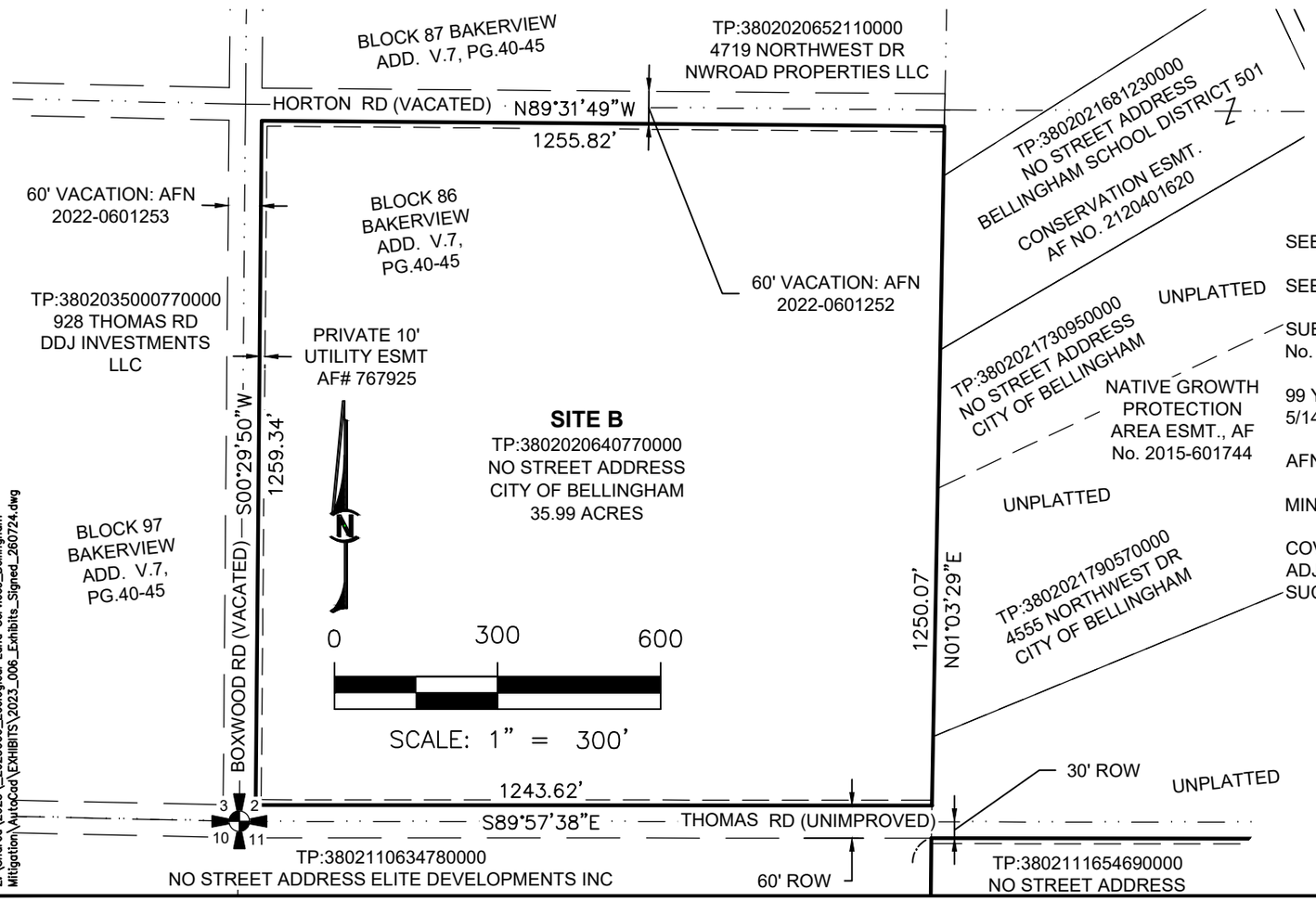
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BELLINGHAM MITIGATION BANK: SITE B

SITUATE IN A PORTION OF THE NE 1/4 OF THE SW 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON.

JEREMY J. DISCH
STATE OF WASHINGTON
44629
REGISTERED
PROFESSIONAL LAND SURVEYOR
7/28/2026



SEE SEWER EASEMENT, AFN 901104 PER SUBDIVISION GUARANTEE.

SEE ACCESS EASEMENT AFN 2026-0602220.

SUBDIVISION GUARANTEE POLICY No. 81030-228366619, WLT ORDER No. W-186946 SCHEDULE "A" AFFECTING SITE "B". AUGUST 10, 2022

99 YEAR OIL & GAS LEASE AGREEMENT AFN 495191, RECORDED 5/14/1938.

AFN 767925 PARTIALLY UNREADABLE. DOES APPLY TO THIS BLOCK 86.

MINERAL RIGHTS, AGREEMENT AFN 532668, RECORDED 8/20/1940.

COVENANTS, AFN 767925, INCLUDING A STRIP OF LAND 10' IN WIDTH ADJOINING THE ROAD(S) ABUTTING THE PROPERTY 2/08/1954. SUCCESSIVE CONVEYANCES ARE AFN'S 1550336 AND 2081201713.

BELLINGHAM MITIGATION BANK: SITE B		
DRAWN BY: GDM	DATE: 7/28/2026	JOB NO.: 2023_006
REVIEWED BY: JJD	SCALE: 1" = 300'	SHEET: 1 OF 1 – SITE B

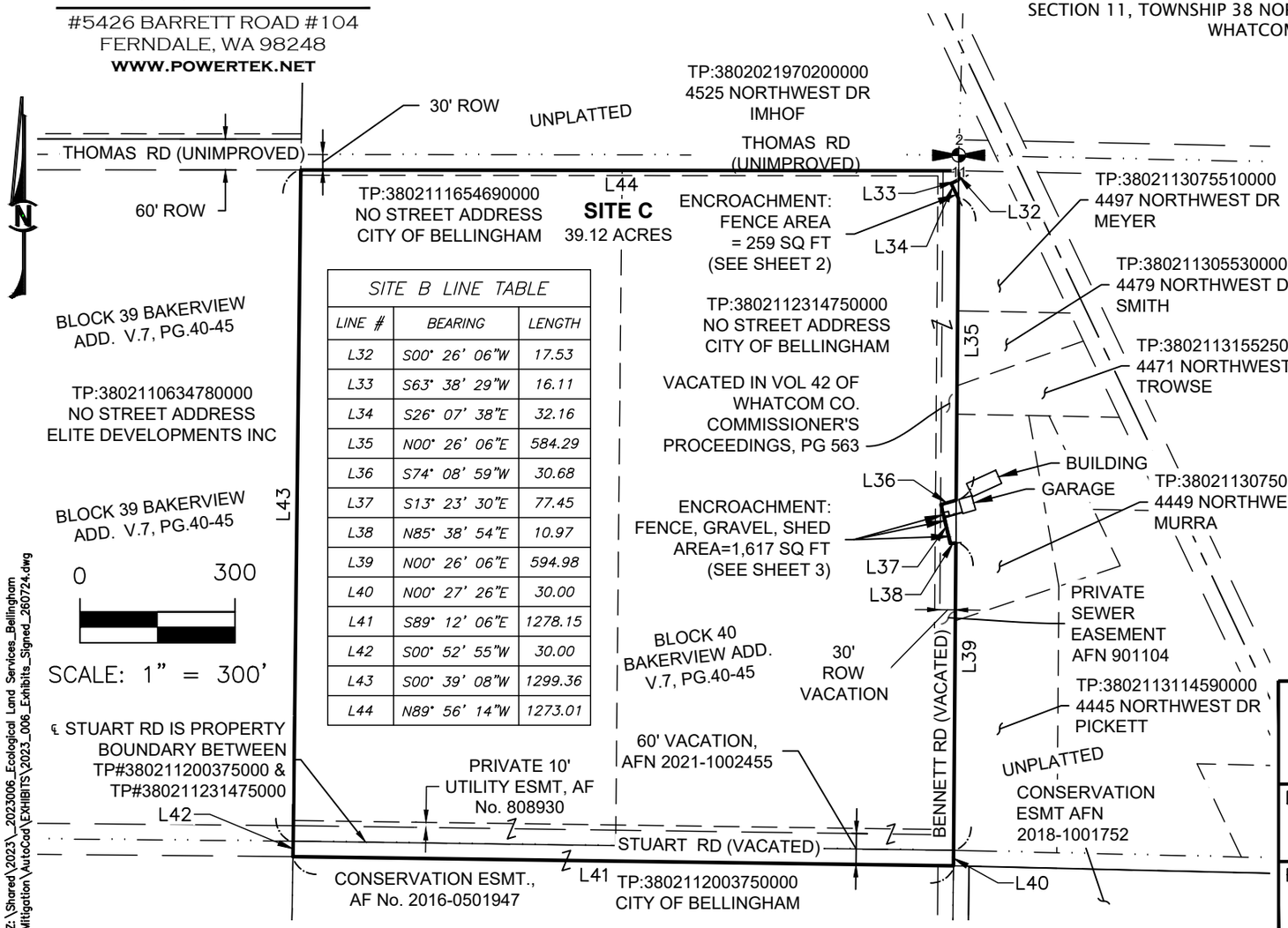
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BELLINGHAM MITIGATION BANK: SITE C

SITUATE IN A PORTION OF THE NE 1/4 OF THE SW 1/4 OF SECTION 11, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON.

JEREMY J. DISCH
STATE OF WASHINGTON
44629
REGISTERED
PROFESSIONAL LAND SURVEYOR
7/28/2026



SITE B LINE TABLE		
LINE #	BEARING	LENGTH
L32	S00° 26' 06"W	17.53
L33	S63° 38' 29"W	16.11
L34	S26° 07' 38"E	32.16
L35	N00° 26' 06"E	584.29
L36	S74° 08' 59"W	30.68
L37	S13° 23' 30"E	77.45
L38	N85° 38' 54"E	10.97
L39	N00° 26' 06"E	594.98
L40	N00° 27' 26"E	30.00
L41	S89° 12' 06"E	1278.15
L42	S00° 52' 55"W	30.00
L43	S00° 39' 08"W	1299.36
L44	N89° 56' 14"W	1273.01

SEE SEWER EASEMENT, AFN 901104 PER SUBDIVISION GUARANTEE.

SEE ACCESS EASEMENT AFN 2026-0602220.

SUBDIVISION GUARANTEE POLICY No. 81030-228366619, WLT ORDER No. W-186946 SCHEDULE "A" AFFECTING SITE "C". AUGUST 10, 2022

MINERAL RIGHTS, AGREEMENT AFN 532668, RECORDED 8/20/1940.

AGREEMENT OF SALE, AFN 808930. 10' UTILITY EASEMENT ADJOINING OR ABUTTING THE ROADS.

MINERAL RIGHTS SUCCESSIVE CONVEYANCES AFN 1550336 AND QUIT CLAIM DEED AFN 2081201713.

OIL AND GAS AFN 480404 NORTH HALF OF SITE "C" ONLY.
OIL AND GAS AFN 480692 SOUTH HALF OF SITE "C" ONLY.

BELLINGHAM MITIGATION BANK: SITE C

DRAWN BY:	DATE:	JOB NO.:
GDM	7/28/2026	2023_006
REVIEWED BY:	SCALE:	SHEET:
JJD	1" = 300'	1 OF 3 – SITE C

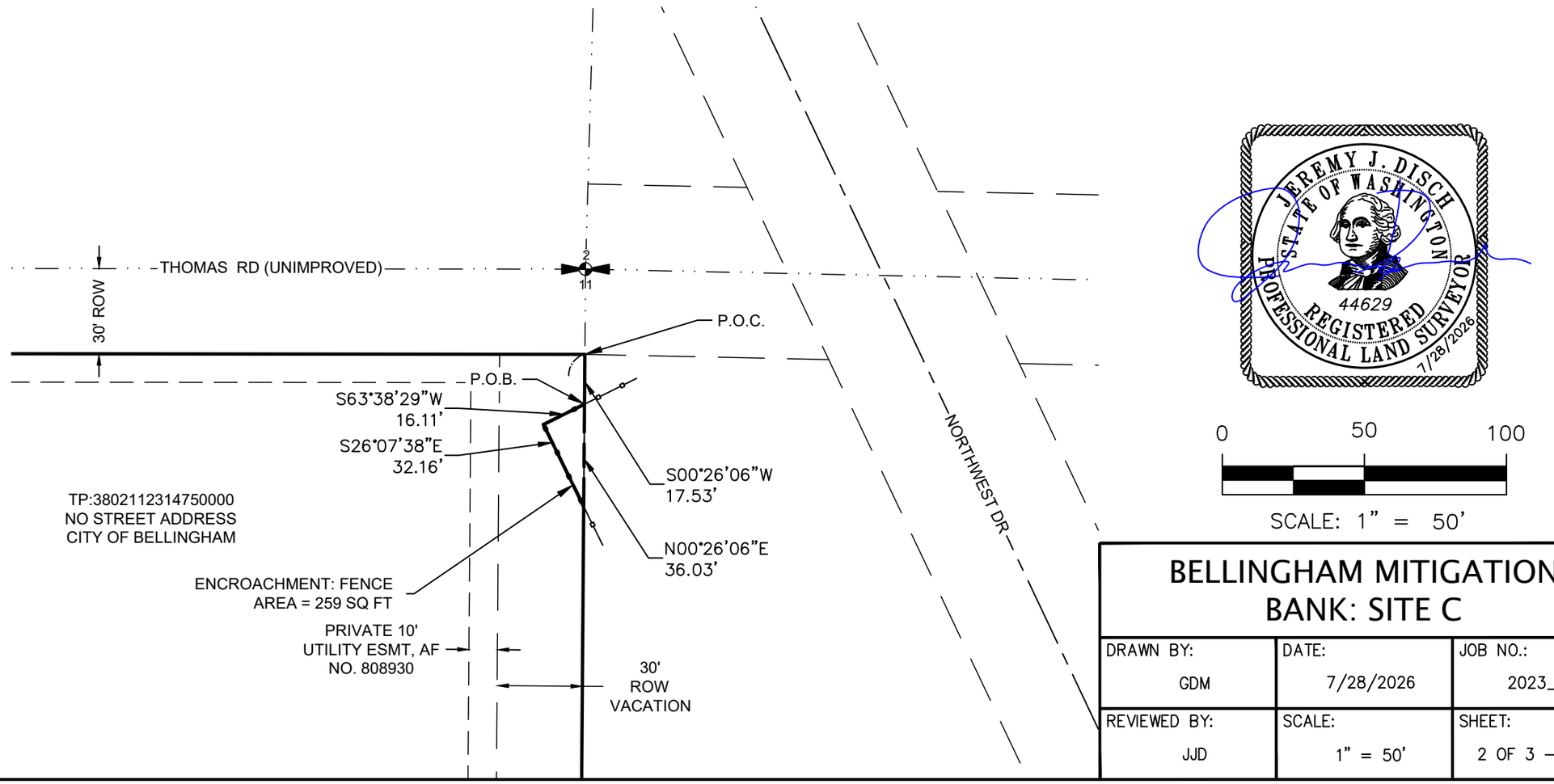
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"SITE C ENCROACHMENT, NORTHEAST"

BELLINGHAM MITIGATION BANK: SITE C

SITUATE IN A PORTION OF THE SW 1/4 OF THE SW 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M, WHATCOM COUNTY, WASHINGTON.





SCALE: 1" = 50'

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BELLINGHAM MITIGATION BANK: SITE C

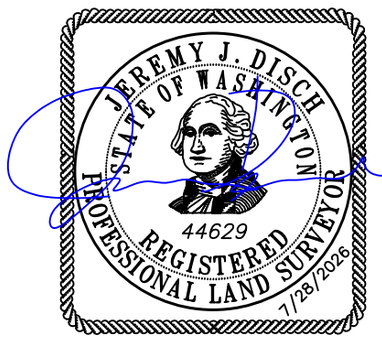
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REVIEWED BY: JJD	SCALE: 1" = 50'	SHEET: 2 OF 3 – SITE C

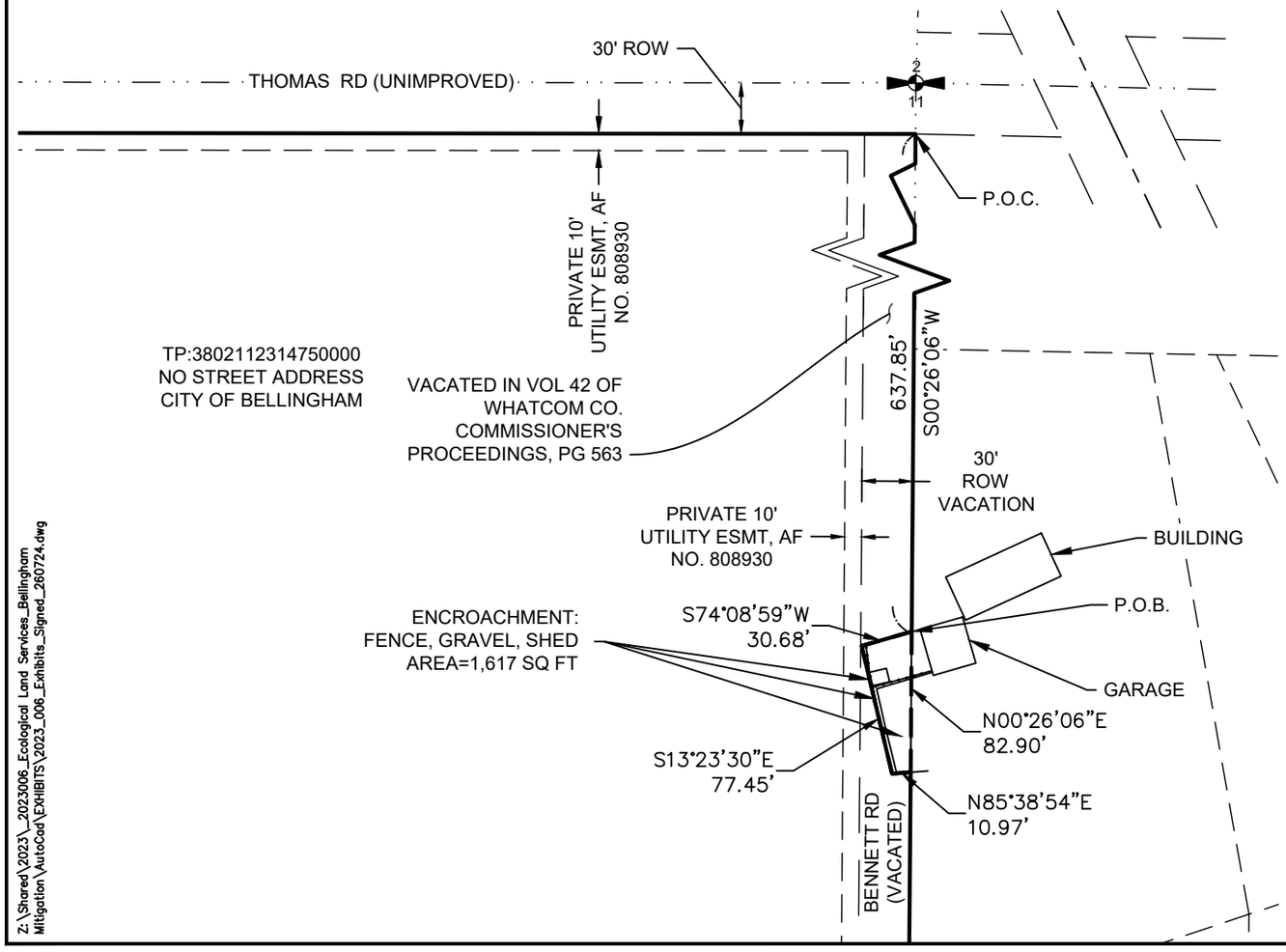
POWERTEK SURVEYING
(360) 746.8801
#5426 BARRETT ROAD #104
FERNDALE, WA 98248
WWW.POWERTEK.NET

"SITE C ENCROACHMENT, EAST"

BELLINGHAM MITIGATION BANK: SITE C

SITUATE IN A PORTION OF THE SW 1/4 OF THE SW 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON.







SCALE: 1" = 100'

BELLINGHAM MITIGATION BANK: SITE C		
DRAWN BY: GDM	DATE: 7/28/2026	JOB NO.: 2023_006
REVIEWED BY: JJD	SCALE: 1" = 100'	SHEET: 3 OF 3 – SITE C

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APPENDIX B

BANK DEVELOPMENT PLAN AND DESIGN

B.1 Development Plan – Overview

The ecological goals of the Bank are to protect 98.65 acres of wetland, stream, riparian, and forested upland habitat and to accelerate ecological succession to a self-sustaining, mixed deciduous-coniferous forest and stable forest community, thereby improving the overall ecosystem functions within the larger Bear Creek sub-watershed. Establishing the Bank in this increasingly urbanized area would contribute to the City of Bellingham's (City) habitat restoration priorities and regional planning goals of providing a protected, contiguous, and highly ecologically functioning forested wildlife corridor within the City's Urban Growth Area (UGA; Diamond Head Consulting 2022; BHRTA 2015).

The Bank's ecological goals are intended to be accomplished by:

- **Permanently protecting** ecosystem functions within the Bank by implementing the Instrument and providing protection in perpetuity through execution of a conservation easement;
- **Enhancing** wetlands and forested uplands with native conifers to accelerate the Bank's ecological succession to a self-sustaining mixed deciduous-coniferous forest, assist in competition with invasive plants, and improve species diversity, habitat structure, and large woody material recruitment over existing conditions;
- **Enhancing** riparian upland along a short segment of Bear Creek with a dense native forest and shrub plant community to assist in competition with invasive plants, increase habitat structure and species diversity, increase stream shade and moderate in-water temperatures, and provide overhanging vegetation for aquatic habitat cover, macroinvertebrates food sources, and organic material inputs to the stream; and
- **Preserving** headwater wetlands, streams, riparian, and interconnected upland habitat to protect high-quality, interconnected wetland and forested upland habitats within the Bank that are a part of a regionally important, undeveloped biodiversity corridor[1].

Non-credit generating perimeter buffers will extend along the interior of the Bank boundaries, except for boundaries that abut offsite legally protected mitigation areas. The Bank will be protected in perpetuity with a conservation easement.

B.1.1 Summary of Design Elements

The Bank has two proposed mitigation methods—preservation and enhancement. Preservation comprises 55.82 acres or 57 percent of the total Bank area, and enhancement comprises 42.83 acres or 43 percent of the total Bank area. Specifically, the preservation encompasses 42.39 acres of wetland and 13.43 acres of upland. The enhancement encompasses 16.93 acres of wetland and 25.90 acres of upland

[1] Although the area is not mapped by the Washington Department of Fish & Wildlife, it meets the WDFW definition of a Priority Habitat and Species Biodiversity Area and Corridor (2023), as cited in NES 2021.

(including the forested uplands and riparian upland areas combined). The activities to complete preservation and enhancement are summarized below.

B.1.2 Preservation

The Bank will preserve 55.82 acres of Palustrine Forested Wetland and Forested Upland plant communities across Sites A, B, and C (**Figure B.1**). These preservation areas are well vegetated with native trees and shrubs and have a mosaic of wetland and upland habitats, including wetlands with beaver pond complexes that contribute to maintaining biodiversity and enhancing water quality. The wetland and upland preservation areas support a variety of wildlife species and contribute to ecosystem functions, including wildlife habitat, water quality, and groundwater recharge. These areas provide important breeding, foraging, and sheltering habitat for wildlife, and filter pollutants from runoff and mitigate flood risk. Some of the preservation areas, especially within the perimeter buffers, have invasive plants that threaten to disrupt the native vegetation and negatively impact wildlife habitat. Addressing the invasive plants through targeted management is a key undertaking of the preservation efforts. By controlling invasive plants and preventing them from exploiting openings as the red alders (*Alnus rubra*) die out, the Bank will promote a more stable and resilient ecosystem. Himalayan blackberry (*Rubus armeniacus*) is the most prevalent noxious weed at the Bank, but other invasive plants are present and will be targeted for control (**Figure B.2**). The City relies heavily on mowing and hand-trimming for invasive plant control and uses herbicides sparingly (City of Bellingham 2020c). However, a cut and dab method is proposed for controlling Himalayan blackberry (Jones and Hutten 2010) and stem injection method for knotweeds. The Sponsor will also construct monitoring transects for controlling and monitoring invasive plants.

As a component of the preservation method, the existing garbage on the Bank and the two failed culverts on Site A will be removed and hauled to a licensed disposal facility. Bank boundaries that border existing development, roads, or access from adjoining properties will be fenced. Some of the Bank boundaries do not meet these criteria and will not be fenced because they are inaccessible and protected by dense vegetation or border existing protected mitigation sites (**Figure B.3, B.4, and B.5**). Signs will be installed along the Bank boundaries except where the Bank abuts an existing mitigation site, e.g., Site B's east and Site C's south boundaries, or where vegetation is nearly impenetrable and forms an effective natural barrier, e.g., Site B's north boundary.

B.1.3 Enhancement

The Bank will enhance 42.83 acres of existing wetland and upland habitat, including riparian habitat, across Sites A, B, and C (**Figure B.1**). Prior to enhancement plantings, invasive plant control for the enhancement areas will follow the same protocols as the preservation areas. Construction access and staging areas will be established in designated locations along the boundaries of Sites A, B, and C (**Figures B.3, B.4, and B.5**).

Selective thinning will occur in red alder-dominated enhancement areas on Sites A, B, and C to create openings in the overstory canopy and facilitate forest succession by allowing dappled sunlight to reach the planting areas. The openings in the overstory canopy will allow the planted native conifers to ascend

to the overstory rather than remain suppressed for many years in the understory. Trees will be felled at or near ground level, without disturbing roots, and will be retained as large woody material to construct the habitat piles throughout the Bank (**Figures B.3 , B.4, and B.5**).

Native trees and shrubs will be planted to provide vegetative diversity and improve habitat structure in these plant communities: Palustrine Forested Wetland, Forested Upland, and Riparian Upland. The enhancement plantings will focus on single-aged and overstocked red alder-dominated sections of the forest that were logged circa the late 1980s to early 1990s. The addition of conifers to the Palustrine Forested Wetland and Forested Upland plant communities will diversify tree species in the existing canopy, improve habitat structure, and facilitate large woody material recruitment. The existing large woody material is almost exclusively small-diameter deciduous trees and lacks the long-term benefit of slowly decaying woody biomass that coniferous trees provide. Thus, the native tree plantings will add coniferous species to a forest with an aging and mostly single age-class of deciduous trees largely devoid of conifers. This will accelerate ecological succession toward a self-sustaining forest community capable of large woody material recruitment.

B.1.3.1 Forested Wetland Enhancement

The Bank will enhance 16.93 acres of forested, scrub-shrub, and emergent wetland with native conifers to develop into a self-sustaining, mixed deciduous-coniferous Palustrine Forested Wetland plant community. The conifers selected for the wetland enhancement areas—Sitka spruce (*Picea sitchensis*) and western redcedar (*Thuja plicata*)—tolerate moderate hydrology and soil moisture, which is a critical trait to their establishment and survival, as substantial portions of the Bank are inundated or saturated for many months in the winter and spring.

B.1.3.2 Forested Upland Enhancement

The Bank will enhance 24.92 acres of forested upland dominated by red alder with native conifers, to develop into a self-sustaining, mixed deciduous-coniferous Forested Upland plant community. The conifers selected for the upland enhancement areas—grand fir (*Abies grandis*) and Douglas-fir (*Pseudotsuga menziesii*)—prefer drier soil moisture than their wetland counterparts. Sitka spruce will also be planted in the Forested Upland plant community for its fast-growth and adaptiveness to varying hydrology and soil moisture.

B.1.3.3 Riparian Upland Enhancement

The Bank will enhance 0.98 acres of a reed canarygrass-dominated floodplain to develop into a Riparian Upland plant community with forested and shrub classes. The Riparian Upland enhancement on Site A will be densely planted with fast-growing native willows and other native trees and shrubs to outcompete the existing monoculture of reed canarygrass (*Phalaris arundinacea*). Once mature, they will overhang the stream and provide thermal regulation, input of macroinvertebrate prey, and organic material inputs into the aquatic system.

B.1.4 Credit Generating and Non-Credit Generating Areas

Bank credits would be generated from preserving and enhancing wetland, forested upland, and riparian upland habitats. All perimeter buffers are internal to the Bank boundaries and are non-credit generating. There are several existing easements and title encumbrances associated with Sites B and C. Site B is subject to a utility easement, oil and gas lease agreements, and mineral rights. Site C is subject to a utility easement, sewer easement, oil and gas lease agreements, and mineral rights. The oil and gas lease agreements were reserved when the land was originally platted in 1937; see Appendix A for a description of the easements and title encumbrances. The credit generating area was calculated as the total area within the Bank boundary less the buffer areas and utility easement area that lies outside of the buffer area on Site C (**Figure B.1**; **Table B.1**). The Bank includes non-credit generating perimeter buffers along the interior of the bank boundaries, which vary in width depending on the adjoining land use, easements, or rights-of-way.

Table B.1. Bank Area Summary

Bank Site	Credit Generating Area (acres)			Non-credit Generating Area (acres)					Bank Area (acres)
				Perimeter Buffer		Easement			
	Enhancement	Preservation	Total	Enhancement	Preservation	Enhancement	Preservation	Total	
A	6.77	7.53	14.30	3.23	6.01	-	-	9.24	23.54
B	11.30	17.89	29.19	1.93	4.87	-	-	6.80	35.99
C	14.63	15.62	30.25	4.86	3.79	0.11	0.11	8.87	39.12
Total Area	32.70	41.04	**73.74**	10.02	14.67	0.11	0.11	**24.91**	**98.65**
								Total Bank Easement Area	0.22
								Total Bank Perimeter Buffer	24.91
								Total Credit Generating Area	73.74

B.1.4.1 Perimeter Buffer Boundaries

Sites A, B, and C's proposed perimeter buffers consider the most impactful adjacent land uses that could occur based on current and expected future land uses allowed per zoning regulations, following the Ecology, Corps, and EPA Joint Guidance (2021). The existing and proposed conditions of adjacent land uses greatly lowers the development threat and confer low or moderate levels of impact to onsite wetlands. Thus, relatively undisturbed, 100-foot perimeter buffers are proposed for most of the Bank to protect the wetlands internal to its boundaries. Along two boundaries, a 100-foot protected area is accomplished by incorporating vacated rights-of-way under City ownership that are external but immediately adjacent to the Bank boundaries and a 70-foot perimeter buffer. A 100-foot perimeter buffer is considered appropriate where Bank boundaries adjoin the following:

- **Parcels where the extent of impact is fully realized**. Any impacts that could occur on adjacent properties are unlikely to be more impactful because the adjacent properties are fully built-out or any future impacts would be consistent with the underlying zone and similar in nature to what currently exists. This is the case for boundaries that border established roads or development, such as Northwest Drive along Site A's west border, built out residential parcels along Site A's northwest

and southwest boundaries, developed industrial land bordering Site B's southwest corner, and residential lots on Site C's east border. In these situations, the offsite parcels have been developed or nearly developed up to the Bank's boundary, and yet, the onsite wetlands appear to be fully functioning despite the proximity of developed land. Whatever impacts to onsite wetlands resulting from the land clearing and building on the adjacent parcels have already occurred, and future activities would be no more impactful.

- **Parcel with development constraints due to existing gas pipeline**. An underground natural gas pipeline runs along the Waldron Road right-of-way immediately north of Site A's north boundary, which highly constrains the right-of-way and the adjoining rural residentially zoned parcels from being developed.
- **Parcels with development constraints due to existing aquatic resources**. The development threat from adjacent properties with underlying light industrial zoning, urban residential-mixed use, or rural residential land use zoning is low because of the constraints associated with environmental permitting, especially where high quality aquatic resources are present. This rationale applies to three-quarters of the Bank boundaries[2] because of the presence of fish-bearing streams and high quality wetlands that extend offsite. Fish-bearing streams extend offsite on all but four of the Bank boundaries. Stream fills, other than road and utility crossings, are difficult to permit and considered avoidable by the development and regulatory community. The streams also require 100-foot buffers per local regulations (WCC 16.16.740.B.3), which further constrain the development potential of adjoining properties. In addition to the streams, large and high quality wetlands, including Category I and II wetland complexes, extend outside the Bank boundaries. Impacts to Category I wetlands are extremely difficult to permit, and even if impacts were allowed by regulatory agencies, the substantial and costly mitigation requirements for offsetting Category I wetland impacts highly constrain potential development of adjoining parcels.

Additionally, specific ecological characteristics and proposed enhancement methods help reduce the impact of adjacent land uses to onsite wetlands and further support 100-foot perimeter buffers.

- **Specific ecological characteristics**. The Bank's complex of wetlands and intervening uplands is densely vegetated with trees and shrubs within an undulating topography, helping to protect the Bank both visually and physically from adjoining land use. The existing dense vegetation in the Bank's wetlands and uplands, undulating terrain that screens and fragments visual and noise impacts, forest soils that help sequester any potential nutrients and contaminants from any future development offsite, and connectivity with a large, relatively undisturbed forested corridor provide high quality habitat and water quality functions. If impacts were to occur, the dense vegetation and undulating terrain present on all the Bank boundaries would reduce the levels of impacts from noise, light, and human activity from adjacent land uses, thereby reducing adverse impacts to the onsite wetlands. The existing dense trees and shrubs and forest soils further limit stormwater impacts generated from

[2] The presence of high quality aquatic resources extending offsite lowers the development threat to adjoining parcels because of the challenge of avoiding large regulated buffers and avoiding direct fills where high quality aquatic resources exist. This applies to Site A's north, southwest, and east boundaries; Site B's north, south, extreme northeast and southeast, and west boundaries; and Site C's north, east, and west boundaries.

any future offsite development with their capacity to infiltrate and sequester nutrients and contaminants.

- **Enhancement methods**. Enhancement efforts aim to reduce invasive plant cover and increase native conifer density in the perimeter buffers of Site A's north and west, Site B's south, and Site C's north, south, and west boundaries. These enhancement methods will improve wildlife habitat while reducing the levels of impact from noise, light, human activity, and stormwater from adjacent land uses to onsite wetlands. Ultimately, these measures create an effective transition zone and promote long-term sustainability of onsite wetlands.

Deviations from the proposed 100-foot buffers are also appropriate where adjacent legal protections already exist, where boundaries adjoin a designated habitat corridor, and where boundaries adjoin vacated rights-of-way conveyed to the City. These situations greatly reduce the potential for adjacent development and confer substantially low levels of impact and low threat to onsite wetlands, and are specifically where Bank boundaries adjoin:

- **Legally protected areas**. A 0-foot perimeter buffer is proposed on 1) the south side of Site A that adjoins the Cornwall Park Church of the God Mitigation Site, 2) the east side of Site B that adjoins the Bellingham School District Mitigation Site and the Costco Mitigation Site, and 3) the south side of Site C that borders the City of Bellingham's North End Regional Pond (NERP) Mitigation Site. All adjacent mitigation sites are legally protected: the Cornwall Park Church of the God's conservation easement was established in 2010, the Bellingham School District's in 2012, and Costco's in 2017. The City of Bellingham's NERP Mitigation Site is protected from development in perpetuity by a covenant conveyed to the U.S. Army Corps of Engineers in 2016.
- **Legally protected open space**. More than half of the Waldron Road right-of-way, located immediately north of Site A's north boundary, borders the City of Bellingham's Bear Creek Open Space, a legally protected open space established for habitat protection and connectivity. The protected open space, combined with the limited development potential of the Waldron Road right-of-way and the existing underground pipeline, greatly restricts the feasibility of offsite development.
- **Designated habitat corridors**. Sites B and C are a part of a relatively undisturbed and vegetated corridor consisting of both protected public and private lands that collectively comprise a 400+ acre block of undeveloped forest along the headwaters of Bear Creek. This forested corridor meets the definition of a Priority Habitat and Species Biodiversity Corridor and Area by the Washington Department of Fish & Wildlife (WDFW 2023) and provides valuable habitat connectivity for wildlife and in-stream species and water quality functions. The biodiversity designation contributes an added level of protection to the wetlands on Sites B and C, as it limits the overall impacts on adjacent higher impact land uses because of the regulatory protection afforded by the designation.
- **Vacated rights-of-way**. A 70-foot perimeter buffer is proposed on the north and west boundaries of Site B, where vacated rights-of-way adjoin the Bank boundaries. The vacations of Horton Road and Boxwood Road resulted in 30 feet of the 60-foot rights-of-way being conveyed to the City, immediately adjacent to the north and west Bank boundaries. The vacated 30-foot rights-of-way plus the proposed 70-foot perimeter buffer affords a 100-foot protected area along the north and west Bank boundaries of Site B.

Two additional site-specific considerations further influenced the proposed perimeter buffer widths. The factors, described below, result in adjacent land uses posing low levels of impact and low threat to onsite wetlands due to substantial development restrictions.

- **Site A's North Boundary**. The 30-foot Waldron Road right-of-way lacks legal protections restricting its development. Despite this, however, several constraints limit its feasibility for future development. These include its proximity to an adjacent natural gas pipeline and the City's lack of plans for its development. While the threat of development is low, it is not entirely eliminated. Developing this right-of-way into a public road would face substantial challenges due to: 1) the challenge of building on top of a natural gas pipeline, 2) substantial environmental permitting complexities from the existing wetlands and streams, and 3) the majority of adjoining properties are either publicly owned, such as this proposed mitigation bank, or an existing preserve (City of Bellingham Bear Creek Open Space), rather than land available for development.
- **Site C's North Boundary**. The presence of wetlands and Bear Creek within the Thomas Road right-of-way would substantially limit development due to high costs and substantial environmental permitting challenges, particularly concerning impacts to high quality aquatic resources and their buffers. Additionally, with Sites B and C protected as a wetland mitigation bank, there is little incentive to develop Thomas Road as an improved thoroughfare. The constructability issues and high costs to construct through Bear Creek and expansive wetlands further reduce the likelihood of development. Moreover, the City has no plans to develop this right-of-way.

B.2 Bank Design

Preservation and enhancement serve as the Bank's proposed mitigation approaches, described in the sections that follow for both the overall program and for Sites A, B, and C individually. The shared components of these approaches are described below.

B.2.1 Site Preparation

Temporary construction access and staging areas will be established in designated locations along the boundaries of Sites A, B, and C (**Figures B.3, B.4, and B.5**). The mitigation activities will be conducted primarily by hand, using handheld power tools. Soils within the temporary staging areas will not be disturbed, and any native vegetation that is disrupted will naturally revegetate after the construction is completed.

Monitoring transects will be manually cleared in the dry season using handheld power tools for monitoring in the enhancement areas and areas for invasive plant control across the Bank. An approximately 2-foot-wide swath of existing vegetation will be cleared by hand at or near the ground surface. The monitoring transects will consist of native soil and will not involve grading or disrupting the soil surface. The monitoring transects will be temporary, constructed by hand to the narrowest width possible, be naturally surfaced, and will naturally revegetate once no longer in use.

B.2.2 Control Invasive Plants

Invasive plant control will be initiated across the entire Bank, in both preservation and enhancement areas, before the enhancement plantings and will continue throughout the establishment period. Invasive plants primarily will be controlled mechanically using handheld power tools with selective chemical control using a cut and dab method for Himalayan blackberry (Jones and Hutten 2010), stem injections for knotweeds, and following City guidelines (see **Section B.6.2 Control Invasive Plants**). Himalayan blackberry cover is estimated at 5 to 10 percent across Sites A, B, and C, although its distribution is widespread (**Figure B.2**). Blackberry will be cut repeatedly with handheld power tools and new sprouts will be dabbed with appropriate herbicide. A small population of giant knotweed (*Fallopia sachalinese*) in the extreme northwest corner of Site A will be controlled by stem injections. After the initial heavy suppression efforts, invasive plant control will be ongoing during the Bank's establishment period to maintain invasive plant cover at or below the performance standards.

B.2.3 Remove Garbage and Protect Boundary

Existing garbage on the Bank will be removed by hand and transported for disposal using a City truck. An abandoned vehicle on Site A will be towed, and two failed culverts on the same site will be cut into manageable sections and manually removed. All waste will be transported via public roads to a licensed disposal facility. The total volume of existing garbage is estimated at no more than 5 cubic yards. Approximate locations of the abandoned vehicle and culverts on Site A are shown on **Figure B.2**.

The following measures will be implemented to discourage trespass and garbage dumping:

- Fencing will be installed along boundaries that abut existing development, road, or access points from adjoining properties (**Figures B.3, B.4, and B.5**). The fencing will be a 2-strand, smooth-wire fence as shown on **Figure B.15**.
- Signs identifying the Bank as an environmentally sensitive area and prohibiting trespass will be placed approximately every 200 feet along boundaries that abut existing development or roads, access points from adjoining properties (**Figures B.3, B.4, and B.5**). The sign typicals are shown on **Figure B.17**.

B.2.4 Preservation Overview

High quality wetlands, including headwater wetlands and beaver-created ponds, streams, and interconnected upland habitat along the Bear Creek riparian corridor, will be preserved (**Figure B.1**). The preservation areas are designated in the less disturbed portions of the Bank; presumably these areas were wetter and inaccessible to logging equipment. On Site A, the preservation areas are older deciduous forest in the northeast abutting Bear Creek and a forested wetland that extends through the center. Large portions of Sites B and C have beaver activity with dynamic hydrological changes that can result in extreme flooding followed by droughty conditions. The continuously shifting hydrology in areas close to the beaver-created ponds limits tree establishment and growth. On Site B, the preservation areas lie in the western half, which has extensive and interconnected beaver-created ponds, wetlands, and streams with patches of mature forest. On Site C, the preservation areas are in the less disturbed southeast quadrant, which has an extensive beaver pond complex and areas of mature forest. Sites A, B, and C have

high preservation potential due to complex interwoven habitats: forested wetlands, streams with known or presumed coho and trout habitat and gradient accessible habitat for fall chum and winter steelhead (NWIFC 2023), riparian habitat, mature forested uplands, and beaver-created ponds, with the beaver activity supporting dynamic changes to hydrology, soils, and habitat. The Bank's overall threat is high due to increasing development pressure on the north end of the City and potential for timber harvest (including constructing logging roads and removing trees) in both uplands and wetlands.

B.2.5 Enhancement Overview

The ecological basis for enhancement is described below and followed by site-specific details.

B.2.5.1 Forested Wetland and Forested Upland Enhancement

Compared to Pacific Northwest-native conifers, red alder is a short-lived tree species, maturing at 60 to 70 years with a maximum age of about 100 years (Harrington *et al*. 1994). Longer-lived and more shade-tolerant conifers, such as western redcedar, Sitka spruce, and western hemlock, typically replace red alder in a successional sequence. Shade-tolerant conifers can linger as saplings in the understory of an alder stand for many years and eventually ascend to the canopy as the alders die out. According to Harrington *et al.* (1994), the fast growing and high stem densities of alder in younger stands make it difficult for more shade-tolerant and slower growing conifers to become established if the conifers do not colonize a site at or shortly before the alder invades. At the Bank, however, large areas of the canopy are overcrowded with red alder that colonized after logging. In some areas, the alders are so dense that they have formed "dog hair thickets" of closely spaced and narrow-diameter trees competing for sunlight and nutrients, which has suppressed conifer establishment.

Thus, the proposed enhancement method for the Palustrine Forested Wetlands and Forested Uplands is influenced primarily by the previous disturbance regime and subsequent development of a relatively short-lived, monotypic, deciduous forest that, without intervention, is ecologically unstable and progressing toward invasive plant dominance. Planting conifers is crucial for the long-term forest composition and stability. The Bank lacks conifer recruitment or a replacement cohort, demonstrated by an absence of conifers both in the overstory canopy and in the understory as seedlings or saplings, except for some present in upland areas that were not harvested in the most recent logging in the late 1980s or early 1990s. The lack of conifers is likely due to the logging disturbance, and that Sites A, B, and C have no evidence of being replanted after the last logging cycle[3]. Consequently, natural regeneration has resulted in a homogeneous stand with overcrowded deciduous trees dominated by red alder—a pioneer species favoring high light levels and exposed mineral soil—and invasive plants in many areas.

The long-term trajectory of the existing forest composition of the Bank is not ecologically stable and will transition to less complex forest structure and native plant diversity as the alders die off, fall to the forest understory, and create openings in the canopy, which will be colonized by invasive plants that have already established a foothold in portions of the Bank. The invasive plants are currently held in check by

[3] The harvest date is an estimate as there is a 9-year gap in the available aerial photo imagery between 1988 and 1997. In the aerial photo from 1988, Sites B and C appear to be forested and by 1997, the aerial imagery shows the sites are in the early stages of regrowth. Thus, logging likely occurred circa the late 1980s or early 1990s.

the dense alder overstory that suppresses light from reaching the understory. Without intervention, invasive plants will eventually dominate Sites A, B, and C as the alder senesces if the Bank follows the typical pattern documented in other Pacific Northwest alder-dominated forests (Harrington *et al*. 1994). To facilitate ecological succession to a self-sustaining, mixed deciduous-coniferous forest and avoid promoting invasive plants in this regionally important habitat corridor, the Sponsor proposes to plant shade- and moisture-tolerant conifers in existing gaps in the canopy that are occupied by invasive plants and to selectively thin overcrowded alder to create additional openings for planting conifers.

The enhancement method is secondarily influenced by microclimate considerations. The Bank's localized microsite is shaded and moist. With its dense overstory and understory vegetation of both native and non-native plants, the ground is slow to become biologically active in the spring and remains saturated or inundated long into the spring months. By selectively thinning the overstory, gaps in the canopy will improve resource availability, especially sunlight, to encourage the successful establishment of planted native conifers. With the microsite considerations, the enhancement areas were field identified in March 2024 based on the following: 1) wetland or upland areas dominated by overcrowded red alder that would benefit from thinning, 2) wetland or upland areas dominated by invasive plants, and 3) areas with hydrology suitable for establishing conifers (**Figure B.1**). During the field assessment to select the enhancement areas, the areas that remain wetter and more saturated into the spring months were excluded.

B.2.5.2 Riparian Upland Enhancement

The proposed enhancement method for the Riparian Upland is influenced by the monoculture of reed canarygrass and lack of native trees or shrubs in a short segment of the Bear Creek riparian corridor on Site A. A dense planting of fast-growing willows and other native shrubs, conifers, and deciduous trees will outcompete the reed canarygrass, improve plant diversity, and shade the stream channel upon maturity. The overhanging vegetation will provide thermal regulation to the stream, thereby benefiting in-stream temperatures, input of macroinvertebrate prey, and organic material inputs into the aquatic system. The forested wetland, forested upland, and riparian upland enhancement areas are identified on **Figures B.1 B.3, B.4, and B.5**.

Prior to planting, the existing reed canarygrass will be hand-trimmed or mowed in the fall to a few inches above the ground surface. Herbicide will be applied as needed. After planting, reed canarygrass will be managed through hand-trimming and mowing two to three times during each growing season until the newly installed plants are established and overtop the reed canarygrass. Once the planted vegetation begins to shade out the reed canarygrass, the hand-trimming and mowing will be reduced to once per growing season or as needed for effective control.

B.2.5.3 Selective Thinning

Following invasive plant control, deciduous trees, primarily red alder, will be selectively thinned within the enhancement areas to create openings in the overstory canopy. The goal is to allow sunlight to reach the understory to help the planted conifers ascend to the overstory. The selective thinning will concentrate on areas where alders are small diameter, approximately 6 inches diameter at breast height

or less, and overcrowded with densities of greater than 450 trees/acre of alder, as stands with densities greater than this experience substantial mortality (Puettmann, DeBell, and Hibbs 1993). The alders will be felled by hand using chainsaws and cut at or near ground level to avoid disrupting roots. The felled alder logs will be retained for constructing the habitat piles, augmenting soils as they decay, and serving as nurse logs for conifer recruitment (Ettinger, Lee, and Montgomery 2017; Harmon and Franklin 1989; Christy and Mack 1984).

B.2.5.4 Habitat Piles

Habitat piles will be constructed from the felled alder logs. The logs will be placed using handheld tools, such as log peavey, wire rope cable, chocker chain, and winch for larger logs. Smaller logs will be transported and placed by hand. The habitat piles will be approximately 5 to 10 feet across at the base and approximately 4 to 6 feet tall and constructed in layers following the design from Link (1999; **Figure B.17**).

B.2.5.5 Planting Specifications

Following controlling invasive plants, thinning alders, and constructing habitat piles, the enhancement areas on Sites A, B, and C (except for the Riparian Upland on Site A) will be planted with native conifers to develop into a self-sustaining, mixed deciduous-coniferous forest with forested wetland and forested upland components (**Figures B.1, B.3, B.4, and B.5**). The conifers for planting in the wetland enhancement areas were selected based on their tolerance for low light and high soil moisture conditions and suitable native species for the ecoregion. The conifers selected for the upland enhancement areas have a range of light and soil moisture requirements. Douglas-fir prefers more light and tolerates lower soil moisture. Grand fir is more shade-tolerant, but like Douglas-fir, it prefers lower soil moisture. The third species, Sitka spruce, which is more adaptive and tolerant of low light and higher soil moisture, will be planted in both the wetland and upland enhancement areas. The enhancement plantings will focus on areas dominated by overcrowded red alder that will die out if not thinned (following density data documented in Puettmann, DeBell, and Hibbs 1993), areas dominated by invasive plants, and areas with suitable hydrology for establishing conifers. Plantings will occur both within the credit generating area and within the perimeter buffer to benefit the entire forest community.

The enhancement plantings will be sourced from native plant nurseries that can ensure appropriate seed sources for planting at the Bank. The type of stock will be transplanted as bareroot stock, but technically it is a combination plug/seedling. The plug + 1 seedling (P+1) stock is grown with their first year as plugs in containers and then transplanted into a bareroot nursery for their second year. The resulting P+1 seedling produces a wider caliper tree that competes well with understory vegetation and overcomes environmental stressors, giving it especially good survival success in reforestation (Hahn 1984). All enhancement plants will be installed during the late fall. The Bank is cool and wet in the spring, with wet soil conditions often persisting long into the spring months, thus planting in the fall will afford the plants more success at rooting in the drier and warmer conditions before the soils become overly saturated and cold in the winter months. Due to heavy browsing by deer and beaver, methods to deter herbivores will be used, including installing tree cages (**Figure B.15**), installing temporary exclusion fencing (**Figure B.15**), and co-planting trees with Sitka spruce, a species that is generally less favorable for herbivores (Murray

2021; Clifton and Smith 2018). Co-planting is a promising and simple way to minimize, but not eliminate, herbivore damage. Conifers, especially western redcedar, are highly susceptible to deer browse whereas Sitka spruce is not. Planting the two species together and thinning out the spruce after 5 to 10 years offers an inexpensive way to improve the survival of planted western redcedar and other conifers. The temporary exclusion fencing will be an 8-foot tall, lightweight and UV resistant poly fence that is high quality and resistant to beaver browse (**Figure B.15**). The fencing will be removed once the plants reach sufficient height to be above deer browse or large enough to withstand beaver pressure, anticipated at 5 to 7 years post-construction.

B.2.6 Site A Enhancement

Portions of Site A were logged earlier than the 1980s-1990s[4] but the actual logging dates are not known. In the logged areas, the deciduous trees are naturally regenerating at a dense rate. This natural overstocking of trees leads to stem exclusion, decadence, and gaps in the canopy that are colonized by invasive plants or clonal native shrubs as the overcrowded alders die out. Few conifers are present. Approximately 42 percent of Site A's forest has no mature conifers for recruitment and no conifer seedlings for a replacement cohort and would benefit from the addition of native conifers to accelerate ecological succession toward a self-sustaining, mixed deciduous-coniferous forest and improve biodiversity within the monotypic deciduous stand of red alder and black cottonwood (*Populus trichocarpa*; **Figures B.3 and B.6**). Valuable ecological lift would be gained through enhancing uplands and wetlands on Site A to establish a conifer replacement cohort and recruitment potential, which will better balance the age-classes and size distribution of trees to a more stable forest community, especially where gaps in the overstory canopy have led to invasive plant infestations. Specifically, native conifer plantings would improve the forest community structure and development of multiple age-classes over the long term, species richness, year-round shading, habitat interspersion, wildlife habitat, and large woody material recruitment.

Additionally, Site A has a short segment of riparian corridor along Bear Creek that is occupied by a dense monoculture of reed canarygrass (**Figure B.2**), which provides an opportunity to improve fish habitat, stream conditions, and riparian wildlife habitat. This segment of the riparian corridor is depauperate in woody plants and would benefit from the addition of native trees and shrubs to improve many important ecological factors as the plants develop and mature: improved plant diversity, thermal regulation, moderated in-stream temperatures, macroinvertebrate prey, and source of organic material inputs to the aquatic system.

In sum, improving the conifer replacement cohort and recruitment potential within Site A's forested wetlands and uplands would balance the age and size distribution of trees, promote a more stable forest community, and control invasive plants from dominating as the existing alder overstory dies out. Improving the native tree and shrub stratum along the segment along the mainstem of Bear Creek would

[4] The actual logging year(s) is not definitive due to gaps in the historical aerial imagery and lack of site records. Site A's most recently logged forest, however, is older than the late 1980s-early 1990s harvest on Sites B and C.

provide shading and improved riparian habitat. The proposed specific design elements for Site A are described below.

B.2.6.1 Site Preparation

A temporary construction access and staging area will be established along the western boundary of Site A, within the right-of-way of Northwest Drive (**Figure B.3**). The site preparation details common to all sites are described above in **Section B.2.1 Site Preparation**.

B.2.6.2 Planting Specifications

The enhancement plantings in the Palustrine Forested Wetland and Forested Upland Enhancement Areas will focus on areas dominated by overcrowded red alder in need of thinning in approximately 0.90 acres in the northern and western parts of Site A, areas that are dominated by invasive plants, and areas with suitable hydrology for establishing conifers (**Figures B.3 and B.6**). The planting specifications common to all sites are described above in **Section B.2.5.5Planting Specifications**.

In addition, a small segment along Bear Creek will be planted to develop into a riparian upland woody plant community that will augment the existing floodplain meadow dominated by 100 percent reed canarygrass (**Figures B.3 and B.7**). The Riparian Upland Enhancement Area will be planted with large diameter willow live stakes, shrubs, and coniferous and deciduous trees at a denser rate than the rest of the forested enhancement areas. The denser plantings are to encourage rapid shading of the riparian area to suppress the reed canarygrass. The woody plants for planting in the Riparian Upland Enhancement Area were selected for their ability to grow quickly and outcompete reed canarygrass, tolerance for establishing on well-drained, sandy soils, beneficial cover and structure for wildlife habitat, and native species that are appropriate to the ecoregion. Like the Forested Wetland and Forested Upland Enhancement Areas, the Riparian Upland Enhancement will occur both within the credit generating area and within the perimeter buffer to benefit the entire forest community.

Temporary exclusion fencing will be installed around the perimeters of the Riparian Upland Enhancement Area and removed after plants are established (estimated 5 to 7 years) and of sufficient size to deter herbivores, particularly beavers (**Figure B.15**).

B.2.7 Sites B and C Enhancement

Large areas of Sites B and C were logged in the late 1980s or early 1990s, and about 37 percent of Site B and 50 percent of Site C are proposed for enhancement. The post-logging land clearing and grading removed the large trees and stumps, which damaged forest soils and microorganisms, and removed woody biomass—a crucial source of large woody material for improved conifer seedling establishment and growth (Ettinger, Lee, and Montgomery 2017; Harmon and Franklin 1989; Christy and Mack 1984). The logged areas were not replanted, and few conifers are present. As a result of the logging disturbance, Himalayan blackberry and other invasive plants have established, and deciduous trees have regenerated at a dense rate. The degraded condition is more evident in the upland and wetland mosaic that is not beaver-influenced and inundated, specifically in the east/southeast portion of Site B and the western half of Site C, and these areas are proposed for enhancement. In uplands and wetlands more distant from

beaver activity, the deciduous trees are naturally regenerating at a dense rate. This natural overstocking of trees leads to stem exclusion, decadence, and gaps in the canopy that are colonized by invasive plants or clonal native shrubs as the overcrowded alders die out. Thus, the monotypic deciduous stands of red alder and black cottonwood on Sites B and C are ideal for a robust effort of native conifer plantings to accelerate ecological succession toward a self-sustaining, mixed deciduous-coniferous forest and improve biodiversity within the monotypic deciduous stand. Valuable ecological lift would be gained through enhancing uplands and wetlands on Sites B and C to establish a conifer replacement cohort and recruitment potential, which will better balance the age and size distribution of trees to a more stable forest community, especially where gaps in the overstory canopy have led to invasive plant infestations. Specifically, native conifer planting would improve the forest community structure, species richness, year-round shading, habitat interspersion, wildlife habitat, and large woody material recruitment. The proposed specific design elements for Sites B and C are described below.

B.2.7.1 Site B Site Preparation

Site B will include a temporary construction access and staging area along its east boundary adjacent to the Costco Mitigation Site, with pedestrian-only access.(**Figure B.4**). The site preparation details common to all sites are described above in **Section B.2.1 Site Preparation**.

B.2.7.2 Site C Site Preparation

Site C will include a temporary construction access and staging area along its south boundary adjacent to the City's NERP Mitigation Site, with pedestrian-only access (**Figure B.5**). The site preparation details common to all sites are described above in **Section B.2.1 Site Preparation**.

B.2.7.3 Site B and C Planting Specifications

The enhancement plantings in the Palustrine Forested Wetland and Forested Upland Enhancement Areas will focus on areas dominated by overcrowded red alder in need of thinning in the eastern part of Site B and western half of Site C, which are areas that are both dominated by invasive plants and with suitable hydrology for establishing conifers (**Figures B.4 and B.8 for Site B; Figures B.5 and B.9 for Site C**). The planting specifications common to all sites are described above in **Section B.2.5.5 Planting Specifications**.

B.2.8 Habitat Types

The Bank is expected to enhance and protect the existing and proposed habitat types described below.

Table B.2. Proposed Mitigation Methods and Areas by Site and Proposed Habitat Types

Proposed Habitat Type[1]		Credit Generating Area (acres)				Non-credit Generating Area (acres)					TOTAL AREA (acres)
						Perimeter Buffer[2]			Ease-ment[3]		
		Site A	Site B	Site C	Total	Site A	Site B	Site C	Site C	Total	
Enhancement	Riparian Upland (Riparian UPL)	0.83	-	-	0.83	0.15	-	-	-	0.15	0.98
	Palustrine Forested Wetland (PFO WET)	3.11	2.65	7.14	12.90	1.24	0.28	2.47	0.04	4.03	16.93
	Forested Upland (FO UPL)	2.83	8.65	7.49	18.97	1.84	1.65	2.39	0.07	5.95	24.92
	Enhancement Subtotal	**6.77**	**11.30**	**14.63**	**32.70**	**3.23**	**1.93**	**4.86**	**0.11**	**10.13**	**42.83**
Preservation	Palustrine Forested Wetland (PFO WET)	5.37	14.63	11.78	31.78	3.35	3.56	3.60	0.10	10.61	42.39
	Forested Upland (FO UPL)	2.16	3.26	3.84	9.26	2.66	1.31	0.19	0.01	4.17	13.43
	Preservation Subtotal	**7.53**	**17.89**	**15.62**	**41.04**	**6.01**	**4.87**	**3.79**	**0.11**	**14.78**	**55.82**
	TOTALS	**14.30**	**29.19**	**30.25**	**73.74**	**9.24**	**6.80**	**8.65**	**0.22**	**24.91**	**98.65**

[1] According to Cowardin classifications for the proposed wetland habitat types (FGDC 2013).
[2] Perimeter buffer encompasses portions of the utility easements on Sites B and C.
[3] Portion of utility easement that lies outside of the perimeter buffer on south boundary of Site C.

B.3 Compliance with the Federal Rule on Using Preservation as Compensatory Mitigation

According to the Federal Rule on *Compensatory Mitigation for Losses of Aquatic Resources* (33 CFR §332), preservation actions can be used as compensatory mitigation when certain criteria are met. These criteria, according to 33 CFR §332.3(h)(1), are listed below in *italics* with the rationale of how the Bank preservation areas meet the requirements of each criterion. While the entire Bank site will be protected with a conservation easement, specific areas are designated for preservation only. These preservation-only areas will not include enhancement plantings.

(i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed;

(ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed;

Physical functions of the Bank involve primarily upper watershed hydrological support for the Bear Creek sub-watershed and the overall Silver Creek watershed. The Silver Creek watershed is a tributary to the Nooksack River. Portions of the Cities of Bellingham and Ferndale and their associated UGA boundaries are within the watershed. Development pressure in this area is significant with ongoing and extensive high-density residential development.

The City's Comprehensive Plan (2016) identifies the Bank and surrounding land in the UGA between the Cities of Bellingham and Ferndale as an area of planned growth. Several studies, including the *Impact Analysis Technical Memorandum* (WLNRC 2017) and the *City of Bellingham Technical Memorandum, Mitigation Program: Analysis of Potential Natural Resource Impacts* (2020), have also documented this planned growth in the north Bellingham area, which encompasses the Bellingham Airport, Interstate-5, and the surrounding areas. These areas are primarily zoned with land uses that support development, such as light industrial, commercial, and residential zoning. These studies analyzed projects that were either permitted or in the permitting process, as well as conceptual projects and areas identified for annexation, to forecast future development patterns and what natural resources would be impacted as a result. Based on this information, the City concluded that the majority of analyzed impact projects within the larger Silver Creek watershed, which includes the Bear Creek sub-watershed, are expected to result in impacts to depressional palustrine emergent and palustrine forested wetlands in the areas that were designated as priority for wetland restoration and preservation.

Specifically, the Silver Creek watershed is projected to have 21.73 acres of aquatic resource impacts and 69.83 acres of buffer impact in the 10-year span from 2017-2027, representing nearly 53 percent of the anticipated total impacts in the WRIA 1 watersheds (WLNRC 2017; City of Bellingham 2020a,b). Thus, the Silver Creek watershed is projected to have the most projects and the greatest development pressure of all other watersheds in the WRIA. The anticipated projects span a range of land use activities: private development, City parks, state highway, and City public works.

The Bear Creek sub-watershed, representing approximately 2,891 acres of the larger Silver Creek watershed, encompasses the entire Bear Creek drainage network that consists of approximately 13.3 stream miles within the east, west, and mainstem Bear Creek riparian corridors and approximately 654 acres of National Wetland Inventory-mapped wetlands. The Bear Creek sub-watershed is situated within or adjacent to the western City of Bellingham limits and its associated western UGA.

The majority of projects that are anticipated to be constructed within the Silver Creek watershed, including the Bear Creek sub-watershed, will result in impacts to disturbed depressional and slope palustrine emergent wetlands. If not currently maintained as open pasture or managed for livestock grazing, the herbaceous vegetation within the emergent wetlands and adjacent buffer areas is dominated by reed canarygrass. Small patches of forest dominated by deciduous trees and shrubs are present within the wetland and buffer areas at the proposed project sites and in their immediate vicinities. Natural habitat features such as snags and large woody debris are generally lacking within the proposed project impact areas.

High-density residential land use is present in the eastern portion of the Bear Creek sub-watershed. This area includes the Cordata neighborhood. High-density industrial and commercial land uses are present along the western portion of the basin adjacent to Interstate-5 and the Port of Bellingham's International Airport. The interior portion of the Bear Creek sub-watershed, representing approximately 600 acres situated between Interstate-5 and Northwest Drive, remains relatively undeveloped. A large tract of contiguous forest with numerous wetlands characterizes this area zoned for industrial development. The Bank and its mosaic of forested wetlands, uplands, and interconnected stream systems are situated

within this forested tract interior to the Bear Creek sub-watershed. The *Bellingham Habitat Restoration Technical Assessment* recommends protecting forest and wetland habitat in this sub-watershed to maintain a contiguous forested wildlife corridor that provides north-south connectivity (BHRTA 2015). The *2021 Wildlife Corridor Analysis* (Diamond Head Consulting 2022) prioritized important habitat for terrestrial wildlife within the City. Three habitat types were found to be particularly important for the selected species: 1) forested and shrub communities that connect to freshwater, 2) conifer-dominated forests, and 3) large, intact forests. The Bank encompasses or lies adjacent to one of the largest Important Wildlife Areas identified in the wildlife corridor analysis, and the Bank's upland, wetland, and stream preservation areas are crucial to the connectivity within the larger forested corridor in this urbanizing area.

The Bank is important to the physical functions of the Silver Creek watershed. The topography of the Bank, along with the influence of beaver, provides surface water detention in the upper watershed that supports groundwater recharge. The observed difference in surface water quantities between wet and dry seasons suggests that groundwater recharge is an important process at the Bank. Beaver activity is also ongoing within Sites A, B, and C. Beavers are naturally important ecological and hydrological manipulators beneficial to watersheds. They create dynamic stream and wetland systems and provide water detention in upper watersheds that support perennial stream flows. Beaver-created ponded areas are a critical source of hydrology within forested areas and improve resilience to forest wildfires in a changing climate regime where fires are becoming more common. Having sufficient areas (wetlands, uplands, riparian areas) for beavers to operate naturally is critical, and their ability to breed, rear offspring, and construct dams becomes less viable in fragmented landscapes impacted by development. Beaver activity through damming also provides two important physical actions: 1) it meters outflow and reduces peak flows, which dampens flood effects, and provides dry season outflow to help support aquatic life, and 2) it provides year-round detention so that groundwater recharge occurs in both wet and dry seasons, which also supports seeps, springs, and related wetlands and streams in lower elevations in the watershed.

Chemical functions provided by the Bank, like physical functions, are related to the detention of surface waters within an undulating landscape manipulated by beaver. The detained water allows biochemical interactions between hydrology, plants, and organisms, which provide nutrient uptake and sequester pollutants. Stream outflows from beaver dams also provide biotic materials for downstream aquatic life and a reduction in nutrients such as phosphorus. Build-up of organic matter through anaerobic processes in the bottom of ponds and wetlands also provides a sink for excess nutrients. Beneficial chemical functions also occur as streams and ponds alter course due to dynamic flow-paths. Forest soils and surface duff, previously unsaturated, become saturated and benefit from the interplay between hydrology, plants, and microorganisms. Conversely, as flow-paths shift and the land becomes drier in some areas, a rebound of wetland and upland plants will occur from the abundantly stored soil nutrients, and this lush growth benefits habitat and food sources for wildlife.

Biologically, the Bank includes interconnected upland, wetland, and aquatic habitats that provide diverse habitat types used by fish and wildlife, including in-stream, riparian, forested, scrub-shrub, emergent wetland, and aquatic bed. The Bank connects to offsite forested areas that encompass hundreds of

undeveloped acres within a biodiversity corridor, including fish-bearing streams. Together, these elements provide interconnected macro- and micro-habitat opportunities for many birds, amphibians, mammals, and fish, and the proximity of these habitat types allows species to use them for multiple life stages and life cycles. The proximity of the Bear Creek riparian corridor, wetlands, and forested upland provides an important ecological linkage. For instance, many species feed and breed in wetlands and streams, then reside in adjacent upland habitats. In addition, amphibians typically live and breed in cold-water streams and wetlands within mature forests, but may be found in the upland areas of the onsite forests during rainy periods. Amphibians are an integral asset in the food chain as they are often top predators in aquatic systems and important prey in terrestrial systems.

In the forested upland and wetlands, downed logs in various states of decomposition litter the understory. Large woody material contributes to the food web through decay and by providing habitat for insects, thus increasing the food web for birds, amphibians, reptiles, and mammals. Large woody material also provides cover and shelter for amphibians and small mammals, hunting perches for raptors, and nesting for waterfowl and beaver. In addition, large woody material provides a food substrate for fungi and invertebrates, which are in turn consumed by vertebrates.

The woody trees and shrubs also provide aquatic shading, which contributes to thermal regulation and cold-water inputs into wetlands, Bear Creek, and other streams. The forest vegetation also benefits the production, storage, and export of organic matter within the adjacent wetlands. If logged, or partially logged, the ecological effects to this ecosystem would be highly detrimental. Even if riparian corridors and wetland buffers were avoided, there would be a loss of valuable habitat, and the remaining corridors/buffers would be more susceptible to wind throw, impacts from heavy rain events, erosion, and overall lower aquatic function. Stream temperatures would likely warm, which would affect onsite wetlands and the aquatic species that may use the wetlands and streams. A large habitat corridor would become fragmented, and invasive vegetation would have a greater opportunity to establish.

The interconnected forested upland, wetland, in-stream, and riparian habitat within the Bank provides a largely unfragmented habitat corridor within the Bear Creek sub-watershed, which is integral to maintaining the physical, biological, and chemical processes associated with the overall functioning and sustainability of the Silver Creek watershed.

(iii) Preservation is determined to be appropriate and practicable;

The upland, wetland, and stream preservation areas would provide long-term ecological benefits to the Silver Creek watershed and Bear Creek sub-watershed that are consistent with a primary goal of the Bank to preserve habitat within the larger, contiguous and undeveloped biodiversity corridor (BHRTA 2015). As described above, The *Bellingham Habitat Restoration Technical Assessment* recommends protecting forest and wetland habitat in this sub-watershed to maintain a contiguous forested wildlife corridor that provides north-south connectivity (BHRTA 2015). Furthermore, the *2021 Wildlife Corridor Analysis* (Diamond Head Consulting 2022) prioritized important habitat for terrestrial wildlife within the City.

The undeveloped forested parcels within the Bear Creek corridor are subject to high development pressure and conversion to other uses, resulting in wetland degradation and habitat fragmentation. Due

to the pattern of land use history and development, wetland and riparian re-establishment within this corridor is limited because much of the undeveloped land is already wetland; however, wetland and riparian preservation is viable and is critical to protecting and maintaining wetland and riparian functions in this corridor.

Over 400 acres of land in this corridor are currently under public ownership and protected. This includes lands owned by the Port of Bellingham to the east of the Bank, a regional stormwater facility and private mitigation site to the south, and the City's Bear Creek Open Space to the north of Site A. Contiguous forested habitat around this corridor encompasses approximately 600 acres. The inclusion of the Bank would add nearly 99 acres of protected habitat to this forested corridor, an increase of nearly 25 percent of protected lands, substantially enhancing the degree of connectivity to other habitats and open space within this corridor.

(iv) The resources are under threat of destruction or adverse modifications; and

The Bank's aquatic resources are under threat from timber harvest and commercial or residential development. Each threat is addressed below.

Timber Harvest

Clear-cut logging or selective logging of the hardwoods is a demonstrable threat based on the Bank's past history of logging in the late 1980s-early 1990s for Sites B and C and an older date for Site A[5]. The commercial value for timber within the forests onsite is moderate to high, as the hardwood could be used for saw logs or pulp. The damage to the wetland habitat and stream habitat could be substantial because, under the Forest Practices regulations, buffers to streams are smaller than development regulations and non-existent for most of the wetlands onsite. Additionally, if logging occurred in areas where invasive plants are already colonizing, the timber harvest could exacerbate invasive plant seed dispersal, making it more difficult to prevent invasive plants from dominating the landscape. If logging and scarification were to occur again, the unbroken habitat corridor would be interrupted and irreplaceable for decades, and damage to the stand structure, habitat interspersion, and forest health would be substantial, as demonstrated by the current condition of the degraded forests found in large portions of the Bank where logging previously occurred.

Commercial or Residential Development

The surrounding land within the City's UGA is under development pressure as demonstrated by the last decade of commercial and residential growth. Undeveloped parcels, such as those within the Bank, are highly desirable for development because of their zoning, and their proximity to developing areas in north Bellingham, the Bellingham International Airport, and Interstate-5. The surrounding land zoning favors a broad mix of commercial, residential, industrial, and institutional development. Land prices have climbed steadily since 2012 and increased dramatically since 2020. Numerous properties once thought to be too constrained by critical areas are now being proposed and used for various intensities of

[5]Timber harvest occurred circa late 1980s-early 1990s on portions of Site's B and C. Other areas not logged at that time contain a mix of older conifers and deciduous trees as typified on Site A by the forest in the northeast quadrant and diagonal swath through the center of Site A. Similar areas occur on the west and north extents of Site B and portions of the east side of Site C. These areas were likely logged in the more distant past but definitive records are absent.

development. Review of aerial photos over a 25-year period from 1998 to 2023 illustrates a sharp rise in development in the north Bellingham area including the airport area. All types of land conversion are evident, but the most obvious and impactful is the conversion of forest land to commercial development involving large acreages (10 to 20 acres). Additional infrastructure, such as streets and utilities, are in place to facilitate even more future development. Such evidence indicates that the sustainability of watershed resources and functions—physical, chemical, and biological—is at risk of threat or adverse alteration.

(v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument.

A conservation easement, which will permanently protect the Bank, will be approved, initiated, and recorded pursuant to Article III.D of this Instrument, and **Section G.1** of Appendix G**.**

B.4 Post-Construction Conditions and Anticipated Functional Lift

Repeated logging, including scarification on Sites B and C, likely in preparation for development, has occurred across the Bank. The most recent harvest in the late 1980s-early 1990s on Sites B and C has resulted in large areas of both wetland and upland habitat lacking multi-layer canopy development, native plant species richness with very few conifers, and habitat interspersion. Forest areas designated for enhancement are dominated by even-aged and overcrowded stands of red alder with scattered black cottonwood; gaps in the canopy are dominated by clonal native shrubs and invasive plants with especially dense thickets of Himalayan blackberry in a corridor along the east side of Site B and north boundary of Site C (**Figure B.2**). In the forested areas proposed for enhancement, multi-layer canopy development is absent, and habitat interspersion is low. Understory vegetation, where present, is depauperate with a low quantity of common native and non-native woody and herbaceous species. Naturally recruited conifers are few, and those few are heavily browsed by deer. Some areas of the forest have no observed conifer seedlings, thus no recruitment or replacement potential. This imbalance in plant succession results in poor long-term stability for the plant community, which has a cascading effect on the entire ecosystem.

Protecting forested habitat within the Bank is integral to maintaining and creating a highly functioning and unbroken forested habitat corridor in the Bear Creek sub-watershed, which is supported by recent studies (Diamond Head Consulting 2022; BHRTA 2015). The Bank encompasses or lies adjacent to one of the largest Important Wildlife Areas identified in the wildlife corridor analysis.

B.4.1 Wetlands – Water Quality

Development pressure is significant and growing within the Silver Creek watershed. Protecting the Bank sites will maintain the onsite wetlands' ability to filter pollutants, control sediment, retain nutrients, and recharge groundwater, which are critical functions in a watershed that is undergoing substantial development pressure. Controlling invasive plants and planting native trees and shrubs will foster plants that are superior at controlling erosion, filtering nutrients, enhancing soil biology, and shading. Moreover, the native tree plantings will increase conifer cover over time and facilitate differentiation of the forest into age classes to provide perennial, multi-layer canopy that provides shading in both uplands

and wetlands and improves the Bank's ecology over existing conditions. The increased shading will reduce direct sunlight exposure to surface waters, leading to lower water temperatures, which is critical for maintaining healthy aquatic ecosystems (EPA 2008). Cooler water temperatures help improve dissolved oxygen levels, benefiting fish and other aquatic organisms, particularly temperature-sensitive species. Additionally, the expanded conifer cover will contribute to improved soil stability, reduced erosion, and enhanced nutrient cycling.

The water quality functions for Sites A, B, and C are anticipated to be improved in at least four of the wetlands (Wetlands D, F, J, and S) post-project by increasing the seasonally ponded areas in those wetlands that lie adjacent or near riparian corridors with existing beaver activity. The Sponsor recognizes that the beavers are a natural part of the ecosystem and lift generated from increased beaver activity is not credit generating; however, as described in Section B.3(i) and (ii), the water quality functional lift is further driven by the presence of beavers. The area that is seasonally ponded helps determine the wetland's capacity for seasonal cycling and its ability to remove different forms of nitrogen that cause eutrophication. The seasonally ponded area in Wetlands D and F on Site A will likely grow from < ¼ of the total wetland area to > ¼ of the total area as beaver activity continues or expands post-project. This results in an increase in the site's potential for water quality functions, but no actual change in the site's potential functions score based on the scoring regime in the Washington Department of Ecology's *Western Washington Wetland Rating Form* (Rating System; Hruby & Yanke 2023). On Site B, Wetland J is nearly 20 acres and is likely to have wetland sections along the riparian corridor with increased areas of seasonal ponding.

B.4.2 Wetlands – Hydrology

Protecting the Bank sites will maintain the onsite wetlands' ability to protect downstream resources from flooding and erosion, as surface flooding problems are identified in a sub-basin farther down-gradient. The ability of wetlands to reduce flooding and attenuate peak flows are critical functions, especially in urbanizing areas. The addition of native plants through the enhancement efforts will bolster the Bank sites' hydrology functions and overall resiliency in the watershed to weather droughts and floods. Native plants generally have dense root systems that slow water and increase infiltration time, improve soil structure, stabilize soils, and reduce erosion, all of which improve water retention and help attenuate peak flows.

With site protection to allow natural processes, the hydrology functions are anticipated to improve over existing conditions in at least eight wetlands (Wetlands A, D, E, F, M, N, P, and Q[6]) post-project because of continued beaver activity in the Riparian Upland Enhancement (Site A) and in interior wetlands (Site B), where such activity will not affect adjoining property owners. As stated above, the Sponsor recognizes that beavers are a natural part of the ecosystem and lift generated solely from increased beaver activity is not credit generating; however, as described in Section B.3(i) and (ii), the hydrology functional lift is

[6] This does not yield a change in the site's potential functions score for hydrology based on the scoring regime in the Rating System (Hruby & Yanke 2023) for Wetlands A, D, E, and F that abut the Riparian Upland Enhancement. Similarly, four Category III wetlands on Site B (Wetlands M, N, P, and Q) may experience greater depths of storage from < 0.5 feet of ponding to 0.5 feet to < 2 feet post-project but not an actual change in the site's potential functions score based on the Rating System (**Table B.3**).

further driven by the presence of beavers. Site A already supports beaver activity in the area proposed for Riparian Upland Enhancement, and the plantings will improve habitat, cover, and food source for beavers; thus, the beaver activity is anticipated to continue within the Riparian Upland Enhancement and may expand to wetlands adjoining the riparian area once the plantings are established. Although some trees and shrubs may be browsed by beavers, the proposed temporary fencing around the perimeter of the entire Riparian Upland Enhancement Area will initially exclude beavers and other herbivores to increase the success of planted species while they are establishing.[7] Once the plants are established and the stems are 3 to 4 inches in diameter and less desirable for beaver browse (King County 2022), the fencing will be removed. Any subsequent beaver browse will be preferential to willows and cottonwoods, which both readily resprout and typically are not harmed by this level of browse.

With beaver influence, the depth of storage during wet periods likely will increase from < 0.5 feet to the next higher increment on the Rating System of 0.5 feet to < 2 feet in certain sections of wetlands that lie adjacent to beaver activity (**Table B.3**). As the inundation depth increases during wet periods, the increased water storage may reduce erosion and flooding, especially peak flows during flooding events. Through the proposed enhancement activities, the existing Category II wetlands on Site A may experience greater depths of storage post-project from their current < 0.5 feet of ponding to 0.5 feet to < 2 feet. Although this improves the potential to reduce flooding and erosion, it does not actually cause a change in the site's potential functions score for hydrology based on the scoring regime in the Rating System (Hruby & Yanke 2023) for Wetlands A, D, E, and F that abut the Riparian Upland Enhancement Area. Similarly, four Category III wetlands on Site B (Wetlands M, N, P, and Q) may experience greater depths of storage from < 0.5 feet of ponding to 0.5 feet to < 2 feet post-project but not an actual change in the site's potential functions score based on the Rating System (**Table B.3**).

B.4.3 Wetlands – Vegetation and Habitat

Among water quality, hydrology, and habitat functions, habitat functions will lead to the most direct functional lift from the enhancement actions at the Bank. By controlling invasive plants and planting conifers, the enhancement methods aim to create a more self-sustaining ecosystem that enhances wildlife habitat quality, fosters biodiversity, and improves overall forest health over its current state. Specifically, the enhancement actions intend to improve wildlife shelter, nesting sites, forage opportunities, and biodiversity, while also reducing erosion, stabilizing soils, regulating temperatures, and filtering contaminants and sediments, especially near streams.

The habitat functions for site potential are designed to be improved in all but one wetland (Wetland J) post-project in Sites A, B, and C. This will be accomplished by controlling invasive plants and establishing native conifers in deciduous-dominated sections of the forests that lack robust plant community structure, lack native plant species richness, and have low habitat interspersion because of the overcrowded and even-aged deciduous overstory (bolded habitat scores in **Table B.3** indicate the

[7] The Sponsor has planned for beaver herbivory by planting species that will resprout readily (willows and cottonwood), planting species that beavers do not regularly cut (Sitka spruce), temporarily protecting the entire Riparian Upland Enhancement perimeters with high quality fencing while the plants are establishing (and not removing until the plants are 3 to 4 inches in diameter and less favorable to beaver browse), and over-planting in anticipation of some beaver herbivory.

wetlands in which habitat functions are anticipated to be improved). The enhancement efforts aim to strengthen the plant community structure and increase species richness by improving the native conifer component over existing conditions. Over time, these actions will help establish a multi-layered forest structure, fostering diverse age classes within the forest.

The existing forest lacks a multi-strata canopy and is dominated by a single tree species (red alder). Adding native conifers will increase plant diversity, develop a self-sustaining forested class with multiple canopy strata capable of regenerating on their own, and decrease invasive plant dominance (initially through mechanical control and later through shading effects). As the canopy develops, the plant community structure matures and conifer diversity increases, and the number of habitat niches that provide breeding areas, escape, cover, and forage for animals also improves. As the mixed forest establishes, it will provide moderate to high interspersion of habitat, wildlife habitat cover, and forage for forest dwelling animals. Post-project conditions also will functionally benefit the habitat over existing conditions by the enhancement plantings that will serve as seed sources for conifer colonization and forest succession. Long term, an increase in conifers will result in more durable and persistent large woody material recruitment (snags and logs) naturally throughout the sites, as compared to the existing deciduous wood that rots quickly. Through the proposed enhancement activities, Site A's Wetland A, a large Category II wetland, may elevate to a Category I wetland with a lift in the site's potential functions for habitat from moderate to high. The remaining Category II wetlands on Site A (Wetlands B through F) will remain in the same category post-project but may have a lift in the site's potential functions for habitat from moderate to high. The Category III wetlands on Site B will remain the same category post-project and may have a lift in the site's potential functions for habitat from low to moderate (**Table B.3**). On Site C, the Category I and III wetlands will remain the same category post-project, but may have a lift in the site's potential functions for habitat from low to moderate for Wetlands R, U, V, and W and moderate to high for Wetland S.

Table B.3. Wetland Functional Assessment Existing and Post-Project Conditions

Wetland	Area (acres)	Existing/ Projected Category[1,2]	Existing Condition Wetland Rating Scores[3]			Post-project Condition Wetland Rating Scores[2,3,4]		
			Water Quality	Hydro-logic	Habitat	Water Quality	Hydro-logic	Habitat
Site A								
A	9.54	II/**I**	M/M/H (7)	M/M/M (6)	M/H/H (8)	M/M/H (7)	M/M/M (6)	**H**/H/H (**9**)
B	0.21	II/II	M/M/H (7)	M/L/M (5)	M/H/H (8)	M/M/H (7)	M/L/M (5)	**H**/H/H (**9**)
C	0.86	II/II	M/L/H (6)	M/M/M (6)	M/H/H (8)	M/L/H (6)	M/M/M (6)	**H**/H/H (**9**)
D	0.20	II/II	M/L/H (6)	M/M/M (6)	M/H/H (8)	M/L/H (6)	M/M/M (6)	**H**/H/H (**9**)
E	2.09	II/II	M/M/H (7)	L/H/M (6)	M/H/H (8)	M/M/H (7)	L/H/M (6)	**H**/H/H (**9**)
F	0.18	II/II	M/L/H (6)	M/M/M (6)	M/H/H (8)	M/L/H (6)	M/M/M (6)	**H**/H/H (**9**)
Site B								
J	19.44[5]	I/I	L/H/H (7)	H/M/M (7)	H/H/H (9)	L/H/H (7)	H/M/M (7)	H/H/H (9)
K	0.08	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)

Wetland	Area (acres)	Existing/ Projected Category[1,2]	Existing Condition Wetland Rating Scores[3]			Post-project Condition Wetland Rating Scores[2,3,4]		
			Water Quality	Hydro-logic	Habitat	Water Quality	Hydro-logic	Habitat
L	0.02	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
M	0.82[5]	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
N	0.60[5]	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
P	0.07[5]	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
Q	0.07[5]	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
Site C								
R	0.16[5]	III/III	L/L/H (5)	M/L/M (5)	L/H/H (7)	L/L/H (5)	M/L/M (5)	**M**/H/H (**8**)
S	24.88[5]	I/I	L/H/H (7)	H/H/M (8)	M/H/H (8)	L/H/H (7)	H/H/M (8)	**H**/H/H (**9**)
U	0.05	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
V	0.01	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/H (6)	M/L/M (5)	**M**/H/H (**8**)
W	0.08	III/III	M/L/H (6)	M/L/M (5)	L/H/H (7)	M/L/M (5)	M/L/M (5)	**M**/H/H (**8**)

[1] Hruby & Yanke 2023

[2] **Bolded** categories and scores indicate functions that are anticipated to have increased scoring post-construction. Additional functional lift is anticipated that is not captured in the scoring. See text descriptions in **Section B.4 Post-Construction Conditions and Anticipated Functional Lift** for additional information.

[3] Site potential score/landscape potential score/value score (total points for function) from Hruby & Yanke 2023; L=Low, M=Moderate, H=High

[4] Post-project condition is estimated at 10 years following construction.

[5] Wetland extends offsite.

B.4.4 Riparian Upland – Vegetation and Habitat

The Riparian Upland Enhancement habitat functions in Site A are designed to be improved post-project by establishing a native tree and shrub strata along Bear Creek, where a monoculture of reed canarygrass currently exists. The reed canarygrass floodplain lacks plant community structure, native plant species richness, habitat interspersion, and provides little to no aquatic shading. The proposed tree and shrub plantings are intended to shade and suppress the reed canarygrass to establish native woody plant structure and improve native plant diversity. As the planted species establish, they will increase habitat interspersion in the reed canarygrass-dominated floodplain and contribute to overwater shading, which will moderate and reduce in-stream water temperatures to benefit a stream with known or presumed coho and trout habitat (NWIFC 2023). A shade length calculator was used to assess the shade effects of planted species at the summer solstice based on the latitude of the project (SunCalc 2023). By analyzing the site's location, the time of year (summer solstice when the sun is at its zenith and shade length is at its annual minimum) and a conservative estimate of the average plant height at three years (5 feet), the planted species along the Riparian Upland Enhancement Area will shade a minimum of 1.72 feet on each side of Bear Creek within 3 years, or a conservative estimate of 3.44 feet of shading when the projected shade-effect of the woody plants on each side of the stream are totaled. The width of the stream channel is about 3.5 feet in this segment, so the planted shrubs will provide nearly complete overwater shading within about 3 years.

The proposed native tree and shrub strata and improved plant community structure in the floodplain will also benefit wildlife habitat and forage opportunities long-term, improve habitat interspersion, and add to aquatic food sources with the overhanging vegetation. As the trees and shrubs mature, they will provide nesting, roosting, and refuge habitat for birds and some mammals. As the native trees and shrubs grow and roots develop, they will help stabilize the floodplain and contribute to higher quality riparian habitat. Conifers planted near the stream will provide long term, durable large wood in both snag and log forms, increasing cover and habitat niches for wildlife species whose life cycles include large wood availability in the stream or riparian zone. Finally, the habitat functional lift anticipated to occur in the Riparian Upland Enhancement may also benefit adjoining habitat by creating a more diverse canopy of deciduous and coniferous trees across the Bank favoring wildlife movement, reducing risk of wildfire on dry summer grass stands, and reducing effects of angled sun exposure on adjacent forests, which also helps to lower surface water temperatures in and adjacent to the forested areas. The enhanced Riparian Upland is anticipated to achieve post-project functional lift similar to the wetland functions for vegetation and habitat described in **Section B.4.3 Wetlands – Vegetation and Habitat**.

B.4.5 Forested Uplands – Vegetation and Habitat

The upland habitat functions are designed to be improved post-project by controlling invasive plants and establishing native conifers in deciduous-dominated sections of the forests that lack multi-layer canopy, lack native plant species richness, and have low habitat interspersion because of the overcrowded and even-aged deciduous overstory. Habitat functional lift that occurs in the upland enhancement may extend to the adjoining wetlands through suppressing invasive plants and helping to prevent further colonization. It also benefits adjoining habitat by creating a more diverse canopy of deciduous and coniferous trees across the Bank, favoring wildlife movement and reducing effects of angled sun exposure on adjacent forests, which also helps to lower surface water temperatures in and adjacent to the forested areas. Conifers planted in the uplands will also provide long term, durable large wood in both snag and log forms, increasing cover and habitat niches for wildlife species whose life cycles include large wood availability. The enhanced uplands are anticipated to achieve post-project functional lift similar to the wetland functions for vegetation and habitat described in **Section B.4.3 Wetlands – Vegetation and Habitat**.

B.5 Bank Construction

The Sponsor will work with its consultant team and permitting agencies to acquire all necessary permits to implement the Bank project.

B.5.1 Construction Timing

Control of invasive plants within the Palustrine Forested Wetland and Forested Upland Enhancement Areas (Sites A, B, and C), Riparian Upland Enhancement Area (Site A), and the preservation areas (Sites A, B, and C) will be carried out in advance of the enhancement plantings. Garbage will be removed and hauled offsite during the dry season. The culverts on Site A will be removed in the summer, during the WDFW-approved in-water work window. Overstocked red alder will be thinned in select enhancement areas with logs and branches retained for constructing habitat piles. All enhancement plantings will occur

in late fall. Fence and sign construction will occur during the fall or spring months, when the soil conditions are not overly dry or wet to facilitate construction.

B.5.2 Implementation Schedule

The mitigation activities are anticipated as follows, with some activities overlapping or occurring concurrently with other activities.

1. Mobilize and procure erosion control and soil stabilization products for the culvert removal.
2. Establish construction access and staging areas along the boundaries of the Bank sites.
3. Establish monitoring transects for accessing enhancement plantings and maintenance internal to the Bank sites.
4. Stake and GPS the Palustrine Forested Wetland and Forested Upland Enhancement Areas on Sites A, B, and C.
5. Stake and GPS the Riparian Upland Enhancement Area on Site A.
6. Control invasive plants throughout Sites A, B, and C at or below their performance standard thresholds. GPS the invasive plant control areas.
7. Hand-trim or mow reed canarygrass in the Riparian Upland Enhancement Area on Site A. Apply herbicide as needed.
8. Remove garbage from Sites A, B, and C, including two failed culverts on Site A during the WDFW-approved in-water work window.
9. Selectively cut deciduous trees, principally red alder, to open up the canopy for success of enhancement plantings. Retain logs and branches for large woody material in habitat piles.
10. Construct habitat piles using branches and logs from the thinned alders within the Palustrine Forested Wetland and Forested Upland Enhancement Areas on Sites A, B, and C and Riparian Upland Enhancement Area on Site A.
11. Plant native conifers within the Palustrine Forested Wetland and Forested Upland Enhancement Areas on Sites A, B, and C.
12. Protect grand fir, Douglas-fir, and western redcedar with appropriate anti-herbivory method.[8]
13. Plant the Riparian Upland Enhancement Area on Site A and install temporary exclusion fencing around its perimeter.
14. Install boundary fencing on Sites A and C where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
15. Install bank boundary signs on Sites A, B, and C where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
16. Remove tree cages and exclusion fencing once plants reach sufficient height to resist herbivory, anticipated at 5 to 7 years post-installation.

B.5.3 Site Preparation

Staging areas will be established along the west boundary of Site A, east boundary of Site B, and south boundary of Site C; refer to the locations marked on **Figures B.3, B.4, and B.5**. Monitoring transects for accessing planting areas and for invasive species control will be hand-cleared prior to equipment

[8] Methods to deter herbivores include, but are not limited, to tree cages, temporary exclusion fencing, or co-planting grand fir, Douglas-fir, western redcedar with Sitka spruce (Murray 2021; Clifton and Smith 2018). (Spruce is not heavily browsed by deer.)

accessing the Sites. Because of the challenging access, extremely dense shrub layer that impedes navigation, and uneven terrain, the mitigation activities will be conducted by hand or with handheld power tools. Invasive plants will be mechanically removed and with selective chemical control of Himalayan blackberry, reed canarygrass, and giant knotweed following the City's specifications for herbicide use (see **Section B.6.1 Vegetation and General Maintenance**).

B.5.4 Site A Specifications

The enhancement method for Site A will entail constructing habitat piles, planting native conifers in wetland and upland habitat areas with poor stand structure, limited species diversity, and invasive species; and planting native trees and shrubs in riparian areas dominated by reed canarygrass (**Figures B.3, B.6, and B.7**).

B.5.4.1 Remove Failed Culverts in Riparian Upland Enhancement Area

Two, approximately 18-inch corrugated plastic pipes that have failed and are partially filled with soil and debris will be removed (**Figures B.6 and B.10**). Mitigation activities will consist of debris (culvert) removal using hand tools and minimal stream bank compacting. No soil will be cut or filled as a part of the culvert removal. All exposed soil will be mulched following disturbance. No incidental fill in the stream channel is anticipated given that the culverts are not within the active stream channel and side channels are dry during the anticipated WDFW-approved in-water work window. Minimal soil compacting may be necessary and will be limited to compacting the stream banks to match surrounding elevations after the two culverts have been removed. All natural habitat features including large woody material will be retained.

Culverts will be removed during the anticipated WDFW-approved in-water work window (July 15 - September 30). The culverts are partially filled with sediment and covered with emergent vegetation, primarily reed canarygrass. The removal will consist of the following steps:

1. Confirm site conditions are dry and lack forecasted precipitation during the work period.
2. Install 100 percent biodegradable certified weed-free straw bale or wattle on the downstream extent of the work area to help filter sedimentation that may occur because of unanticipated precipitation events during culvert removal.
3. Stake straw bale or wattle using wooden stakes or metal t-posts to secure straw bale or wattle. Tools: dead blow hammer, wooden stakes, metal t-posts (**Figure B.16**).
4. Temporarily remove emergent vegetation and soil on top of culverts to expose the entire culvert length. Tools: shovels, rakes, Pulaski, picks, tarp.
5. Cut the above-ground sections of culverts into pieces. Tools: hacksaw, battery-operated Sawzall.
6. Dig out sediment inside exposed culverts and dispose of sediment in an upland location. No more than incidental fallback to occur during removal. Tools: shovels, picks, Pulaski, tarp.
7. Dig out and cut into pieces below-ground section of culverts in a manner such that no more than incidental fallback occurs. Tools: shovels, picks, hacksaw, battery-operated Sawzall, rock bars, picks, Pulaski, tarp.
8. Hand-carry culvert pieces offsite. Dispose of material in a licensed disposal facility.

9. Compact the culvert removal area using hand-tools to match surrounding elevations without cutting or filling. Tools: shovels, rakes, tamper.
10. Stabilize exposed soils with native seed mix.
11. Revegetate work area with salvaged native plants if needed. Tools: shovels.
12. Remove the downstream straw bale or wattle.

B.5.4.2 Plant Native Conifers in Forested Wetland and Forested Upland Enhancement Areas

The Palustrine Forested Wetland and Forested Upland Enhancement Areas will be planted with native conifers to increase the density of conifers and diversity of the stand composition (**Figures B.6 and B.12; Table B.4**). The conifer planting consists of the following:

1. Blaze approximately 2-foot-wide monitoring transects with handheld power tools. Tools: weed trimmers, hedge trimmers.
2. Stake Palustrine Forested Wetland and Forested Upland Enhancement Areas.
3. Control invasive plants in enhancement planting areas with handheld power tools at or below their performance standard threshold. Tools: weed trimmers, hedge trimmers.
4. Selectively cut deciduous trees, principally red alder, to open the canopy for success of enhancement plantings. Retain logs and branches for large woody material in constructing habitat piles in Step 5. Tools: chainsaw, axe.
5. Construct habitat piles using retained logs and branches from thinned trees. Tools: wire rope, choker chain, winch, log peavey.
6. Plant conifers using handheld tools. Tools: tree shovel, tree planting bag.
7. Protect grand fir, Douglas-fir, and western redcedar with appropriate anti-herbivory method (**Figure B.15**)[9]
8. Install boundary fencing where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
9. Install bank boundary signs where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
10. Remove anti-herbivory method once plants reach sufficient height to resist herbivory, anticipated at 5 to 7 years post-installation.

B.5.4.3 Plant Native Trees and Shrubs in Riparian Upland Enhancement Area

The reed canarygrass-dominated Riparian Upland will be enhanced with native shrubs and coniferous and deciduous trees to shade the area and improve plant structure and wildlife habitat (**Figures B.7 and B.11; Table B.5**). The tree and shrub plantings consist of the following:

1. Blaze approximately 2-foot-wide monitoring transects with handheld power tools. Tools: weed trimmers, hedge trimmers.
2. Stake Riparian Upland Enhancement Area.
3. Hand-trim or mow reed canarygrass in enhancement planting area. Apply herbicide as needed. Tools: weed trimmers, mower, backpack sprayer.

[9] Methods to deter herbivores include, but are not limited, to tree cages, temporary exclusion fencing, or co-planting grand fir, Douglas-fir, western redcedar with Sitka spruce (Murray 2021; Clifton and Smith 2018). (Spruce is not heavily browsed by deer.)

4. Plant native trees and shrubs using handheld tools. Tools: tree shovel, tree planting bag, soil auger.
5. Protect enhancement area perimeters with exclusion fencing (**Figure B.15**).
6. Remove exclusion fencing once plants reach sufficient height to resist herbivory, anticipated at 5 to 7 years post-installation, fencing will be removed.

B.5.5 Site B Specifications

The enhancement methods for Site B will entail constructing habitat piles and planting native conifers in wetland and upland habitat areas that have poor overstory stand structure, limited species diversity, and are dominated by invasive species in the understory (**Figures B.4 and B.8**).

B.5.5.1 Plant Native Conifers in Forested Wetland and Forested Upland Enhancement Areas

The Palustrine Forested Wetland and Forested Upland Enhancement Areas will be planted with native conifers to increase the density of conifers and diversity of the stand composition (**Figures B.8 and B.13; Table B.4**). The conifer planting consists of the following:

1. Blaze approximately 2-foot-wide monitoring transects with handheld power tools. Tools: weed trimmers, hedge trimmers.
2. Stake Palustrine Forested Wetland and Forested Upland Enhancement Areas.
3. Control invasive plants in enhancement planting areas with handheld power tools at or below their performance standard threshold. Tools: weed trimmers, hedge trimmers.
4. Selectively cut deciduous trees, principally red alder, to open the canopy for success of enhancement plantings. Retain logs and branches for large woody material in constructing habitat piles in Step 5. Tools: chainsaw, axe.
5. Construct habitat piles using retained logs and branches from thinned trees. Tools: wire rope, choker chain, winch, log peavey.
6. Plant conifers using handheld tools. Tools: tree shovel, tree planting bag.
7. Protect grand fir, Douglas-fir, and western redcedar with appropriate anti-herbivory method (**Figure B.15**).[10]
8. Install bank boundary signs where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
9. Remove anti-herbivory method once plants reach sufficient height to resist herbivory, anticipated at 5 to 7 years post-installation.

B.5.6 Site C Specifications

The enhancement methods for Site C will entail constructing habitat piles and planting native conifers in wetland and upland habitat areas that have poor overstory stand structure and are dominated by invasive species in the understory (**Figures B.5 and B.9**).

[10] Methods to deter herbivores include, but are not limited, to tree cages, temporary exclusion fencing, or co-planting grand fir, Douglas-fir, western redcedar with Sitka spruce (Murray 2021; Clifton and Smith 2018). (Spruce is not heavily browsed by deer.)

B.5.6.1 Plant Native Conifers in Forested Wetland and Forested Upland Enhancement Areas

The Palustrine Forested Wetland and Forested Upland Enhancement Areas will be planted with native conifers to increase the density of conifers and diversity of the stand composition (**Figures B.9 and B.14; Table B.4**). The conifer planting consists of the following:

1. Blaze approximately 2-foot-wide monitoring transects with handheld power tools. Tools: weed trimmers, hedge trimmers.
2. Stake Palustrine Forested Wetland and Forested Upland Enhancement Areas.
3. Control invasive plants in enhancement planting areas with handheld power tools at or below their performance standard threshold. Tools: weed trimmers, hedge trimmers.
4. Selectively cut deciduous trees, principally red alder, to facilitate sunlight to open the canopy for success of enhancement plantings. Retain logs and branches for large woody material in constructing habitat piles in Step 5. Tools: chainsaw, axe.
5. Construct habitat piles using retained logs and branches from thinned trees. Tools: wire rope, chocker chain, winch, log peavey.
6. Plant conifers using handheld tools. Tools: tree shovel, tree planting bag.
7. Protect grand fir, Douglas-fir, and western redcedar with appropriate anti-herbivory method (**Figure B.15**)[11]
8. Install boundary fencing where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
9. Install bank boundary signs where the Bank boundaries abut existing development or roads or where there may be access from adjoining properties.
10. Remove anti-herbivory method once plants reach sufficient height to resist herbivory, anticipated at 5 to 7 years post-installation.

[11] Methods to deter herbivores include, but are not limited, to tree cages, temporary exclusion fencing, or co-planting grand fir, Douglas-fir, western redcedar with Sitka spruce (Murray 2021; Clifton and Smith 2018). (Spruce is not heavily browsed by deer.)

Table B.4. Proposed PFO WET and FO UPL Enhancement – Sites A, B, C

	Species	Avg. Spacing (ft on center)	Size	Density	Proposed Habitat Type
Wetland	Sitka spruce (*Picea sitchensis*, FAC)	22.5	P+1[1]	86 trees/acre or ~1,455 trees	Palustrine Forested Wetland (PFO WET)
Wetland	Western redcedar (*Thuja plicata*, FAC)				
Upland	Grand fir (*Abies grandis*, FACU)	22.5	P+1	86 trees/acre or ~2,140 trees	Forested Upland (FO UPL)
Upland	Sitka spruce (*Picea sitchensis*, FAC)				
Upland	Douglas-fir (*Pseudotsuga menziesii*, FACU)				

[1] P+1 (plug+1) is a combination of a small plug in a containerized nursery that is transplanted to a bareroot nursery after one year. P+1 are 12 to 20 inches tall. A P+1 starts its first year as a nursery grown container and a second year in a bareroot nursery. The plants are installed as bareroot seedlings. The P+1 produces larger caliper trees with well-developed root masses that have better survival compared to bareroot-only grown seedlings (Hahn 1984).

Table B.5. Proposed Riparian UPL Enhancement – Site A

	Species	Avg. Spacing (ft on center)	Size	Density (0.98 ac)	Proposed Habitat Type
Tree	Sitka spruce (*Picea sitchensis*, FAC)	10	P+1[1]	218 trees/acre ~215 trees	Riparian Upland with forested & shrub classes (Riparian UPL)
Tree	Douglas-fir (*Pseudotsuga menziesii*, FACU)	10	P+1		
Tree	Black cottonwood (*Populus balsamifera,* FAC)	10	P+1		
Tree	Scouler willow (*Salix scouleriana*, FAC)	10	Min 4-ft live stake ≥ 1-in diameter entire length		
Shrub	Black twinberry (*Lonicera involucrata*, FACW)	5	P+1	435 non-willow shrubs/acre ~430 shrubs	
Shrub	Nootka rose (*Rosa nutkana*, FAC)	5	P+1		
Shrub	Pacific ninebark (*Physocarpus capitatus*, FACW)	5	P+1		
Shrub	Common snowberry (*Symphoricarpos albus*, FACU)	5	P+1		
Shrub	Pacific willow (*Salix lasiandra*, FACW)	3	Min 4-ft live stake ≥ 1-in diameter entire length	1,210 willows/acre ~1,200 willows	
Shrub	Sitka willow (*Salix sitchensis*, FACW)	3	Min 4-ft live stake ≥ 1-in diameter entire length		

[1] P+1 (plug+1) is a combination of a small plug in a containerized nursery that is transplanted to a bareroot nursery after one year. P+1 are 12 to 20 inches tall.

B.5.7 Plant Specifications

B.5.7.1 Plug + 1 seedling (P+1) Stock

- Plug + 1 seedling (P+1) stock will be grown by a native plant nursery, be native to the lowland Nooksack watershed, and be sourced from climate-adapted seed stock, as available.
- P+1 stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- P+1 stock will be kept cool and moist prior to being planted.
- No damaged or desiccated roots or diseased plants will be accepted.
- Unplanted P+1 stock will be properly stored at the end of each planting day to prevent drying out.

B.5.7.2 Willow Live Stakes

- Live stakes will be purchased from a local native plant nursery or wild harvested.
- Live stakes will be a minimum of 4 feet long and equal to or greater than 1-inch diameter throughout entire length.
- Live stakes will be kept cool and moist prior to being planted.
- Live stake stock should be installed within approximately 1 week of cutting.
- Unplanted cutting stock will be properly stored at the end of each planting day to prevent desiccation.

B.5.7.3 Grass Seed Mix

A native grass seed mix will be seeded in the area exposed by the culvert removals on Site A. The actual percentages of the species listed below may be adjusted based on availability.

75% *Glyceria elata* (tall mannagrass)
5% *Agrostis exarata* (spiked bentgrass)
5% *Calamagrostis canadensis* (bluejoint reedgrass)
10% *Deschampsia cespitosa* (tufted hairgrass)
5% *Glyceria grandis* (reed mannagrass)

B.5.8 Construct Habitat Piles

Habitat piles will be constructed on Sites A, B, and C according to Link (1999) specifications or WDFW-approved design (**Figure B.17**). The habitat piles will be constructed from red alder logs that are felled to create openings in the canopy for the enhancement plantings.

B.5.9 Remove Garbage

Existing garbage, including two failed culverts on Site A, debris from past logging activities, and an abandoned vehicle, will be removed and disposed of offsite at a licensed disposal facility (**Figure B.2**). Any newly deposited garbage found during the establishment period of the Bank will be identified and removed.

B.5.10 Install Fencing and Signs

Fencing will be installed along the boundaries of Sites A and C that border existing development, roads, or have access from adjoining properties (**Figures B.3, B.4, and B.5**). Site B does not have any existing

access points and is not proposed to be fenced. The fencing will be 2-strand, smooth wire to minimize impact to wildlife and will be affixed to metal or wood posts (**Figure B.15**).

The exclusion fencing on Site A will be installed around the Riparian Upland Enhancement, internal to the site boundaries. The exclusion fencing will be a lightweight, durable, 8-foot-high poly mesh that is affixed to metal t-posts (**Figure B.15**).

Bank boundary signs will be installed at 200-foot intervals on boundaries of Sites A, B, and C that border development, roads, or have access from adjoining properties; see **Figures B.3, B.4, and B.5** for locations and **Figure B.17** for typical.

B.6 Conduct Maintenance and Monitoring

B.6.1 Vegetative and General Maintenance

The Sponsor will perform post-construction site maintenance and monitoring for the duration of the Bank establishment period in accordance with the provisions of Appendix F. After this period, the Long-Term Steward will assume responsibility for maintenance in accordance with the provisions of Appendix G. Yearly site monitoring will help guide and inform required maintenance actions; see Appendix F for information on monitoring.

General site maintenance will be performed throughout the Bank to address conditions that may limit the success of the Bank and attainment of the performance standards and objectives described in Appendix C. Anticipated maintenance activities fall into two main categories and include, but are not limited to, vegetative maintenance and general maintenance.

Vegetative maintenance includes such activities as watering, replanting failed plants to meet performance standards, controlling invasive plants, mowing, and deterring herbivores such as voles, beavers, and deer. Hand-trimming at the base of trees and shrubs to discourage voles and competing vegetative may occur.

General maintenance activities may include re-installing signs and fencing and removing garbage. All maintenance activities will be documented in monitoring reports.

B.6.2 Control Invasive Plants

Invasive plant control will occur as needed following construction and will target reed canarygrass, Himalayan blackberry, Japanese knotweed (*Fallopia cuspidatum*), giant knotweed (*Fallopia sachalinense*), Himalayan knotweed (*Persicaria polystachyum*), Bohemian knotweed *(Fallopia* x *bohemicum*), and related hybrids, English ivy (*Hedera helix*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), tansy ragwort (*Senecio jacobaea*), traveler's-joy (*Clematis vitalba*), horse chestnut (*Aesculus hippocastanum*), and any Class A and Class B non-native invasive species listed on the current Whatcom County Noxious Weed list that attempt to colonize the site. Japanese knotweeds and any hybrids,

bindweeds (*Convolvulus arvensis*, *Convolvulus sepium*, *Convolvulus silvaticus*, and *Fallopia convolvulus*), English ivy, and purple loosestrife (*Lythrum salicaria*) will be immediately eradicated if found onsite.

Reed canarygrass will be controlled by hand-trimming, mowing, or herbicide. Blackberries will be cut repeatedly with handheld power tools, and new sprouts may be dabbed with appropriate herbicide, using a cut and dab method (Jones and Hutten 2010). Knotweeds will be treated with herbicide delivered by stem injections or foliar applications. English ivy and traveler's-joy will be hand-pulled, rolled up, and hauled offsite for disposal or composted onsite. Large, woody English ivy and traveler's-joy growing on trees may be treated with an Ez-Ject herbicide lance and left to decompose in place. English hawthorn, English holly, and horse chestnut will be manually removed or treated by a cut-and-dab method or an Ez-Ject herbicide lance, and above-ground reproductive parts removed from the Bank for disposal. Any non-reproductive plant parts will be composed onsite. Tansy ragwort will be hand-pulled to include roots and above-ground stems, bagged, and hauled offsite for disposal or composted onsite. Any noxious weed part removed for disposal will be taken to an appropriate facility. Any other invasive plant will be controlled primarily by hand-trimming around the bases of planted trees and shrubs or by following the guidelines in the City's *Herbicide Use Plan* (2020c). Weed control will be initiated before the enhancement plantings and will continue throughout the Bank's establishment period. Herbicide use will follow the Washington Department of Agriculture regulations and, unless modified above, follow the City's *Herbicide Use Plan* (2020c).

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Proposed Mitigation Methods and Areas by Site and Proposed Habitat Types

	Proposed Habitat Type[1]	Credit Generating Area (acres)				Non-credit Generating Area (acres)					TOTAL AREA (acres)
						Perimeter Buffer[2]			Easement[3]		
		Site A	Site B	Site C	Total	Site A	Site B	Site C	Site C	Total	
Enhancement	Riparian Upland (Riparian UPL)	0.83	-	-	0.83	0.15	-	-	-	0.15	0.98
Enhancement	Palustrine Forested Wetland (PFO WET)	3.11	2.65	7.14	12.90	1.24	0.28	2.47	0.04	4.03	16.93
Enhancement	Forested Upland (FO UPL)	2.83	8.65	7.49	18.97	1.84	1.65	2.39	0.07	5.95	24.92
	Enhancement Subtotal	**6.77**	**11.30**	**14.63**	**32.70**	**3.23**	**1.93**	**4.86**	**0.11**	**10.13**	**42.83**
Preservation	Palustrine Forested Wetland (PFO WET)	5.37	14.63	11.78	31.78	3.35	3.56	3.60	0.10	10.61	42.39
Preservation	Forested Upland (FO UPL)	2.16	3.26	3.84	9.26	2.66	1.31	0.19	0.01	4.17	13.43
	Preservation Subtotal	**7.53**	**17.89**	**15.62**	**41.04**	**6.01**	**4.87**	**3.79**	**0.11**	**14.78**	**55.82**
	TOTALS	**14.30**	**29.19**	**30.25**	**73.74**	**9.24**	**6.80**	**8.65**	**0.22**	**24.91**	**98.65**

[1] According to Cowardin classifications for the proposed wetland habitat types (FGDC 2013).
[2] Perimeter buffer encompasses portions of the utility easements on Sites B and C.
[3] Portion of utility easement that lies outside of the perimeter buffer on south boundary of Site C.

NOTE(S):
A. Internal right-of-way (ROW) widths are measured off of Site C's Bank Boundaries (for vacated Bennett and Stuart Roads) and are represented in the legend and Site C by a red dashed line.
B. The 10' wide utility easement line is offset 10' from the Bennett and Stuart Road vacated ROW boundaries. All other 10' utility easement lines (southern boundary of Site B and northern boundary of Site C) are offset from the boundary of Thomas Road.

SITE A
Proposed Credit Generating Area 14.30 ac.
Enhancement 10.00 ac.
PFO WET 3.11 ac. Credit Generating Area; 1.24 ac. Buffer
FO UPL 2.83 ac. Credit Generating Area; 1.84 ac. Buffer
Riparian UPL 0.83 Credit Generating Area; 0.15 ac. Buffer
Preservation 13.54 ac.
PFO WET 5.37 ac. Credit Generating Area; 3.35 ac. Buffer
FO UPL 2.16 ac. Credit Generating Area; 2.66 ac. Buffer
Total Site Area - 23.54 ac.

SITE B
Proposed Credit Generating Area 29.19 ac.
Enhancement 13.23 ac.
PFO WET 2.65 ac. Credit Generating Area; 0.28 ac. Buffer[1]
FO UPL 8.65 ac. Credit Generating Area; 1.65 ac. Buffer[1]
Preservation 22.76 ac.
PFO WET 14.63 ac. Credit Generating Area; 3.56 ac. Buffer[1]
FO UPL 3.26 ac. Credit Generating Area; 1.31 ac. Buffer[1]
Total Site Area - 35.99 ac.
1. Perimeter buffer encompasses portions of the utility easements on Site B.

SITE C
Proposed Credit Generating Area 30.25 ac.
Enhancement 19.60 ac.
PFO WET 7.14 ac. Credit Generating Area; 2.47 ac. Buffer[1]; 0.04 ac. Easement[2]
FO UPL 7.49 ac. Credit Generating Area; 2.39 ac. Buffer[1]; 0.07 ac. Easement[2]
Preservation 19.52 ac.
PFO WET 11.78 ac. Credit Generating Area; 3.60 ac. Buffer[1]; 0.10 ac. Easement[2]
FO UPL 3.84 ac. Credit Generating Area; 0.19 ac. Buffer[1]; 0.01 ac. Easement[2]
Total Site Area - 39.12 ac.
1. Perimeter buffer encompasses portions of the utility easements on Site C.
2. Portions of utility easement that lies outside of the perimeter buffer on south boundary of Site C.

LEGEND:
Bank Boundaries 98.65 ac.
City Limits
Buffer
Stream with Flow Direction
Protected Mitigation Areas
City-owned Vacated ROW
Internal ROW Boundary (Vacated)
Parcel Boundary
Underground Natural Gas Pipeline
Culvert
10' Utility Easement

0 300 600
SCALE IN FEET

NOTE(S):
1. Aerial from Google Earth™ (2022).
2. Wetland, Habitat and Streams from NES 2021.

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Fax: (360) 414-9305
www.eco-land.com

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DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure B.1
BANK SITE DESIGN OVERVIEW
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Stream with Flow Direction
- Culvert
- Internal ROW Boundary (Vacated)
- Abandoned Vehicle
- Reed canarygrass (*Phalaris arundinacea*)
- Blackberry - Multiple species but primarily Himalayan blackberry (*Rubus armeniacus*)
- Giant knotweed (*Fallopia sachalinense*)
- English ivy (*Hedera helix*)
- English hawthorn (*Crataegus monogyna*)
- English holly (*Ilex aquifolium*)
- Tansy ragwort (*Senecio jacobaea*)
- Traveler's-joy (*Clematis vitalba*)
- Horse chestnut (*Aesculus hippocastanum*)

SITE A
- Wetland Area - 13.07 ac.
- Upland Area - 10.47 ac.
- Total Site Area - 23.54 ac.

SITE B
- Wetland Area - 21.12 ac.
- Upland Area - 14.87 ac.
- Total Site Area - 35.99 ac.

SITE C
- Wetland Area - 25.13 ac.
- Upland Area - 13.99 ac.
- Total Site Area - 39.12 ac.

DETAIL
1"=80'

NOTE(S):
1. Shaded areas represent approximate distribution of invasive plants and is a high-level mapping for planning purposes. It is not intended to provide specific areas or percent cover of invasive plants and does not depict species dominance.

0 300 600
SCALE IN FEET

NOTE(S):
1. Aerial from Google Earth™ (2022).
2. Wetland, Habitat and Streams from NES 2021.

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Figure B.2
INVASIVE PLANT DISTRIBUTION
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- OHWM
- Culvert
- Protected Mitigation Areas
- Proposed Habitat Pile (6-8)
- Proposed Bank Boundary Sign (200')
- Proposed Boundary Fencing
- Proposed Exclusion Fencing
- Construction Access & Staging Area

NOTE(S):

1. Wetland categorization and lettering, streams, and habitat are from NES 2021.

SITE A

Proposed Credit Generating Area 14.30 ac.

Enhancement 10.00 ac.

PFO WET	3.11 ac.	Credit Generating Area
	1.24 ac.	Buffer
FO UPL	2.83 ac.	Credit Generating Area
	1.84 ac.	Buffer
Riparian UPL	0.83	Credit Generating Area
	0.15 ac.	Buffer

Preservation 13.54 ac.

PFO WET	5.37 ac.	Credit Generating Area
	3.35 ac.	Buffer
FO UPL	2.16 ac.	Credit Generating Area
	2.66 ac.	Buffer

Total Site Area - 23.54 ac.

Bear Creek

City of Bellingham
Bear Creek Open Space

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

100'

See Figure B.12

Site A Construction Access & Staging Area

Northwest Drive ROW 60'

Bennett Road ROW 30'

100'

100'

See Figure B.11

Culvert B

Culvert A

See Figure B.10

0'

West Bear Creek

Bellingham School District Mitigation Site

Bear Creek

Costco Mitigation Site (Land Owner: City of Bellingham)

Cornwall Park Church of God Mitigation Site

N W E S

0 150 300
SCALE IN FEET

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Figure B.3
BANK SITE DESIGN - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Protected Mitigation Areas
- City-owned Vacated ROW
- Proposed Habitat Pile (6-8)
- Proposed Bank Boundary Sign (200')
- Pedestrian Access for Construction Access & Staging
- 10' Utility Easement

NOTE(S):

1. Wetland categorization and numbering, streams, and habitat are from NES 2021.

SITE B

Proposed Credit Generating Area 29.19 ac.

Enhancement 13.23 ac.

PFO WET	2.65 ac.	Credit Generating Area
	0.28 ac.	Buffer[1]
FO UPL	8.65 ac.	Credit Generating Area
	1.65 ac.	Buffer[1]

Preservation 22.76 ac.

PFO WET	14.63 ac.	Credit Generating Area
	3.56 ac.	Buffer[1]
FO UPL	3.26 ac.	Credit Generating Area
	1.31 ac.	Buffer[1]

Total Site Area - 35.99 ac.

1. Perimeter buffer encompasses portions of the utility easements on Site B.

Horton Road ROW (Vacated) 60'

30'

10'

10'

70'

Utility Easement

100'

Bellingham School District Mitigation Site

D

D'

See Figure B.13

30'

West Bear Creek

70'

Utility Easement

Boxwood Road ROW (Vacated) 60'

0'

Costco Mitigation Site (Land Owner: City of Bellingham)

Site B Pedestrian Access for Construction Access & Staging (City Owned Property)

100'

100'

Utility Easement

10'

Thomas Road ROW 60'

Unnamed Tributary to West Bear Creek

Q

J

J

J

K

L

M

N

P

N

W

E

S

0 150 300

SCALE IN FEET

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CHK:
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Figure B.4
BANK SITE DESIGN - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- City Limits
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Protected Mitigation Areas
- Proposed Habitat Pile (6-8)
- Proposed Bank Boundary Sign (200')
- Proposed Boundary Fencing
- Pedestrian Access for Construction Access & Staging
- Internal ROW Boundary (Vacated)
- 10' Utility Easement

NOTE(S):

1. Wetland categorization and numbering, streams, and habitat are from NES 2021.

SITE C

Proposed Credit Generating Area 30.25 ac.

Enhancement 19.60 ac.

PFO WET	7.14 ac.	Credit Generating Area
	2.47 ac.	Buffer[1]
	0.04 ac.	Easement[2]
FO UPL	7.49 ac.	Credit Generating Area
	2.39 ac.	Buffer[1]
	0.07 ac.	Easement[2]

Preservation 19.52 ac.

PFO WET	11.78 ac.	Credit Generating Area
	3.60 ac.	Buffer[1]
	0.10 ac.	Easement[2]
FO UPL	3.84 ac.	Credit Generating Area
	0.19 ac.	Buffer[1]
	0.01 ac.	Easement[2]

Total Site Area - 39.12 ac.

1. Perimeter buffer encompasses portions of the utility easements on Site C.
2. Portions of utility easement that lies outside of the perimeter buffer on south boundary of Site C.

Bear Creek

Northwest Drive ROW

10' Waterline (Utility) Easement

10'

60' Thomas Road ROW

Thomas Road ROW 30'

Utility Easement

10'

100'

10'

Utility Easement

R

E

E'

W

See Figure B.14

S

S

U

V

S

S

30'

Bennett Road ROW (Vacated)

100'

100'

Utility Easement

10'

Internal ROW

60'

Stuart Road ROW (Vacated)

0'

Site C Pedestrian Access for Construction Access & Staging

City Limits

N W E S

0 150 300

SCALE IN FEET

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Figure B.5
BANK SITE DESIGN - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- OHWM
- Culvert
- Proposed Habitat Pile (6-8 per site)
- Proposed Bank Boundary Sign (200')
- Proposed Boundary Fencing
- Proposed Exclusion Fencing
- Construction Access & Staging Area

Enhancement
- PFO WET
- FO UPL
- Riparian UPL

Preservation
- PFO WET
- FO UPL

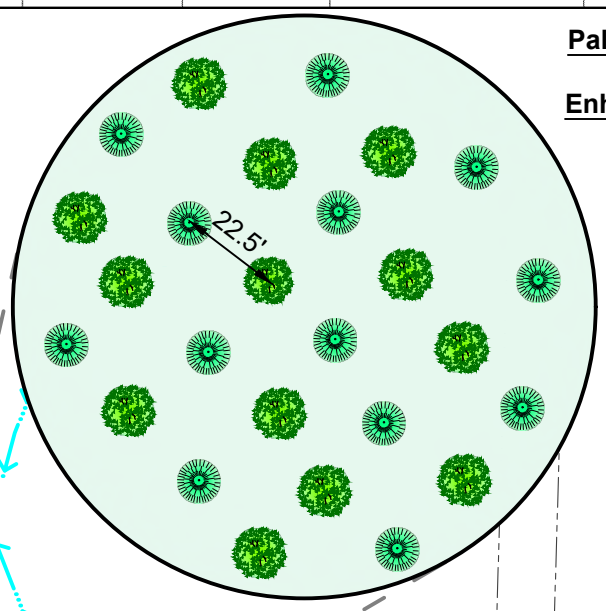
NOTE:
1. Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

Proposed PFO WET and FO UPL Enhancement – Site A

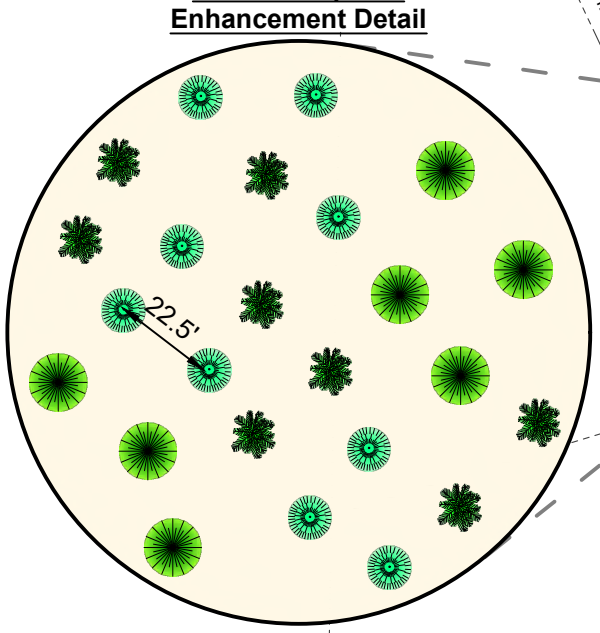
	Species	Avg. Spacing (ft on center)	Size	Density	Proposed Habitat Type
Wetland	Sitka spruce (*Picea sitchensis,* FAC)	22.5	P+1	86 trees/acre or ~375 trees	Palustrine Forested Wetland (PFO WET)
Wetland	Western redcedar (*Thuja plicata,* FAC)				
Upland	Grand fir (*Abies grandis,* FACU)	22.5	P+1	86 trees/acre or ~400 trees	Forested Upland (FO UPL)
Upland	Sitka spruce (*Picea sitchensis,* FAC)				
Upland	Douglas-fir (*Pseudotsuga menziesii,* FACU)				

P+1 (plug+seedling)

Palustrine Forested Wetland Enhancement Detail



Forested Upland Enhancement Detail



Bear Creek

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

Site A Construction Access & Staging Area

Northwest Drive ROW 60'

Bennett Road ROW 30'

See Figure B.12

See Figure B.11

Culvert A

Culvert B

See Figure B.10

Horton Road ROW (Vacated) 60'

100'

0'

N W E S

0 200 400

SCALE IN FEET

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CHK:
PROJECT NO: 3815.01

Figure B.6
PLANTING PLAN - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Underground Natural Gas Pipeline
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- OHWM
- Culvert
- Proposed Habitat Pile (6-8 per site)
- Proposed Bank Boundary Sign (200')
- Proposed Boundary Fencing
- Proposed Exclusion Fencing
- Construction Access & Staging Area

Enhancement
- PFO WET
- FO UPL
- Riparian UPL

Preservation
- PFO WET
- FO UPL

Native grass seed mix will be seeded in the culvert removal area. Approximate percentages of seed mix:

75% *Glyceria elata* (tall mannagrass)
5% *Agrostis exarata* (spiked bentgrass)
5% *Calamagrostis canadensis* (bluejoint reedgrass)
10% *Deschampsia cespitosa* (tufted hairgrass)
5% *Glyceria grandis* (reed mannagrass)

Bear Creek

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

Site A Construction Access & Staging Area

Northwest Drive ROW 60'

Bennett Road ROW 30'

See Figure B.12

See Figure B.11

See Figure B.10

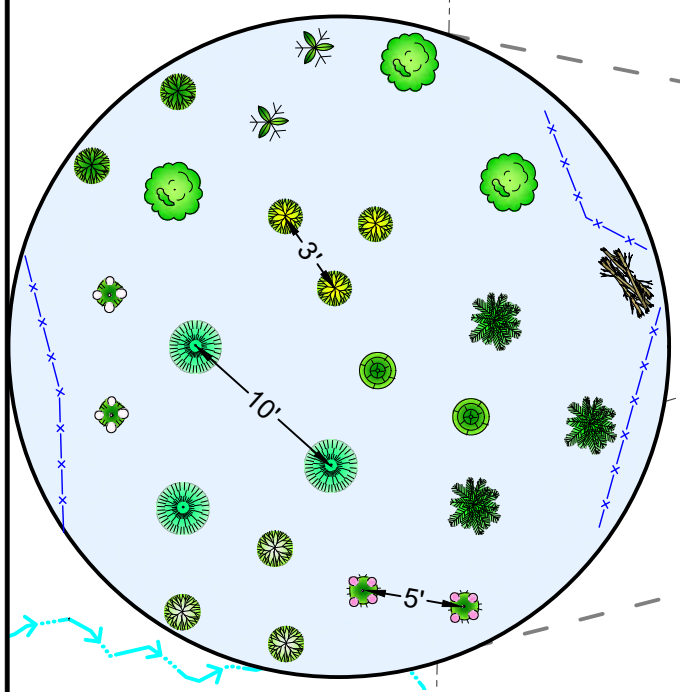
Culvert A

Culvert B

100'

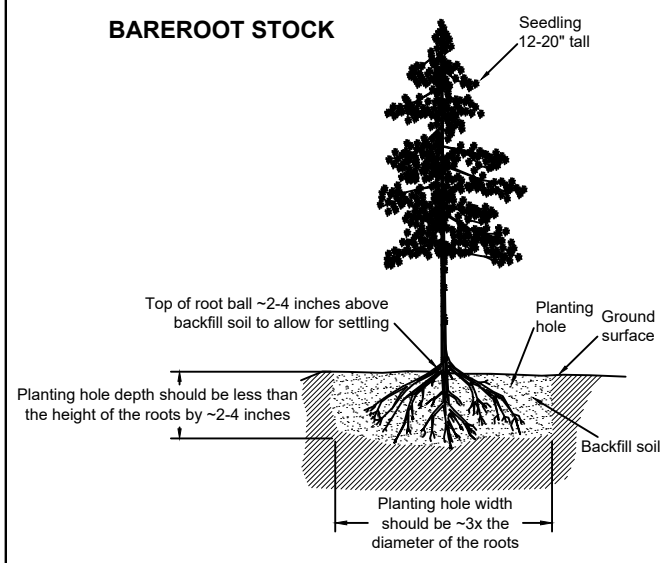
0'

Riparian Upland Enhancement Detail



Proposed Riparian UPL Enhancement – Site A

	Species	Avg. Spacing (ft on center)	Size P+1 (plug+seedling)	Density (0.98 ac)	Proposed Habitat Type
Tree	Sitka spruce (*Picea sitchensis,* FAC)	10	P+1	218 trees/acre or ~215 trees	Riparian Upland with forested & shrub classes (Riparian UPL)
Tree	Douglas-fir (*Pseudotsuga menziesii,* FACU)	10	P+1		
Tree	Black cottonwood (*Populus balsamifera,* FAC)	10	P+1		
Tree	Scouler willow (*Salix scouleriana,* FAC)	10	Min 4-ft live stake; ≥ 1-in diameter entire length		
Shrub	Black twinberry (Lonicera involucrata, FACW)	5	P+1	435 non-willow shrubs/acre or ~430 shrubs	
Shrub	Nootka rose (*Rosa nutkana,* FAC)	5	P+1		
Shrub	Pacific ninebark (Physocarpus capitatus, FACW)	5	P+1		
Shrub	Common snowberry (*Symphoricarpos albus,* FACU)	5	P+1		
Shrub	Pacific willow (Salix lasiandra, FACW)	3	Min 4-ft live stake; ≥ 1-in diameter entire length	1,210 willows/acre or ~1,200 willows	
Shrub	Sitka willow (*Salix sitchensis,* FACW)	3	Min 4-ft live stake; ≥ 1-in diameter entire length		



NOTE(S):
1. Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field.
2. See Figure B.15 for live stake detail.

N W E S

0 200 400
SCALE IN FEET

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CHK:
PROJECT NO: 3815.01

Figure B.7
RIPARIAN PLANTING PLAN - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Proposed Habitat Pile (6-8 per site)
- Proposed Bank Boundary Sign (200')
- Construction Access & Staging Area
- Pedestrian Access

Enhancement
- PFO WET
- FO UPL

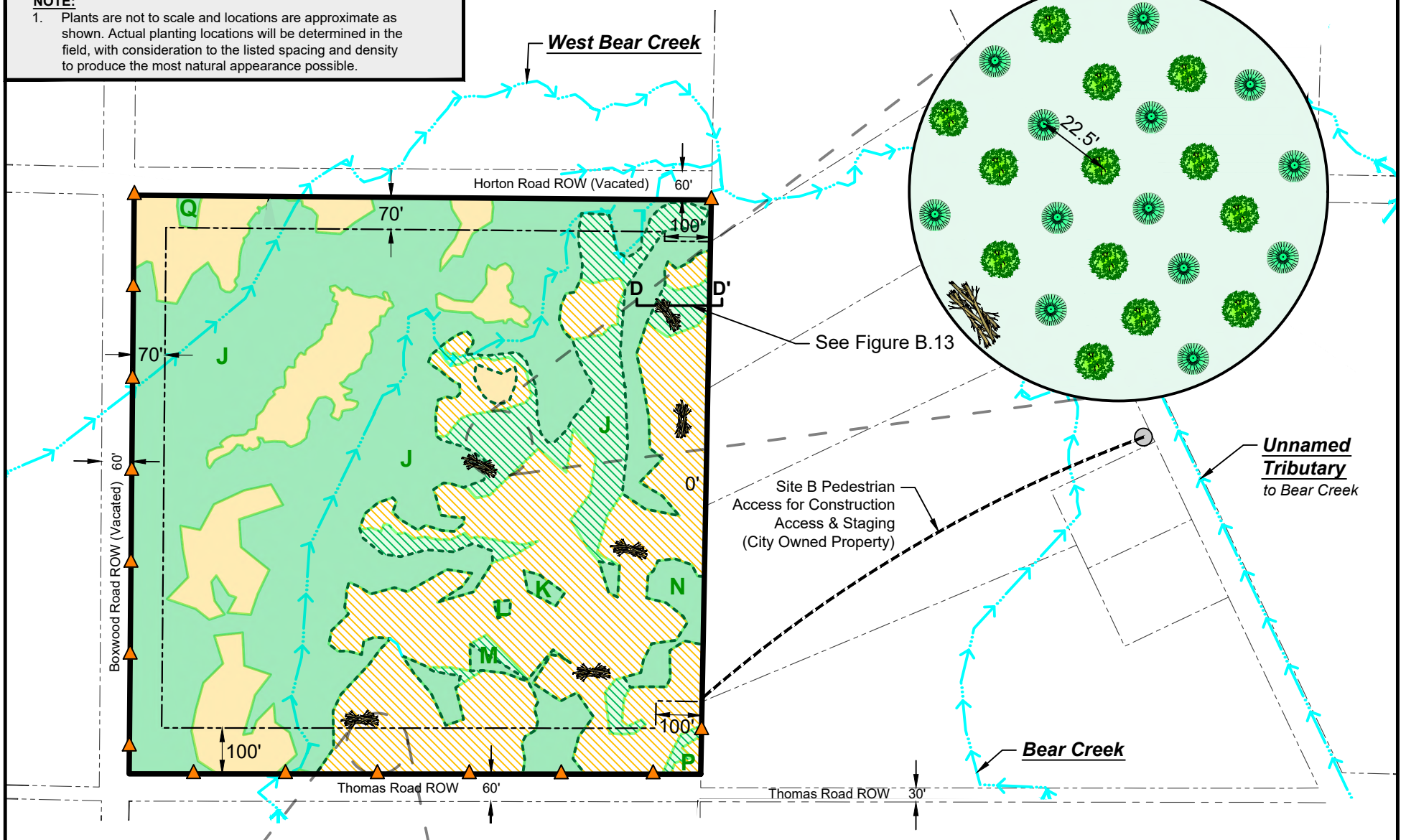
Preservation
- PFO WET
- FO UPL

NOTE:
1. Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

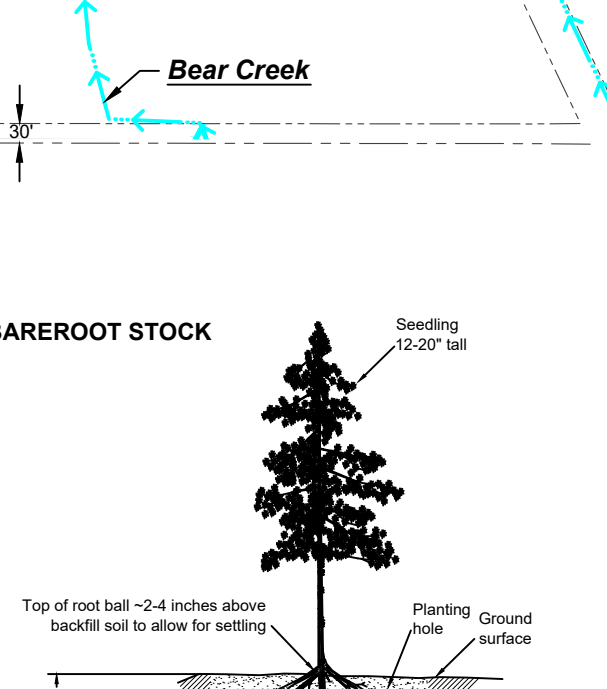
Proposed PFO WET and FO UPL Enhancement – Site B

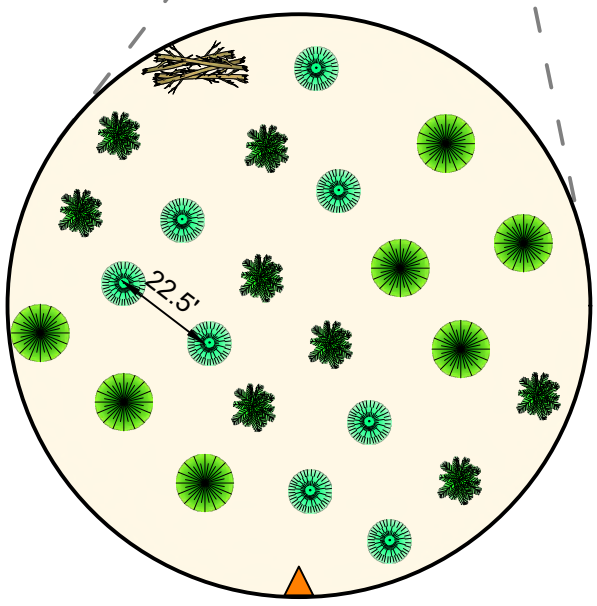
	Species	Avg. Spacing (ft on center)	Size	Density	Proposed Habitat Type
Wetland	Sitka spruce (*Picea sitchensis,* FAC)	22.5	P+1	86 trees/acre or ~250 trees	Palustrine Forested Wetland (PFO WET)
Wetland	Western redcedar (*Thuja plicata,* FAC)				
Upland	Grand fir (*Abies grandis,* FACU)	22.5	P+1	86 trees/acre or ~885 trees	Forested Upland (FO UPL)
Upland	Sitka spruce (*Picea sitchensis,* FAC)				
Upland	Douglas-fir (*Pseudotsuga menziesii,* FACU)				

P+1 (plug+seedling)



Palustrine Forested Wetland Enhancement Detail





Forested Upland Enhancement Detail

BAREROOT STOCK

N W E S

0 300 600
SCALE IN FEET

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PROJECT NO: 3815.01

Figure B.8
PLANTING PLAN - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Proposed Habitat Pile (6-8 per site)
- Proposed Bank Boundary Sign (200')
- Proposed Boundary Fencing
- Pedestrian Access for Construction Access & Staging
- Internal ROW Boundary (Vacated)

Enhancement
- PFO WET
- FO UPL

Preservation
- PFO WET
- FO UPL

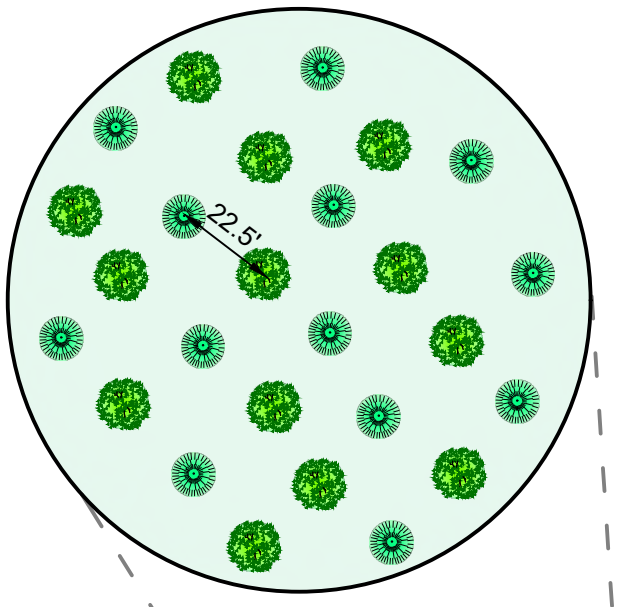
NOTE:
1. Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

Proposed PFO WET and FO UPL Enhancement – Site C

	Species	Avg. Spacing (ft on center)	Size	Density	Proposed Habitat Type
Wetland	Sitka spruce (*Picea sitchensis,* FAC)	22.5	P+1	86 trees/acre or ~830 trees	Palustrine Forested Wetland (PFO WET)
Wetland	Western redcedar (*Thuja plicata,* FAC)				
Upland	Grand fir (*Abies grandis,* FACU)	22.5	P+1	86 trees/acre or ~855 trees	Forested Upland (FO UPL)
Upland	Sitka spruce (*Picea sitchensis,* FAC)				
Upland	Douglas-fir (*Pseudotsuga menziesii,* FACU)				

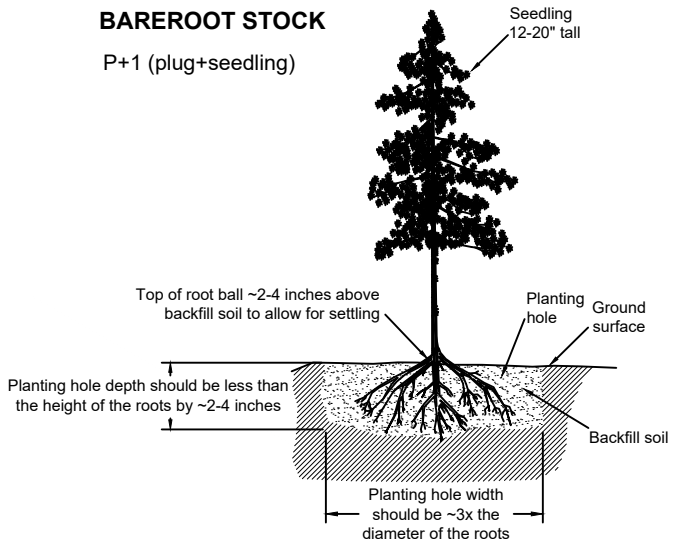
P+1 (plug+seedling)

Palustrine Forested Wetland Enhancement Detail

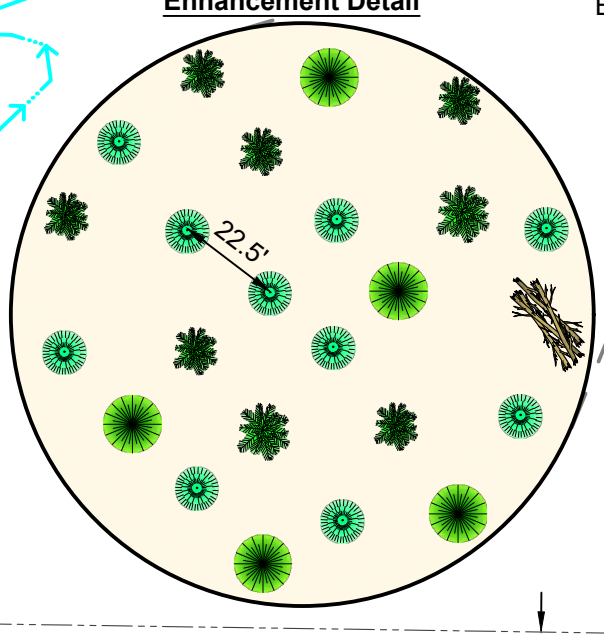


BAREROOT STOCK

P+1 (plug+seedling)



Forested Upland Enhancement Detail



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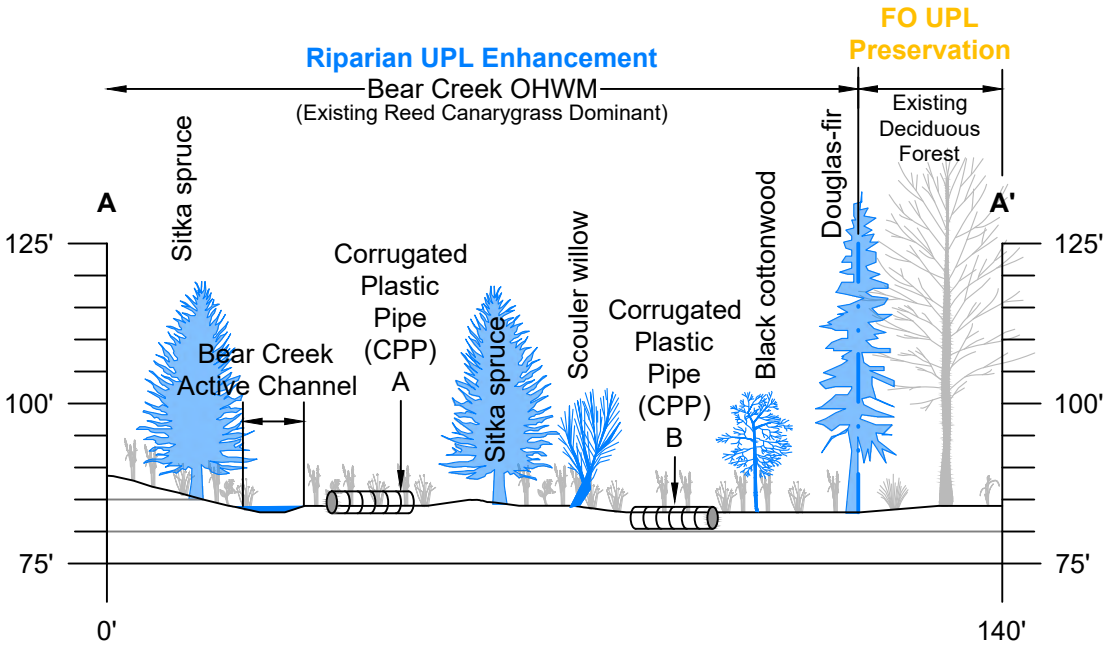
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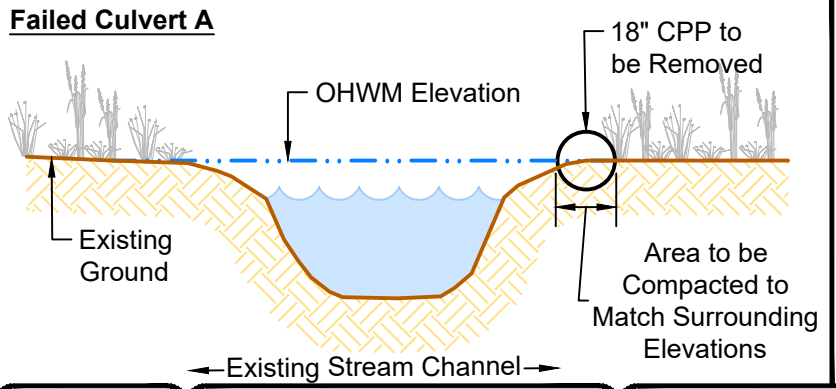
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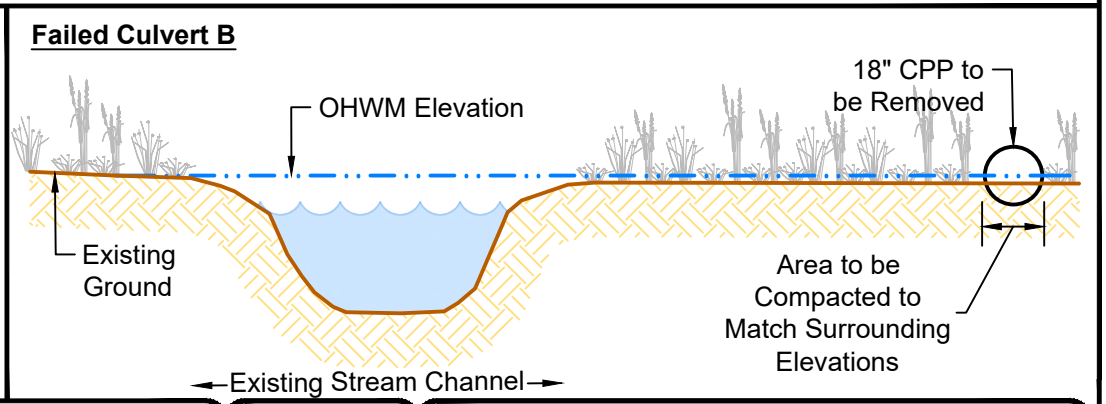
Figure B.9
PLANTING PLAN - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

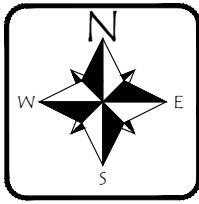










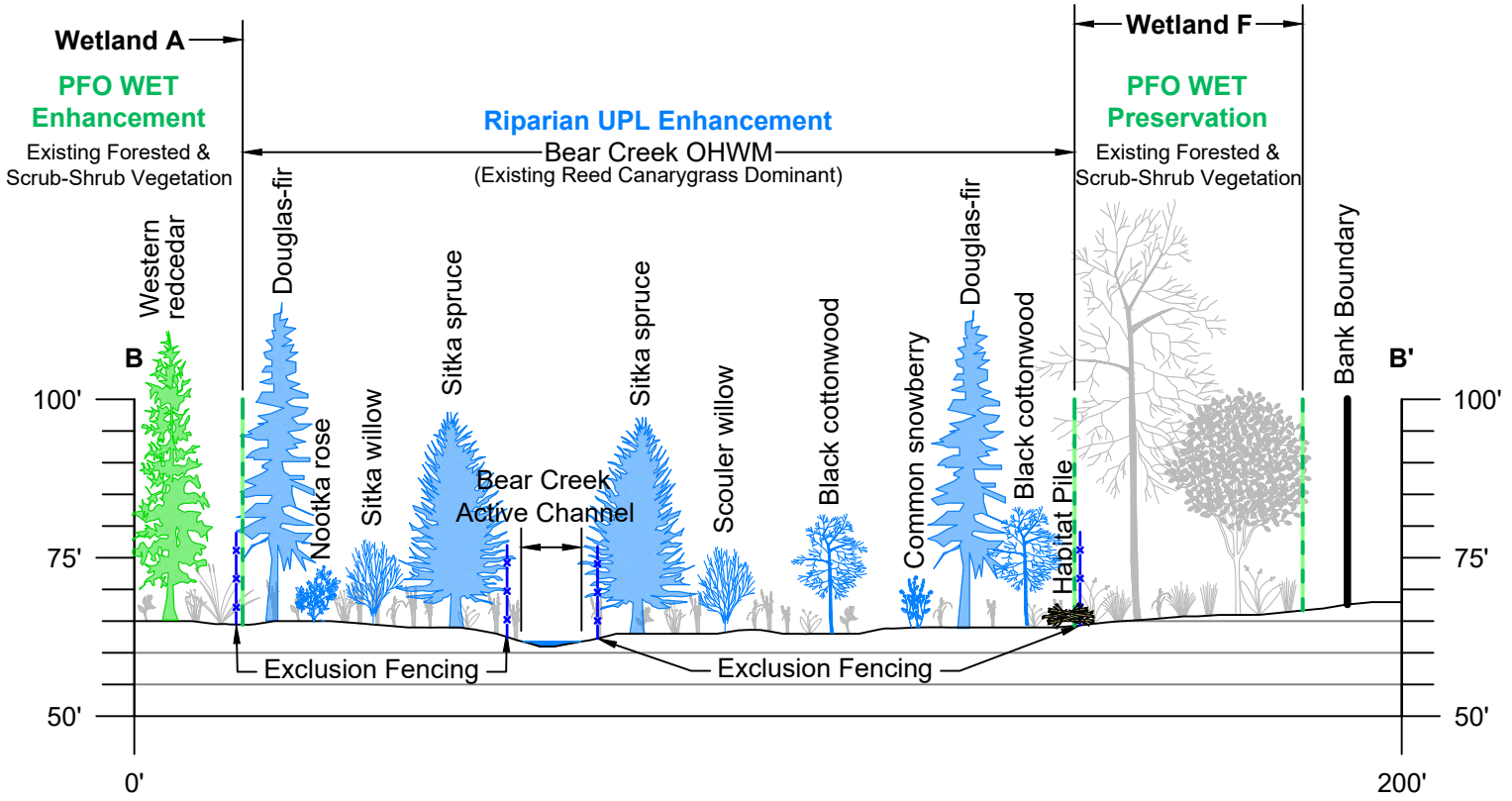


SCALE AS SHOWN

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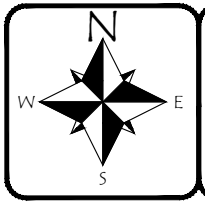
DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure B.10
CULVERT REMOVAL CROSS SECTION A - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.



NOTE(S):

1. Species selected that will tolerate sandy soils. Plant layout is specifically designed to provide perennial shade and species diversity to the stream and riparian corridor.



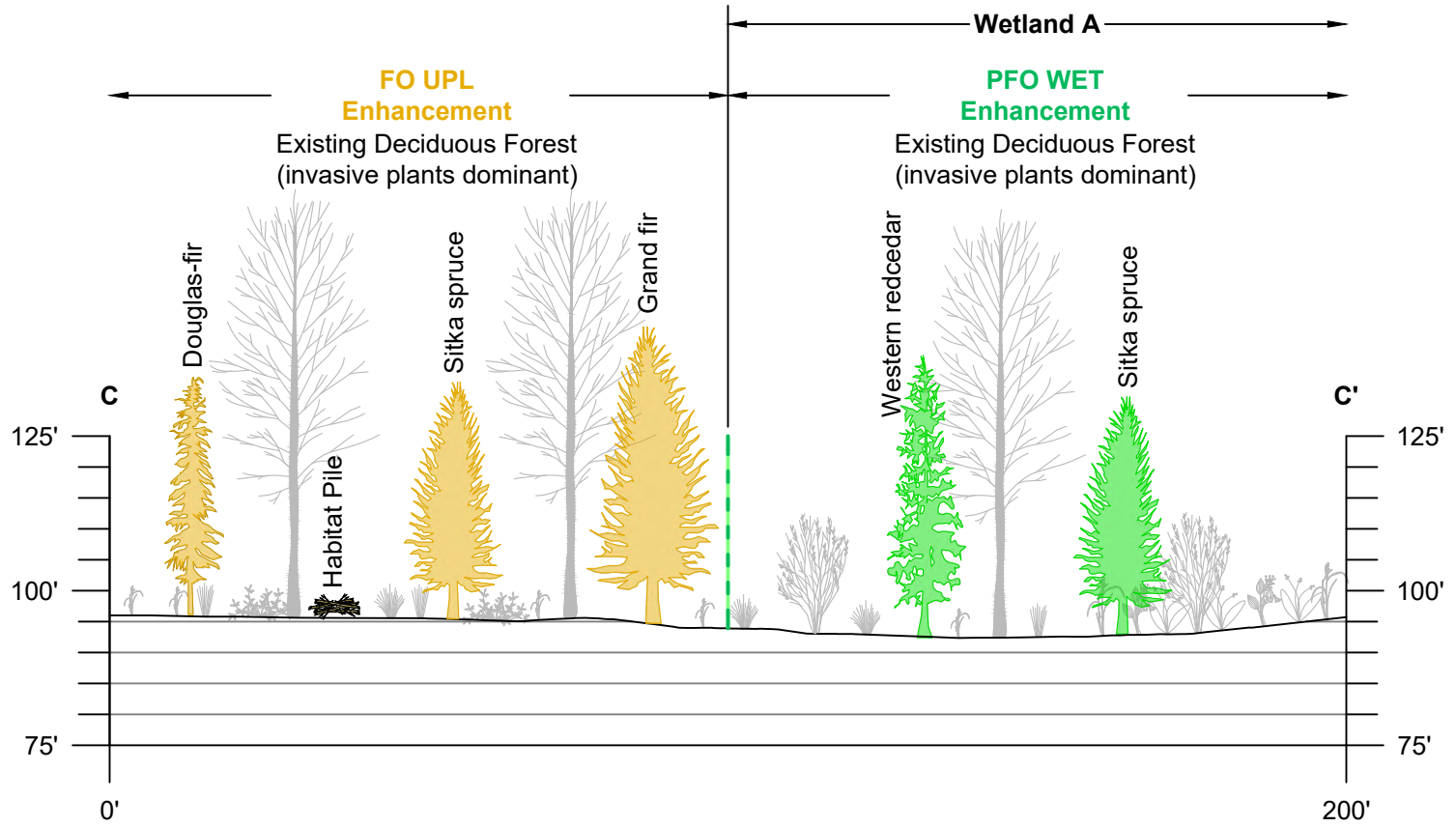
0 30 60

SCALE IN FEET

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Figure B.11
RIPARIAN UPLAND ENHANCEMENT CROSS SECTION B - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.



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SCALE IN FEET

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Figure B.12
FORESTED WETLAND & UPLAND ENHANCEMENT CROSS SECTION C - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.



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SCALE IN FEET

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Figure B.13
FORESTED WETLAND ENHANCEMENT CROSS SECTION D - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.



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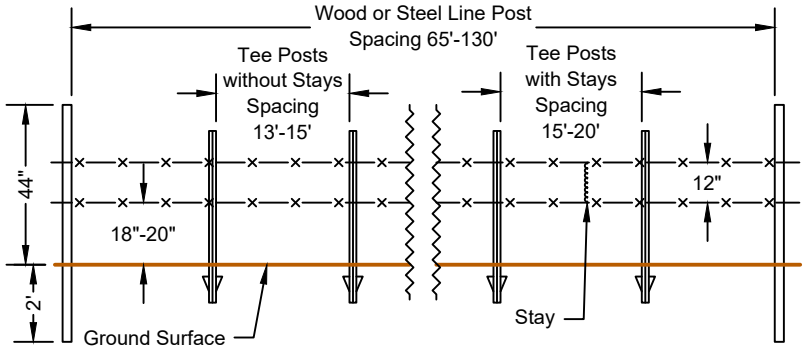
0 30 60
SCALE IN FEET

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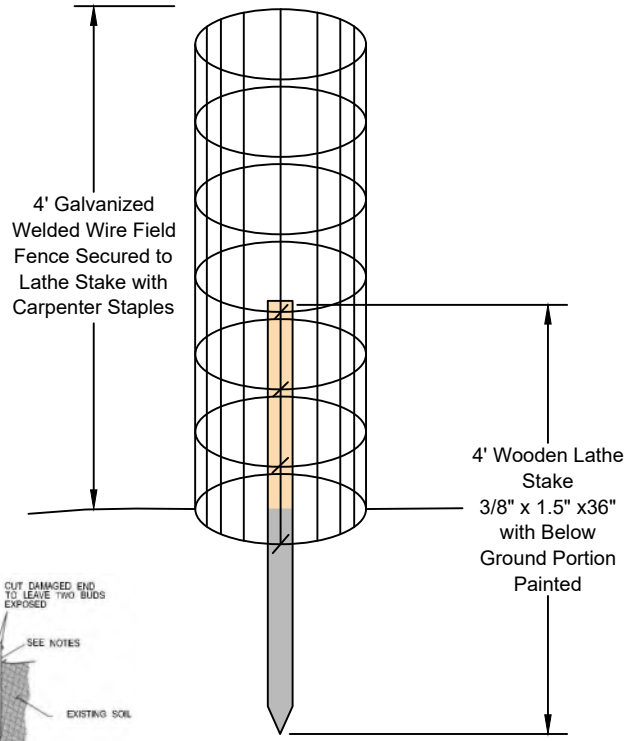
DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure B.14
FORESTED UPLAND ENHANCEMENT CROSS SECTION E - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

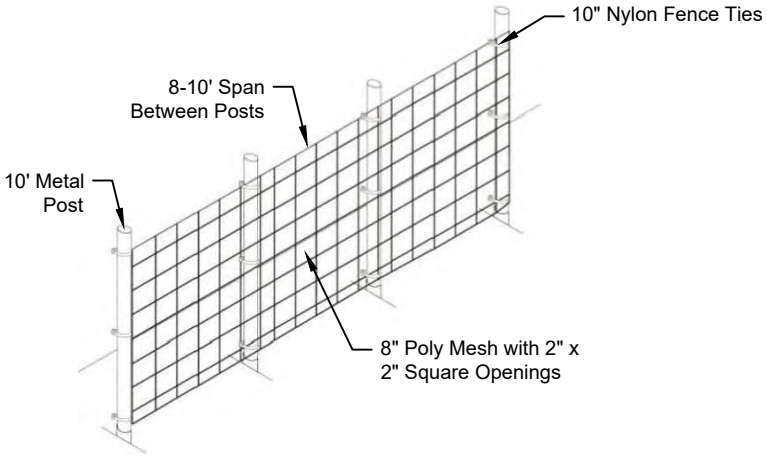
2-STRAND WIRE FENCE TYPICAL



TREE CAGE TYPICAL

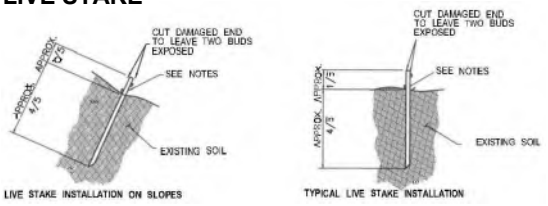


EXCLUSION FENCE TYPICAL



NOTE(S):
1. Detail www.criterfence.com

LIVE STAKE



NOTES:

1. A SOIL AUGER OR SIMILAR TOOL SHALL BE USED TO MAKE A PILOT HOLE FOR EACH LIVE STAKE.
2. THE DIAMETER OF THE PILOT HOLE SHALL BE LESS THAN THE NARROWEST DIAMETER OF THE LIVE STAKE TO ENSURE CONSISTENT SOIL-TO-LIVE STAKE CONTACT.
3. THE PILOT HOLE DEPTH SHALL BE APPROXIMATELY 2/3 THE LENGTH OF THE LIVE STAKE PRIOR TO INSTALLATION.
4. A DEAD BLOW HAMMER SHALL BE USED TO DRIVE THE LIVE STAKE INTO THE PILOT HOLE.
5. NO MORE THAN 2 BUDS OF THE LIVE STAKE SHALL EXTEND ABOVE THE SOIL SURFACE AFTER INSTALLATION. IF MORE THAN 2 BUDS REMAIN AFTER INSTALLATION, CUT THE LIVE STAKE 1" ABOVE THE SECOND BUD FROM THE GROUND WITH A STRAIGHT CUT.
6. LIVE STAKES DAMAGED AT THE TOP DURING INSTALLATION SHALL BE TRIMMED BACK TO AN UNDAMAGED CONDITION.
7. ALL LIVE STAKES SPLIT OR WITH LESS THAN 2 UNDAMAGED BUDS REMAINING ABOVEGROUND AFTER INSTALLATION MAY BE LEFT IN PLACE BUT MUST BE SUPPLEMENTED WITH A NEW LIVE STAKE THAT REMAINS WITH 2 UNDAMAGED BUDS ABOVEGROUND AFTER INSTALLATION.
8. IF SOIL VOIDS ARE PRESENT AROUND THE LIVE STAKE AFTER INSTALLATION, FILL VOID WITH A SOIL SLURRY. SOIL SLURRY IS MIXED IN A BUCKET FROM EQUAL PARTS WATER AND SOIL.

N W E S

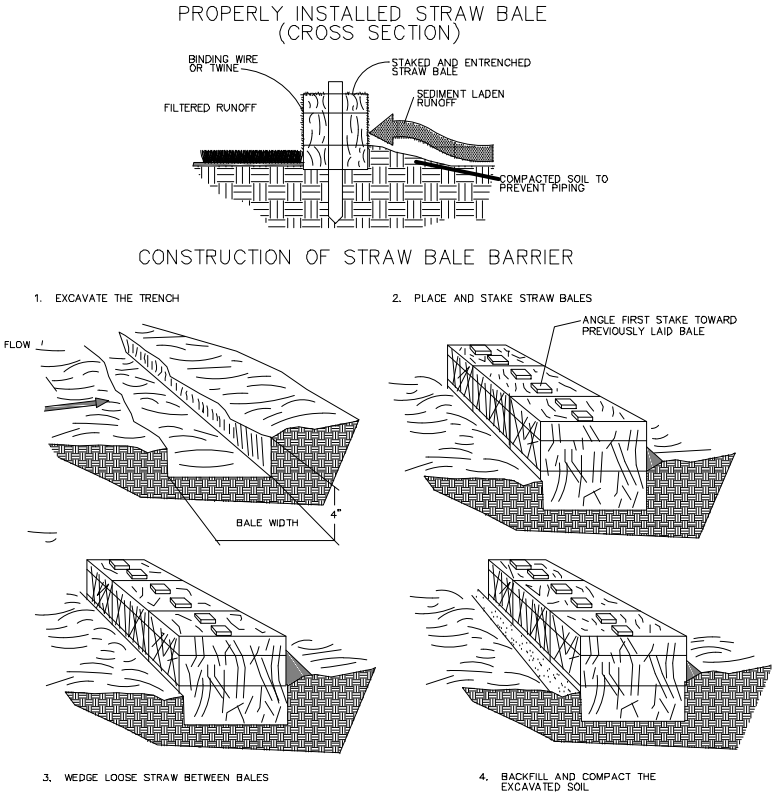
NOT TO SCALE

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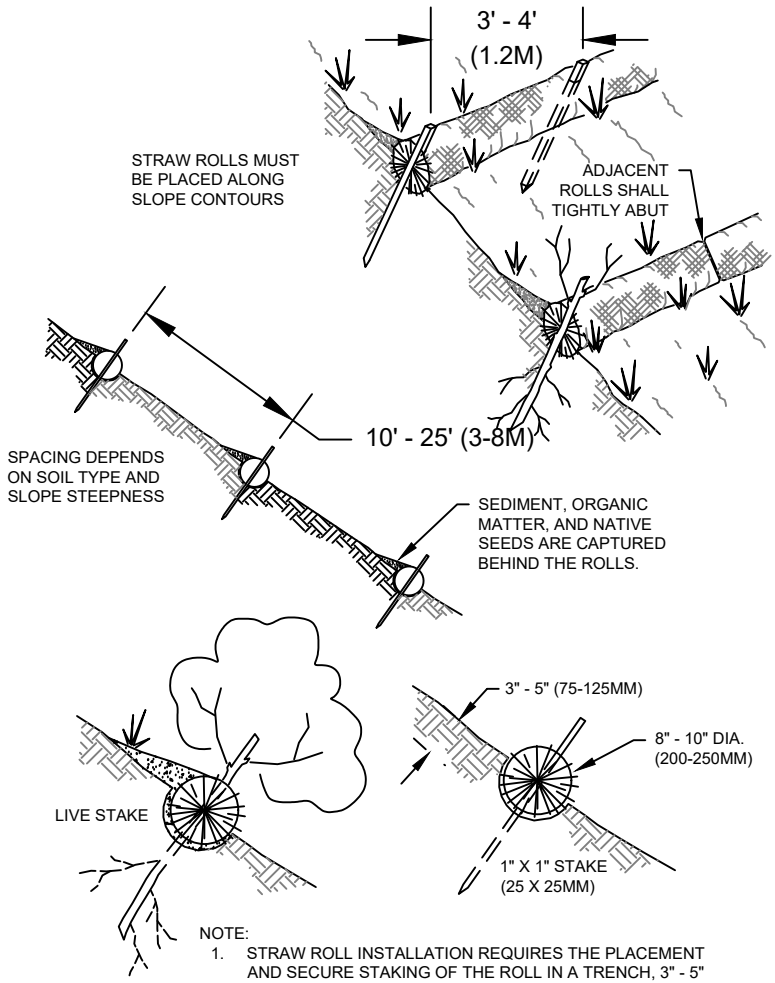
Figure B.15
TYPICALS
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

STRAWBALE TYPICAL



STRAW WATTLE DETAIL

NOT TO SCALE



NOTE:

1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" - 5" (75-125MM) DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.



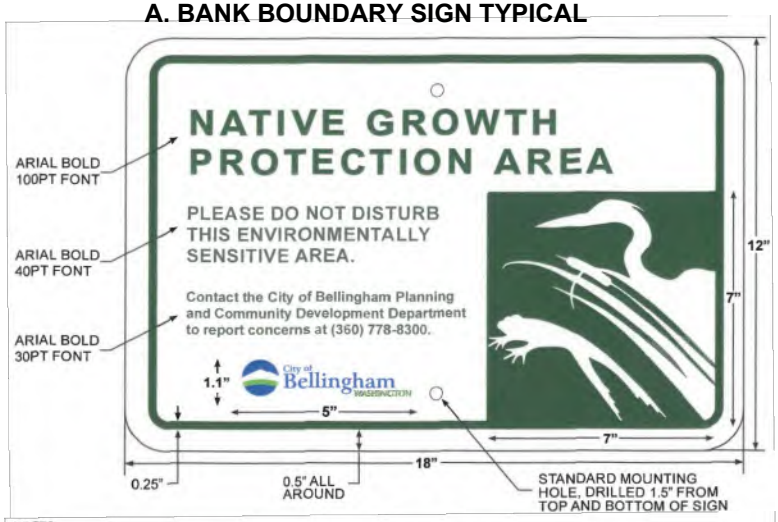
NOT TO SCALE

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Figure B.16
TYPICALS 2
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

A. BANK BOUNDARY SIGN TYPICAL



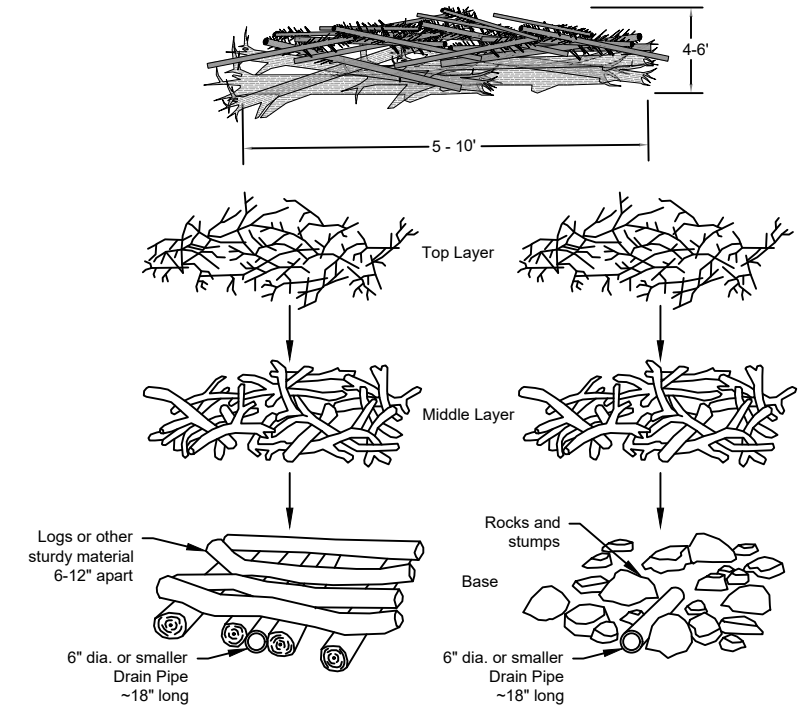
NOTES:
A. COLOR FOR FONT AND BORDER: C=79 M=33 Y=84 K=21.
B. LOCATION: SHALL BE AS SHOWN IN THE PLANS, OR AS MARKED IN THE FIELD BY CITY OF BELLINGHAM STAFF.
C. SIGNS SHALL BE FABRICATED IN ACCORDANCE WITH WSDOT AND MUTCD STANDARDS FOR TRAFFIC SIGNS.
D. SIGN SHALL BE MOUNTED ON PROTECTIVE FENCE OR STANDARD METAL STREET SIGN POST (COB PUBLIC WORKS STANDARD DETAIL TC-320 – STREET SIGN POST DETAIL).
E. GRAPHIC ELECTRONIC FILE WILL BE SUPPLIED BY CITY STAFF. GRAPHIC SHALL BE PRINTED ON WHITE BACKGROUND AS INDICATED ABOVE ON TRAFFIC GRADE REFLECTIVE VINYL.

B. BANK BOUNDARY SIGN TYPICAL



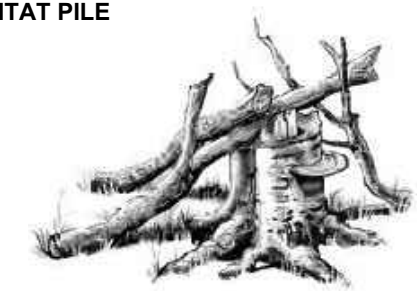
NOTE(S):
1. Both signs A and B will be displayed along bank boundaries.

HABITAT PILE TYPICAL



NOTE(S):
1. Detail from R. Link. 1999. Landscaping for Wildllife in the Pacific Northwest.

TREE STUMP VARIATION ON HABITAT PILE



Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

NOT TO SCALE

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure B.17
TYPICALS 3
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

APPENDIX C

BANK OBJECTIVES AND PERFORMANCE STANDARDS

C.1 Requirements for Bank Objectives and Performance Standards

A. Implementation of the Bellingham Mitigation Bank is anticipated to result in substantial gains in aquatic ecosystem functions, as compared to those now present as of the date of execution of the Instrument or those that would likely accrue on the site if the Bank were not constructed. The Sponsor must be able to demonstrate tangible aquatic ecosystem gains before Bank credits can be awarded for sale, use, or other transfer, because these functional gains will be used to offset comparable losses to other components of the aquatic environment in the Bank service area. The Bank's success will be measured by the enumerated objectives, each of which is subdivided into specific performance standards. The prescribed performance standards each provide a gauge for measuring the success of the ecological preservation and enhancement efforts of wetland and upland at the Bank.

B. Unless otherwise noted, all documentation required for demonstrating attainment of performance standards will be submitted to the IRT for review and approval as a condition of credit award. Documentation can typically be included in required monitoring reports. IRT award of credits will be reflected in a letter issued using a joint letterhead and signed by the Corps and Ecology.

C. Recreational, educational and scientific activities that do not conflict with the use limitations or other provisions of the conservation easement, do not interfere with the delineated purposes and goals of the Bank, and do not adversely affect the ecological viability and functionality of the Bank may take place on the Bank site.

D. All performance standards apply to the entire Bank including the perimeter buffer area.

C.2 Bank Objectives and Performance Standards

Objective 1. Protect Aquatic Ecosystem Functions

Permanently protect aquatic ecosystem functions at the Bank by instituting the Instrument and implementing a conservation easement with permanent funding for site stewardship. Each of the performance standards associated with this objective must be met before any Bank credits may be awarded, and before other implementation activities may be initiated pursuant to this Instrument. Any construction or implementation activities conducted onsite prior to the inception of the establishment period must cease as of the effective date of this Instrument pursuant to Article VI.B.1, until the Objective 1 performance standards 1A. through 1C. have been accomplished. The initial award of credits in recognition of accomplishment of these performance standards will serve as the IRT's notification that construction and implementation activities are authorized to commence.

	Performance Standard	Documentation
1A.	Complete the development of an appropriate Mitigation Banking Instrument and Appendices.	Mitigation Banking Instrument has been signed by the Sponsor and the applicable regulatory agencies. An original signed Instrument must be provided to each of the signatories.
1B.	Protect ecosystem functions by placing an IRT-approved conservation easement on the property.	Provide the IRT with copies of the signed, IRT-approved conservation easement and evidence that it has been recorded with Whatcom County and placed on the property title.
1C.	Obtain all appropriate environmental documentation, permits, and other authorizations needed to establish and maintain the Bank.	Provide IRT with copies of all environmental documentation, permits, and other authorizations.

Objective 2. Hydrology

Maintain existing wetland hydrology on the Bank site to support wetland-dependent species, sustain water quality functions, and maintain hydrologic connectivity in a regionally important, undeveloped biodiversity corridor.

	Performance Standard	Documentation
2A.	A minimum of 56 acres of wetland will be present on the Bank (Sites A, B, C) at Year 10.	In Year 10, wetlands will be delineated according to the 1987 Corps of Engineers Delineation Manual and appropriate regional supplement in effect at the time of delineation. Wetlands will be rated according to the Washington State Department of Ecology's *Washington State Wetland Rating System For Western Washington 2014 Update Version 2.0*, updated July 2023 (or the most current version). In addition, the ordinary high-water mark (OHWM) of all streams will be delineated according to methodology approved by Washington State Department of Ecology and U.S. Army Corps of Engineers. Wetland and stream delineation report is submitted to and approved by the IRT in Year 10. Wetlands and streams will be delineated on the entire Bank Site including the buffer areas.

Objective 3. Vegetation

Preserve and protect the Palustrine Forested Wetland (PFO WET) and Forested Upland (FO UPL) habitat that are interspersed with streams and riparian areas and are a part of a regionally important, undeveloped biodiversity corridor. Enhance Palustrine Forested Wetland (PFO WET), Forested Upland (FO UPL) habitats, and Riparian Upland (Riparian UPL) habitat across the Bank. Control invasive plants on the entire Bank Site.

Notes:

- *"Cover"* is used in this MBI to mean the actual proportion of the ground surface of the sample plot that is covered by a vertical projection of foliage (by a single species or a defined group of species) as viewed from above (or below for taller shrubs and trees), or by bare substrate. While one point on the ground may be covered by more than one species, the combined coverage of the target species group is only counted once. The percent cover by the combined native trees and shrubs cannot exceed 100% (relative cover).
- Cover standards refer to the cover of the target community, where cover of native herbaceous species does not count toward the cover targets of shrub or tree communities, and vice versa.

Performance Standards for All Areas of the Bank

	Performance Standard	Documentation
3A.	**Sites A, B, C.** Complete the native tree and shrub plantings within enhancement areas according to IRT-approved plans.	As-built planting plan and figures showing completed planting submitted to and approved by the IRT. Include a species list, plant spacing and density, and final planted acreages of plant community types.
3B.	**Sites A, B, C.** Within each habitat type (PFO WET, FO UPL, and Riparian UPL) Himalayan blackberry (*Rubus armeniacus*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), tansy ragwort (*Senecio jacobaea*), traveler's-joy (*Clematis vitalba*), and horse chestnut (*Aesculus hippocastanum*) will not collectively exceed 10% cover at Years 1, 3, 5, 7, and 10. Cover is not averaged for the entire site – maximum applies to each habitat type. Additional species may be added pursuant to Article VI.B.2.	Monitoring reports documenting non-native invasive species presence and percent cover are submitted to and approved by the IRT. Document the percent cover of invasive species in each habitat type and each data plot in Years 1, 3, 5, 7, and 10.
3C.	**Sites A, B, C.** Within the PFO WET and FO UPL habitat types, cover of reed canarygrass will not exceed 25% at Years 1, 3, 5, 7, and 10. Cover is not averaged for the entire site – the maximum applies to each habitat type.	Monitoring reports documenting reed canarygrass presence and percent cover are submitted to and approved by the IRT. Document the percent cover of reed canarygrass in each habitat type and each data plot in Years 1, 3, 5, 7, and 10.

	Performance Standard	Documentation
3D.	**Sites A, B, C.** Over the entire Bank Site there will be zero presence of invasive knotweed [Japanese knotweed (*Fallopia cuspidatum*), giant knotweed (*Fallopia sachalinense*), Himalayan knotweed (*Persicaria polystachyum*), Bohemian knotweed *(Fallopia* x *bohemicum*), and related hybrids], bindweeds (*Convolvulus arvensis, Convolvulus sepium, Convolvulus silvaticus,* and *Fallopia convolvulus*), purple loosestrife (*Lythrum salicaria*), and English ivy (*Hedera helix*). Any existing specimens will be mapped and eliminated. Map any specimens and eradicate during the growing season of each year. Additional species may be added pursuant to Article VI.B.2.	Monitoring reports documenting identification and eradication are submitted to and approved by the IRT. Inventory annually and include any presence and eradication methods in monitoring reports in Years 1, 3, 5, 7, and 10.

Performance Standards for Sites A, B, C – Palustrine Forested Wetland (PFO WET) and Forested Upland (FO UPL) Preservation

	Performance Standard	Documentation
3E.	**Sites A, B, C.** Assess and document any changes to the preservation areas from human activities or significant natural changes in Years 5 and 10.	Perform a qualitative assessment of preservation areas noting any natural or unnatural (human-caused) changes to the wetlands, stream, or upland forest from baseline conditions, including but not limited to new or expanded encroachments, new deposition of garbage, and condition of signs and fencing. Include in Years 5 and 10 monitoring reports for submittal to and approval by the IRT. If negative changes occur, adaptive management activities will be evaluated in consultation with the IRT.

Performance Standards for Sites A, B, C – Palustrine Forested Wetland (PFO WET) and Forested Upland (FO UPL) Enhancement

	Performance Standard	Documentation
3F.	**Sites A, B, C.** The PFO WET and FO UPL habitat types will have a minimum density of native conifers of at least 86 plants per acre (22.5 feet o.c.) at Year 1 and will have a minimum density of at least: ▪ 43 conifers per acre at Year 3, ▪ 37 conifers per acre at Year 5, ▪ 32 conifers per acre at Year 7, and ▪ 26 conifers per acre at Year 10.	Monitoring reports documenting density of native conifers in Years 1**,** 3, 5, 7, and 10 are submitted to and approved by the IRT. Native conifers existing before installation do not count toward this performance standard. Volunteer native conifer species taller than 2 feet can count towards satisfying this Performance Standard.

Performance Standards for Site A – Riparian Upland (Riparian UPL) Enhancement

	Performance Standard	Documentation
3G.	**Site A.** The Riparian UPL habitat type will have a minimum density of native trees and shrubs of at least 1,863[1] plants per acre (3 to 10 feet o.c.) at Year 1, and will have a minimum combined percent cover by native trees and shrubs of at least: ▪ 30% cover at Year 3, ▪ 50% cover at Year 5, ▪ 70% cover at Year 7, and ▪ 85% cover at Year 10.	Monitoring reports documenting density of installed native trees and shrubs in Year 1, and combined percent cover by native trees and shrubs in Years 3, 5, 7, and 10 are submitted to and approved by the IRT. Native trees and shrubs existing before installation do not count toward the density performance standard. Aerial cover by volunteer native tree and shrub species taller than 2 foot can count towards satisfying the percent cover Performance Standard.

[1] 1,863 native trees and shrubs per acre consists of 218 trees, 435 non-willow shrubs per acre, and 1,210 willows per acre in Year 1

APPENDIX D

CREDIT GENERATION AND AWARD SCHEDULE

D.1 Definition of Credit Values

A. Credits will be established and awarded to the Bank upon the Sponsor's demonstration that the Performance Standards reflected in Appendix C, Section C.2 have been met.

B. A "credit" is defined as a unit of measure representing the increase in the ecological value of the Bank site. A credit for this Bank represents the increase in functions and values, and areal extent of the wetland and riparian systems on the Bank site. A credit is also based on the water quality, water quantity, and habitat functions the Bank will provide as performance standards are met. This increase in function resulting from preservation and enhancement of wetlands, streams, and associated uplands is detailed in Appendix B and **Table D.1** below. The anticipated number of credits reflected in **Table D.1** are determined based on the projection, if the performance standards are achieved, that the enhanced and preserved wetlands, riparian areas, and associated upland habitat will continue to rate as high functioning systems.

C. The precise number of credits actually generated by the Bank cannot be determined until the project is implemented and the success of preservation and enhancement activities is assessed by the Corps and Ecology, in consultation with the IRT. The final number of credits will be determined by the Corps and Ecology, in consultation with the IRT, and will be based on achievement of the performance standards set forth in Appendix C of this Instrument.

D.2 Credit Generation

A. Credits generated by the Bank will be calculated as shown in **Table D.1** below. The total amount of credit that can be generated at the Bank site is 13.69 credits. This includes credits generated by 32.70 acres of enhanced wetlands and riparian habitat and 41.04 acres of preserved wetland and uplands.

Table D.1. Wetland Credit Generation by Bank Development Activity

Bank Activity	Credit Generating Area (acres)	Credit Ratio (Activity Area: Credit)	Anticipated Number of Credits
Enhancement			
Riparian Upland (Riparian UPL)	0.83	4:1	0.21
Palustrine Forested Wetland (PFO WET)	12.90	4:1	3.23
Forested Upland (FO UPL)	18.97	5:1	3.79
subtotal	32.70		7.23
Preservation			
Palustrine Forested Wetland (PFO WET)	31.78	6:1	5.30
Forested Upland (FO UPL)	9.26	8:1	1.16
subtotal	41.04		6.46
Total	**73.74**		**13.69**

D.3 Credit Award Schedule

A. Credits will be awarded to the Bank for sale, use, or other transfer as the performance standards associated with those credits are met, with the following exceptions: (1) no credits may be awarded prior to meeting all of the performance standards associated with Objective 1 in Appendix C, and (2) no credits associated with the Year 10 performance standards may be awarded until at least 60 percent of all possible credits associated with Years 0 through 9 have been awarded.

B. The Corps and Ecology, in consultation with the IRT, will typically approve the award of credits according to the schedule in **Table D.2**, below. Credits may not be awarded sooner than specified in **Table D.2**, except where otherwise noted or in extraordinary situations with the written approval of the Corps and Ecology, in consultation with the IRT. If the Bank is not able to meet a particular performance standard by the year indicated in **Table D.2**, the Sponsor may submit documentation of successful satisfaction of that performance standard during a subsequent year, and the Corps and Ecology, in consultation with the IRT, will give full consideration to the award of appropriate credits for sale, use, or transfer without reduction or other penalty.

C. The Corps and Ecology may, at their discretion, following consultation with the IRT, award partial credit for partial accomplishment of a performance standard. In the event a specific performance standard is not met, but the IRT feels that the Bank is progressing satisfactorily, the Corps and Ecology may at their discretion, following consultation with the IRT, award credits.

D. Once a credit is awarded, the Bank may sell, use, or otherwise transfer that credit at any time, subject to the provisions of this Instrument.

E. If the institution of an adaptive management or remedial action plan as described in Section F.5 of Appendix F causes delay in the achievement of a performance standard, the timeline for achievement of each subsequent milestone for that performance standard will be deferred for a like interval, unless otherwise specifically approved by the Corps and Ecology, following consultation with the IRT. The Corps and Ecology, following consultation with the IRT and with the Sponsor, will determine what remedial actions are necessary to correct the situation, pursuant to Article IV.H. and Section F.5, and direct their performance prior to the award of any additional mitigation credits.

Applies to Enhancement Activity
Applies to Preservation Activity
Applies to Both Activities

Table D.2. Credit Release Schedule

	Pre-Construction Credits	Year 0[1] Credits	Year 1 Credits	Year 3 Credits	Year 5 Credits	Year 7 Credits	Year 10 Credits	Total Credits
Objective 1. Protect Aquatic Ecosystem Functions								
1A. MBI Signed	1.67							1.67
1B. CE Recorded	1.67							1.67
1C. Obtain Permits for Construction	1.66							1.66
Objective 2. Hydrology								
2A. Sites A, B, C - Minimum Acreage of Wetlands Present in Year 10							0.80	0.80
Objective 3. Vegetation								
All Areas of the Bank								
3A. Sites A, B, C - Plantings Installed in Enhancement Areas (As-built Report)		1.50						1.50
3B. Sites A, B, C - Maximum Cover of Specified Invasives in Years 1, 3, 5, 7, 10			0.20	0.20	0.20	0.20	0.20	1.00
3C. Sites A, B, C - Maximum Cover of Reed Canarygrass in Years 1, 3, 5, 7, 10			0.20	0.20	0.20	0.20	0.20	1.00
3D. Sites A, B, C - Maximum Cover of High Importance Specified Invasives in Years 1, 3, 5, 7, 10			0.20	0.20	0.20	0.20	0.20	1.00
PFO WET and FO UPL Preservation								
3E. Sites A, B, C - Qualitatively assess preservation areas for changes in Years 5 and 10					0.50		0.68	1.18
PFO WET and FO UPL Enhancement								
3F. Sites A, B, C - Conifer Density in Year 1, 3, 5, 7, 10			0.20	0.20	0.20	0.20	0.20	1.00
Riparian UPL Enhancement								
3G. Site A - Tree and Shrub Density in Year 1, Percent Cover in Years 3, 5, 7, 10			0.24	0.24	0.24	0.24	0.25	1.21
Total Credits Available in the Period	**5.00**	**1.50**	**1.04**	**1.04**	**1.54**	**1.04**	**2.53**	**13.69**
Percent	36.52	10.96	7.60	7.60	11.25	7.60	18.48	100.00
Cumulative Percent	36.52	47.48	55.07	62.67	73.92	81.52	100.00	100.00
Credits from Enhancement Activities	**1.92**	**1.50**	**0.76**	**0.76**	**0.76**	**0.76**	**0.77**	**7.23**
Credits from Preservation Activities	**3.08**	**0.00**	**0.28**	**0.28**	**0.78**	**0.28**	**1.76**	**6.46**

[1]Year 0 is the calendar year during which construction is completed, and the as-built drawings are submitted by the Sponsor and approved by the IRT. Year 1 is the first year of site monitoring following approval of the as-built drawings.

APPENDIX E

PROCEDURES FOR USE OF MITIGATION BANK CREDITS AND DEBIT USE

E.1 Service Area

A. The service area for the Bank includes all freshwater wetland and stream habitats in nine watersheds and associated sub-watersheds within Water Resource Inventory Area (WRIA) 1 (**Figure E.1**). The service area excludes waters having salt concentration greater than 0.5 parts per thousand at any time during the year, including marine, nearshore, and estuarine areas (Ecology, Corps, and EPA Joint Guidance 2021).

The boundaries for the service area were delineated based on the watershed boundaries developed by the Subbasin Subcommittee as described in the *WRIA 1 Watershed Management Plan* (WMP 2005). The service area includes lowland headwater systems of coastal drainages that run from east to west, through the City of Bellingham, flowing into Bellingham Bay. In addition to these coastal drainages, the service area includes Silver Creek, where the Bank is located, and Ten Mile Creek, both of which drain to the Nooksack River before its outlet to Bellingham Bay. The service area ranges in elevation from near sea level to 2,000 feet and includes a majority of the City of Bellingham and its Urban Growth Area (UGA) and portions of rural Whatcom County. The total size of the service area is 68,978 acres (108 square miles), or approximately 7.5 percent of WRIA 1. At its greatest distance, the service area spans approximately 17.3 miles from north to south and 11.4 miles east to west. Confluence points in Bellingham Bay for drainages from the service area are within 8.7 miles of each other. The extents of the service area are summarized in **Table E.1** and depicted on **Figures E.1 and E.2**.

Table E.1 Extent of Bellingham Mitigation Bank Service Area

	Service Area Limits of Bellingham Mitigation Bank
Northern Limits	Northern Extent of Ten Mile Creek Watershed
Western Limits	Western Extents of Silver Creek, Bellingham Bay, and Chuckanut Bay Watersheds
Eastern Limits	Eastern Extents of Ten Mile Creek, Squalicum Creek, Whatcom Creek, Padden Creek, Chuckanut Creek and Chuckanut Bay Watersheds
Southern Limits	Southern Extents of Chuckanut Creek and Chuckanut Bay Watersheds

The Bank may be used to compensate for permitted impacts that are located within the service area if specifically approved by the appropriate agencies requiring mitigation.

Consideration of anticipated impacts by watershed, the types of wetlands and aquatic resources that are to be impacted, and the types of aquatic resource functions to be provided at the Bank were key factors in defining the service area. In 2017, the City undertook extensive analysis to identify projects and quantify potential impacts to wetland and stream functions within the entirety of WRIA 1 (*Impact Analysis Technical Memorandum*, WLNRC 2017). The City then updated the analysis in 2020 to confirm impact estimates (*Mitigation Program: Analysis of Potential Natural Resource Impacts,* City of Bellingham

2020b). Based on these analyses, the greatest amount of future impact is anticipated to occur within the Silver Creek watershed (where the Bank is located), which is projected to receive nearly 53 percent of all impacts within WRIA 1. The Silver Creek watershed, as well as the Ten Mile Creek watershed, contain small, lowland tributaries to the Nooksack River, and were included in the service area due to their location adjacent to the Bank and high level of anticipated future impacts to aquatic resources. The remaining seven watersheds in the service area are part of coastal drainage basins containing subbasins that drain directly into Bellingham Bay as described in the *WRIA 1 Watershed Management Plan* (WMP 2005).

The service area was chosen based on commonalities with the Bank, including shared land use pressures, historic alterations, hydrology regimes, landscape setting and habitat types among others. The service area encompasses an urban-suburban-rural mix of the City of Bellingham and its UGA boundary within Whatcom County, including rural lands experiencing moderate development pressure. Lowland and headwater wetlands within the Bank provide water quality, flood storage, and habitat functions that the City has targeted to protect, similar to the wetlands and functions that will be impacted throughout the service area.

The watersheds included in the service area have a shared geomorphic landscape that was formed by the advancement and retreat of the Cordilleran ice sheet during the Fraser Glaciation approximately 18,000 to 11,500 years ago and was further shaped by localized fluvial, volcanic, eolian, and hillslope ecological processes (Kovanen *et al.* 2020). According to the *WRIA 1 Groundwater Data Assessment* (Lindsay and Bandaragoda 2013), the lowlands in the westernmost part of WRIA 1, which make up most of the service area, are mainly underlain by glacial and alluvial sediments overlying sedimentary bedrock. The assessment describes the Silver Creek and Ten Mile Creek watersheds as part of the Discontinuous Aquifer designation. Groundwater in these areas is typically unconfined, recharged by direct infiltration of precipitation, and primarily discharges to shallow wells and nearby streams. The remainder of the service area is described as part of the Bedrock Aquifer, with generally low permeability but the ability to yield usable quantities of groundwater in localized areas where secondary fractures have increased the overall permeability of the unit.

The service area encompasses high priority habitat, riparian, and open space corridors identified in key planning documents, including the City's *Habitat Restoration Technical Assessment* (BHRTA 2015) and *Wildlife Corridor Analysis* (Diamond Head Consulting 2022). The *Wildlife Corridor Analysis* highlighted the importance of maintaining and improving ecological connections within the City of Bellingham, including forested and shrub communities that connect to freshwater, conifer-dominated forests, and large, intact forests. City planning documents, including the *Bellingham Habitat Restoration Technical Assessment* (BHRTA 2015) and *Parks, Recreation, and Open Space (PRO) Plan* (City of Bellingham 2020a), propose multiple open space corridors oriented north-south, bisecting watersheds primarily oriented east-west. The Bank meets or has the potential to meet all three criteria with enhancement and preservation of a portion of a larger 400+ acre corridor. In doing so, it shares and augments goals for habitat maintenance throughout the entire service area. Along with successful planning efforts, the Bank has the potential to provide a critical location and connectivity for wildlife habitation and movement across the service area.

Segments of impaired waterbodies on the 303d list for water quality are found throughout the service area. Enhancement and preservation at the Bank will directly maintain and improve water quality within Bear Creek, its tributaries, and receiving waters. Since all watersheds in the service area share a common receiving water (Bellingham Bay), water quality improvements at the Bank will aid in offsetting the impacts of water quality degradation throughout the service area. Similarly, the functional lift provided by improvements at the Bank will yield benefits to watershed processes, including flow regime regulation, water quality improvement and habitat connectivity that will serve as a safeguard and provide long-term refugia for anadromous fish and other aquatic species in the case of a depopulation event or other disturbance within the service area.

Specific areas have been excluded from the service area. The Lake Whatcom Watershed is excluded due to its unique ecological needs as a reservoir and existing management by the multi-jurisdictional Lake Whatcom Management Program. Several other areas were excluded based on feedback from the Lummi Nation and the Swinomish Indian Tribal Community. In response to input from the Lummi Nation, the Lynden North and Lower Mainstem Nooksack basins were removed. In response to comments from the Swinomish Indian Tribal Community, the Samish Bay Watershed was excluded.

E.2 Use of Credits Outside the Service Area

The Bank may be used to compensate for permitted impacts outside the service area, including watersheds adjacent to the described service area, if specifically approved by the appropriate agencies requiring mitigation and the Corps and Ecology, following consultation with the IRT, provided that such mitigation would be practicable and environmentally preferable to other mitigation alternatives. As such, out-of-service-area impacts will only be allowed in special circumstances, which will be evaluated on a case-by-case basis. Examples include projects that span multiple basins, such as transportation and utility corridors and pipelines, and settlement of enforcement actions.

E.3 Credit-Debit Ratios

A. Credits may be used, subject to the approval of the regulatory agencies with jurisdiction over the impact, to compensate for authorized permanent or temporary impacts, as well as to resolve enforcement or permit compliance actions such as replacing previously implemented project-specific mitigation that has partially or completely failed.

B. Each credit withdrawal transaction agreement that is associated with a permit must indicate the permit number of the impacting project, impacted resource type, date of permit issuance, the number of credits transacted, and must expressly specify that the Sponsor, and its successors and assigns, assume responsibility for accomplishment and maintenance of the permittee's compensatory mitigation requirements associated with the impacting project, upon completion of the credit transfer.

C. The following table (**Table E.2)** depicts the approximate number of Bank credits typically required by the IRT agencies to compensate for each unit of permanent loss of listed aquatic resource type and functional level. The actual number of Bank credits required to compensate for an adverse impact to aquatic resources in any particular situation depends on many factors (e.g., whether the impact is permanent or temporary) and will be determined on a case-by-case basis by the regulatory

agency(ies) authorizing the impact. The wetland functional categories are based on the *Washington State Wetland Rating System for Western Washington* (Hruby & Yahnke 2023). Units of loss are measured in acres for wetland and buffer impacts and may be measured in either acres or linear feet for stream impacts. Due to the variety and typically high level of functioning of both streams and Category I wetlands, compensation for impacts to these resources by Bank credits will be determined by the regulatory agencies on a case-by-case basis.

Table E.2. Typical Credit-Debit Ratios for Wetland Impacts at the Bank

Resource Impact	Bank Credits : Impact Acreage
Wetland, Category I	Case-by-Case
Wetland, Category II	1.2:1
Wetland, Category III	1:1
Wetland, Category IV	0.85:1

E.4 Use of Bank Credits for Critical Area Buffer Mitigation

Impacts to critical area buffers for wetlands, streams, lakes and other critical habitat areas regulated by local jurisdictions within the Bank service area can be mitigated using Bank credits with the approval of the appropriate regulatory agencies.

Since one Bank credit is generated by every 5 acres of wetland or riparian buffer that is created at the Bank, a ratio of "0.2:1" for critical area buffer impacts results in a "1:1" ratio of a permitted buffer impact to buffer enhancement at the Bank. Critical area buffer functions and values vary based upon many factors (for example, impacts to riparian buffers may require a higher ratio than a wetland buffer) so the amount of credit required in each permit situation can be determined on a case-by-case basis by the regulatory agency reviewing the project, according to the local critical area regulations.

E.5 Procedures for Use of Mitigation Bank Credits

A. Use of Mitigation Bank Credits: Public and private proponents of activities regulated under Sections 401 and 404 of the Clean Water Act (33 U.S. Code §§ 1341, 1344), Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code § 403), Washington State Water Pollution Control Act (Chapter 90.48, RCW) Shoreline Management Act (RCW 90.58), Growth Management Act (RCW 36.70A), Hydraulic Code (RCW 75.20), and other Federal, State, and local authorities may be eligible to use the Bank as mitigation for unavoidable impacts. The Bank will be eligible to serve public and private end users by providing advance compensatory mitigation for authorized impacts to regulated areas that require mitigation to settle enforcement claims. The Bank is intended to provide replacement of lost functions, and values including: wetlands, streams, riparian buffer habitat, and wetland buffer habitat.

B. An applicant seeking a permit for a project with adverse impacts to the aquatic environment within the service area must generally obtain the approval of each regulatory agency with jurisdiction over that project, in order to use the Bank as a source of compensatory mitigation. To receive approval to

use the Bank, the applicant must demonstrate to the satisfaction of the pertinent regulatory agencies that the project complies with all applicable requirements pertaining to alternatives and mitigation sequencing, and that purchasing credits from the Bank for compensatory mitigation would be in the best interest of the environment. Specifically, a permit applicant must generally be able to demonstrate to the satisfaction of the involved regulatory agencies that:

1. There is no practicable less environmentally damaging alternative to adversely impacting the aquatic resource, critical area, buffer, or other regulated area; and
2. All appropriate and practicable measures to minimize adverse impacts to the aquatic ecosystem have been demonstrated and included in the project.

It is the determination of the agency(ies) permitting the project with adverse impacts as to whether a proposed use of Bank credits within the service area is appropriate and environmentally preferable to other mitigation alternatives.

C. Upon receiving permission to utilize credits from the Bank, the permittee must contact the Sponsor to ensure that credits are available. Upon completion of the transaction, the Sponsor will inform the permitting agencies of each completed transaction, via email or letter with an attached copy of the accounting ledger.

D. Other types of credit users may include, but are not necessarily limited to, purchases made that will not be associated with a particular project or impact (i.e., “good will” purchase), purchases made by natural resource stewards resulting from expenditures from in-lieu-fees (or similar type funds), and other conservation purposes.

E. The Sponsor may use the Bank to provide compensatory mitigation to offset impacts to environmental elements other than aquatic resources. Such use shall result in no physical changes to the Bank site unless approved by the Corps and Ecology, in consultation with the IRT. The Sponsor must obtain approval from the Corps and Ecology, following consultation with the IRT, prior to establishing currencies other than mitigation credits that are established by Appendix D of this Instrument. The agencies that regulate those specific environmental elements are responsible for establishing the value of the currency and release schedules, and determining the appropriateness of using the Bank as compensatory mitigation for impacts to those elements. The Corps and Ecology, in consultation with the IRT, will determine how withdrawal of those currencies will affect the amount of potential wetland mitigation credits remaining. The Sponsor shall record the award and use of all currencies on the Bank ledger and otherwise follow the procedures as outlined in Appendix E.6. Use of the Bank for compensatory mitigation for other environmental elements shall not conflict with the provisions of this Instrument.

E.6 Accounting Procedures

A. The Sponsor shall establish and maintain for inspection and reporting purposes a ledger of all credits that are awarded through the achievement of specified performance standards, as well as credits that are sold, used, or transferred. The Sponsor will submit a copy of each credit withdrawal transaction that receives a permit to each member of the IRT within 30 days from the purchase date.

B. The ledger must follow the current ledger template approved by the Corps and Ecology. The following information, at a minimum, will be recorded in the ledger for each transaction:

1. Date of transaction.
2. Number of credits transacted.
3. For credits awarded, reference the performance standard(s) to which the awarded credits correspond.
4. For credit sales/use/transfers, include the name, address, and telephone number of purchaser/user/transferee, and include all the following information that applies: permit number(s), permit issuance date, and name of the regulatory agency(ies) issuing permits; location of the project for which the credits are being purchased/used/transferred; the size of the impacts; and a brief description of the project impacts requiring compensatory mitigation (e.g., nature and quality of aquatic resources affected).
5. For credits withdrawn from the ledger for reasons other than credit sale/use/transfer, include the specific reason for withdrawal.
6. Bank credit balance after the award or transaction.

C. The Sponsor will provide an updated ledger to each member of the IRT each time credits are awarded, sold, used, or otherwise transferred. This must be provided within 30 days of any credit transaction. The Sponsor will also submit an annual ledger by February 1 of each year. The annual ledger must show a cumulative tabulation of all credit transactions at the Bank through December 31. This ledger will be submitted in conjunction with the monitoring reports until (1) all credits have been awarded and sold, used, or transferred; or (2) the Corps and Ecology, in consultation with the IRT, has approved the Sponsor's written request to permanently cease banking activity.

E.7 References

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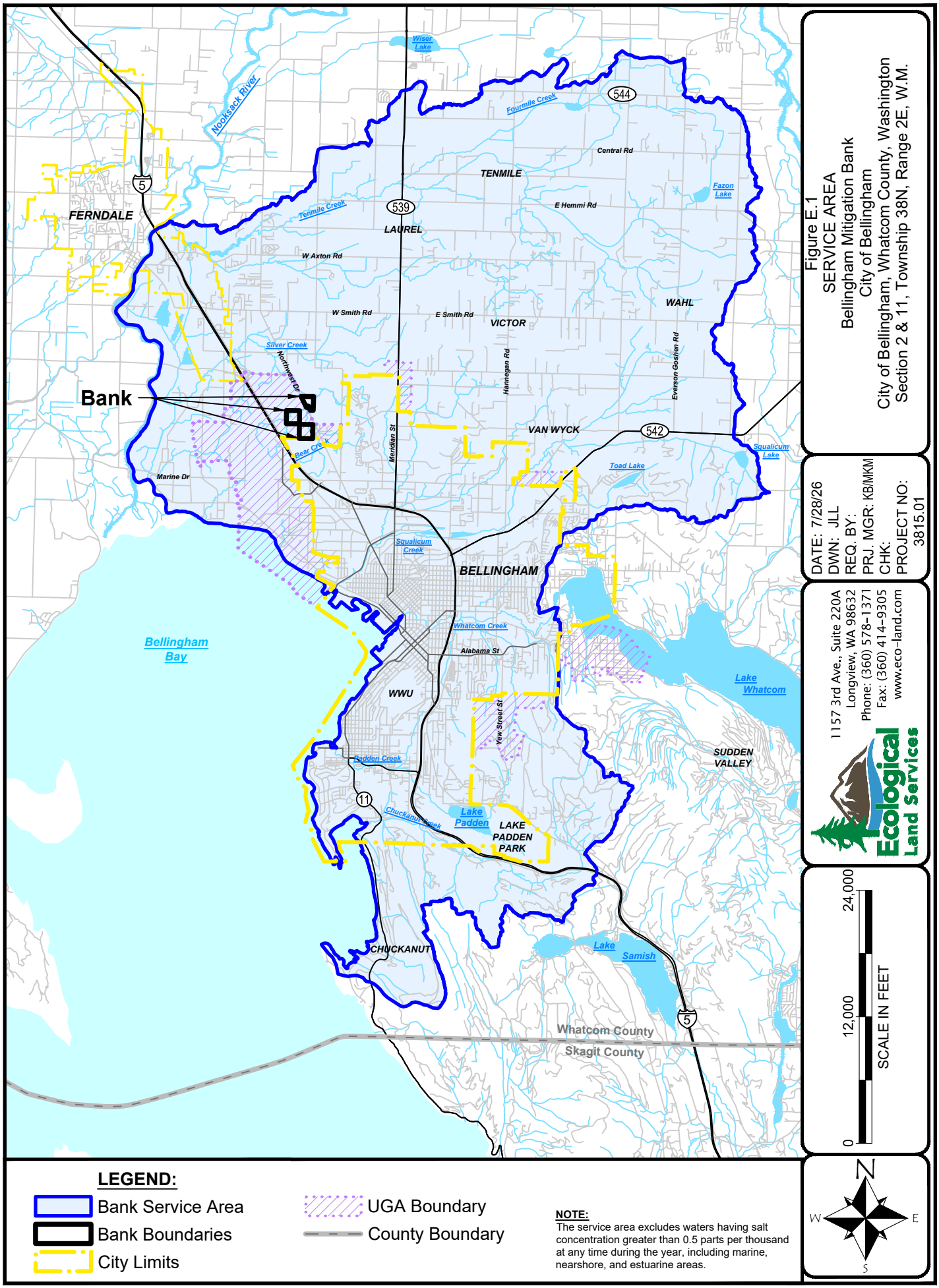
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Figure E.1
SERVICE AREA
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.
DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services
SCALE IN FEET
0
12,000
24,000
N
W
E
S
LEGEND:
Bank Service Area
Bank Boundaries
City Limits
UGA Boundary
County Boundary
NOTE:
The service area excludes waters having salt concentration greater than 0.5 parts per thousand at any time during the year, including marine, nearshore, and estuarine areas.
Bank
FERNDALE
LAUREL
TENMILE
VICTOR
WAHL
VAN WYCK
BELLINGHAM
WWU
SUDDEN VALLEY
LAKE PADDEN PARK
CHUCKANUT
Bellingham Bay
Lake Whatcom
Lake Samish
Lake Padden
Fazon Lake
Squalicum Lake
Toad Lake
Wiser Lake
Nooksack River
Fourmile Creek
Tenmile Creek
Silver Creek
Bear Creek
Squalicum Creek
Whatcom Creek
Padden Creek
Chuckanut Creek
Meridian St
Hannegan Rd
Everson Goshen Rd
Yew Street St
Alabama St
Northwest Dr
Marine Dr
Central Rd
E Hemmi Rd
W Axton Rd
W Smith Rd
E Smith Rd
544
539
542
5
11
Whatcom County
Skagit County

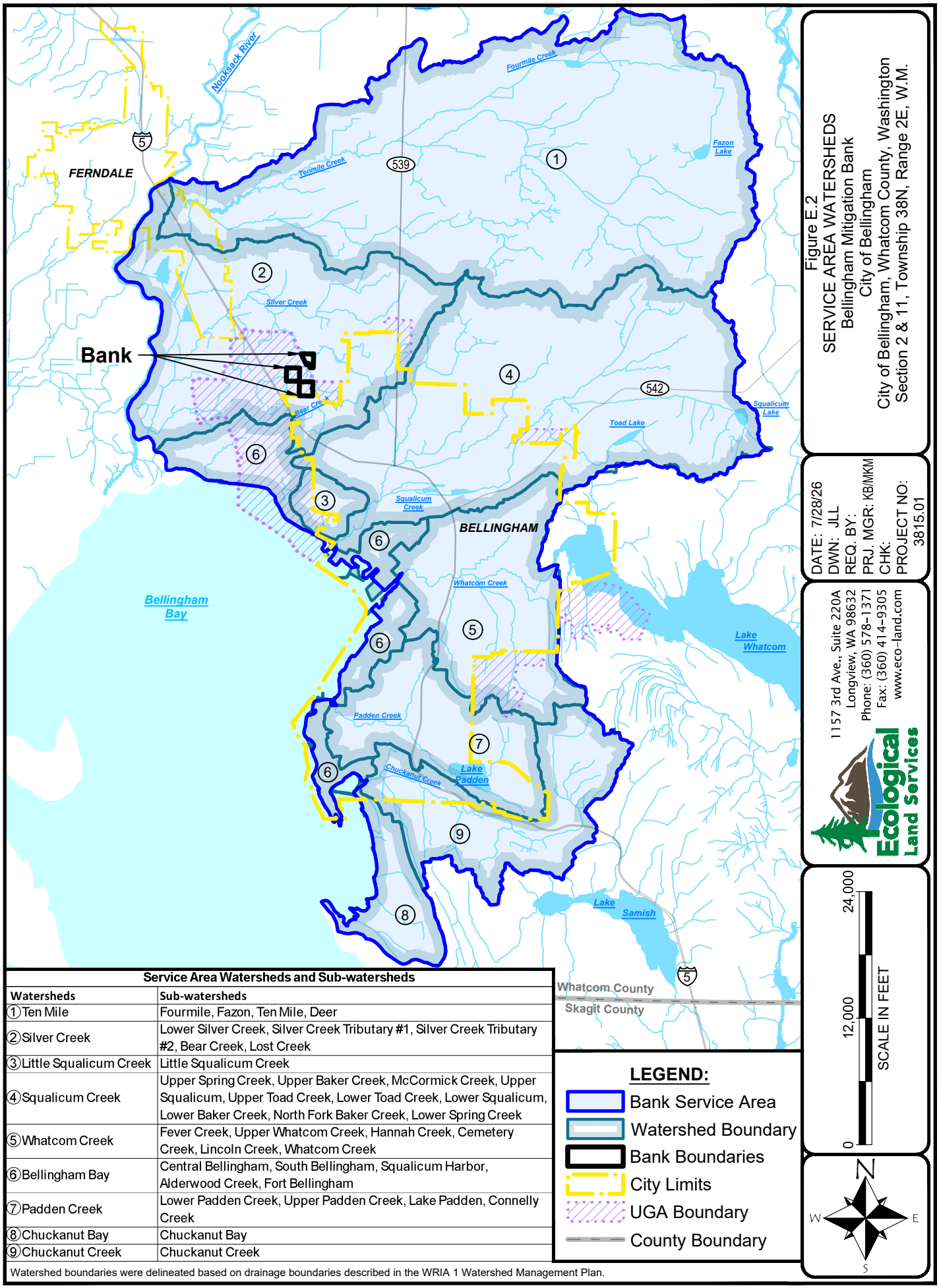


Figure E.2
SERVICE AREA WATERSHEDS
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

DATE: 7/28/26
DWN: JLL
REQ. BY:
PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

1157 3rd Ave., Suite 220A
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Ecological Land Services

SCALE IN FEET
0
12,000
24,000

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LEGEND:
- Bank Service Area
- Watershed Boundary
- Bank Boundaries
- City Limits
- UGA Boundary
- County Boundary

Service Area Watersheds and Sub-watersheds

Watersheds	Sub-watersheds
①Ten Mile	Fourmile, Fazon, Ten Mile, Deer
②Silver Creek	Lower Silver Creek, Silver Creek Tributary #1, Silver Creek Tributary #2, Bear Creek, Lost Creek
③Little Squalicum Creek	Little Squalicum Creek
④Squalicum Creek	Upper Spring Creek, Upper Baker Creek, McCormick Creek, Upper Squalicum, Upper Toad Creek, Lower Toad Creek, Lower Squalicum, Lower Baker Creek, North Fork Baker Creek, Lower Spring Creek
⑤Whatcom Creek	Fever Creek, Upper Whatcom Creek, Hannah Creek, Cemetery Creek, Lincoln Creek, Whatcom Creek
⑥Bellingham Bay	Central Bellingham, South Bellingham, Squalicum Harbor, Alderwood Creek, Fort Bellingham
⑦Padden Creek	Lower Padden Creek, Upper Padden Creek, Lake Padden, Connelly Creek
⑧Chuckanut Bay	Chuckanut Bay
⑨Chuckanut Creek	Chuckanut Creek

Watershed boundaries were delineated based on drainage boundaries described in the WRIA 1 Watershed Management Plan.

APPENDIX F

ESTABLISHMENT PERIOD MONITORING, REPORTING, MAINTENANCE, AND REMEDIAL ACTION

During the establishment period, the Sponsor shall monitor and report on the progress of the Bank toward achieving the goals, objectives, and performance standards established by these Appendices and take all actions directed by the Corps and Ecology, following consultation with the IRT, to remediate any consideration that prevents a component of the Bank from achieving its goals, objectives, and performance standards of the Bank. Procedures for as-built reports, monitoring reports, and remedial actions are described below.

F.1 As-built Reports

As-built reports will be submitted to the IRT upon the completion of construction to verify enhancement and preservation actions, including tree thinning, invasive species removal, native plantings, culvert removal, presence of fencing, signs, and habitat piles, and garbage removal.

At a minimum, the following components should be included in the as-built report:

- Name and contact information for the parties responsible for the Bank construction including the Sponsor and wetland professional onsite during construction;
- Ecology, Corps, and local permit numbers;
- Dates when activities begin and end, such as controlling invasive plants, thinning trees, constructing habitat piles, installing plants, removing garbage, and protecting bank boundaries;
- Description of removed garbage, including approximate location, volume, and type of material;
- Photographs depicting at a minimum the post-construction condition of selectively thinned areas, habitat piles, plantings and tree protection, culvert removal, garbage removed, signs, and fencing;
- Photographs from permanent photo points (panoramic photos are recommended) established at Year 0 to document the progression of each habitat type (Palustrine Forested Wetland, Forested Upland, Riparian Upland) on Sites A, B, and C;
- Description of any problems encountered, and solutions implemented (with reasons for changes) during construction of the Bank sites;
- List of any follow-up actions needed with a schedule; and
- Figures (11-inch x 17-inch) of the Bank showing:
  - Installed planting scheme, including species list and quantities, densities, sizes of plant stock, approximate planting locations and acreages, and sources of plant material;
  - Locations of naturally established conifers that are of similar size as planted conifers;
  - Location of tree thinning areas and habitat piles;
  - Location of removed garbage;
  - Location of signs and fencing installed;
  - Locations of permanent photo points; and
  - Date when figures were produced and when data were collected.

As-built reports will be submitted to each member of the IRT within 90 days of completing construction of the Bank and must demonstrate compliance with Appendix B and any modifications to the Bank development plan and design approved by the Corps and Ecology prior to construction or implementation, following consultation with the other members of the IRT.

Permanent photo points will be established in Year 0 to document the progression of each habitat type. Photo point locations will be documented in the as-built report. A Bank mitigation construction manager will document Year 0 post-construction conditions in the as-built report for the tree thinning areas, invasive species removal, habitat piles, native plantings, culvert removal, and garbage removal, and will include photographs and as-built drawings. The as-built report will also establish baseline conditions for future monitoring.

F.2 Establishment Period Monitoring

A performance monitoring program will be implemented to determine the success of the mitigation effort during the establishment period. Monitoring will include periodic surveys and site evaluations to establish the foundation on which the Bank can demonstrate to the IRT that pertinent performance standards have been achieved and continue to be maintained. Monitoring will include measurements and observations of wetland hydrology, native plant cover, invasive plant cover, native plant density, presence and condition of fences, signs, habitat piles, and general observations of fish and wildlife presence to assess function.

F.2.1 Monitoring Requirements Overview

As-built and monitoring requirements specific to each performance standard (**Section C.2 Bank Objectives and Performance Standards, Appendix C**) are summarized below.

Objective 1. Protect Aquatic Ecosystem Functions

Permanently protect aquatic ecosystem functions at the Bank by instituting the Instrument and implementing a conservation easement with creation of permanent funding through legislative appropriations for site stewardship. Each of the performance standards associated with this objective must be met before any Bank credits may be awarded, and before any construction or other implementation activities may be initiated pursuant to this Instrument. Any construction or implementation activities conducted onsite prior to the inception of the establishment period must cease as of the effective date of this Instrument pursuant to Article VI.B.1, until the Objective 1 performance standards 1A. through 1C. have been accomplished. The initial award of credits in recognition of accomplishment of these performance standards will serve as the IRT's notification that construction and implementation activities are authorized to commence.

Objective 2. Hydrology

Maintain existing wetland hydrology on the Bank site to support wetland-dependent species, sustain water quality functions, and maintain hydrologic connectivity in a regionally important, undeveloped biodiversity corridor.

- Conduct a wetland delineation and ordinary high-water mark (OHWM) delineation of all streams in Year 10 across the entire Bank documenting all wetland acreage, vegetation, soil development, and hydrology. Submit a wetland and stream delineation report in Year 10; include wetland ratings for all wetlands on the Bank site (Performance Standard 2A).

Objective 3. Vegetation

Preserve and protect the Palustrine Forested Wetland (PFO WET) and Forested Upland (FO UPL) habitat that are interspersed with streams and riparian areas and are a part of a regionally important, undeveloped biodiversity corridor. Enhance PFO WET and FO UPL habitats, and Riparian Upland (Riparian UPL) habitat across the Bank. Control invasive plants on the entire Bank site.

Sites A, B, C – As-Built and Invasive Plant Management

- Document Year 0 as-built conditions in all habitat types, showing the species list, plant spacing and densities, and final planted acreages of plant community types in enhancement areas (Performance Standard 3A).
- Conduct survey for non-native, invasive species within all habitat types, including Himalayan blackberry (*Rubus armeniacus*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), tansy ragwort (*Senecio jacobaea*), traveler's-joy (*Clematis vitalba*), and horse chestnut (*Aesculus hippocastanum*) presence and document percent cover and control methods in Years 1, 3, 5, 7, and 10 (Performance Standard 3B).
- Document the percent cover of reed canarygrass within the PFO WET and FO UPL habitat types in Years 1, 3, 5, 7, and 10 (Performance Standard 3C).
- Conduct annual survey for invasive knotweed [Japanese knotweed (*Fallopia cuspidatum*), giant knotweed (*Fallopia sachalinense*), Himalayan knotweed (*Persicaria polystachyum*), Bohemian knotweed *(Fallopia* x *bohemicum*), and related hybrids], bindweeds (*Convolvulus arvensis, Convolvulus sepium, Convolvulus silvaticus,* and *Fallopia convolvulus*), purple loosestrife (*Lythrum salicaria*), and English ivy (*Hedera helix*) in all habitat types. Document location(s) and eradication methods in Years 1, 3, 5, 7, and 10. Additional species may be added pursuant to Article VI.B.2 (Performance Standard 3D).

Sites A, B, C – Palustrine Forested Wetland and Forested Upland Preservation

- Qualitatively assess and document any changes to the preservation areas from human activities or significant natural changes in Years 5 and 10. Include assessment in Year 5 and Year 10 monitoring reports. If any negative changes occur, adaptive management activities will be evaluated in consultation with the IRT (Performance Standard 3E).

Sites A, B, C – Palustrine Forested Wetland and Forested Upland Enhancement

- Document native planted conifer density in Years 1, 3, 5, 7, and 10 (Performance Standard 3F).

Site A – Riparian Upland Enhancement

- Document native tree and shrub density in Year 1 and percent cover in Years 3, 5, 7, and 10 (Performance Standard 3G).

F.2.2 Monitoring Protocols

If the monitoring methodologies as written below do not accurately inform the IRT about the success of a particular habitat area, the Sponsor will coordinate with the IRT about changing the monitoring approach. Experience in the field may indicate that other performance monitoring methods would provide more useful information; the Corps and Ecology, following consultation with the IRT, must approve in advance any changes in the means of gathering or reporting performance data.

F.2.2.1 Formal Monitoring

Formal monitoring will include both qualitative and quantitative monitoring to address achieving the Bank objectives and performance standards described in Appendix C. Formal monitoring, which will be preceded by a Year 0, in which as-built conditions are documented and permanent photo point established, will occur in Years 1, 3, 5, 7, and 10 according to the monitoring schedule and sampling protocol described below. Year 0 is the calendar year in which the as-built/as-planted figures are approved in writing by the Corps and Ecology, in consultation with the IRT, and permanent photo points are established. Year 1 is the first year of site monitoring after approval of the as-built/as-planted figures. A wetland and stream delineation, including wetland ratings, will be conducted across the entire Bank in Year 10.

During formal and informal monitoring (described below), the Bank will be evaluated for the condition of signs and fencing, new or expanded encroachments, evidence of new garbage deposition, condition of habitat piles, and observations of wildlife. The qualitative assessment will be documented in the formal monitoring reports in Years 1, 3, 5, 7, and 10.

Vegetation monitoring will be conducted during the growing season and before leaf drop. Plants must have been in the ground for a minimum of five months prior to monitoring.

F.2.2.2 Informal Monitoring

Informal monitoring provides a general overview of Bank progress, and will be conducted in Years 2, 4, 6, 8, and 9, for which there is no formal quantitative monitoring reporting requirement. Informal monitoring is conducted to ensure that the Bank is progressing towards achieving performance standards. Specifically, a qualitative visual inspection of the Bank will be conducted during periodic site visits to identify concerns associated with meeting Bank objectives and performance standards, if any. Informal monitoring typically will include observation notes and site photos. Informal monitoring may quantitatively address some performance standards for upcoming years but is less statistically rigorous than formal monitoring. Informal monitoring will be the only monitoring method during the years for

which there are no performance standards, although it will also be employed during years of formal monitoring. Informal monitoring observations will be documented in the formal monitoring reports in Years 1, 3, 5, 7, and 10.

F.2.2.3 Photo Documentation

Permanent photo points will be established in areas to provide vantage points around the margins of the Bank, vantage points within the Bank, and at specific monitoring locations such as vegetation monitoring plots, in sufficient numbers to give a visual representation of site conditions. Location of photo points will be recorded by hand-held Global Positioning System (GPS) and marked in the field. The location of the photo points will be provided on the Year 0 as-built figure and in appropriate figures in the formal monitoring reports.

F.2.2.4 Hydrology

The extent of wetlands (wetland hydrology) will be documented in Year 10 by conducting a wetland delineation on the entire Bank site using the *1987 Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers 1987) and appropriate regional supplement in effect at the time of delineation. Wetlands will be rated according to the Washington State Department of Ecology's *Washington State Wetland Rating System For Western Washington 2014 Update Version 2.0*, updated July 2023 (or the most current version). In addition, the OHWM of all stream channels will be delineated according to methodology approved by Ecology and the Corps. The results, including wetland determination data forms, wetland rating forms, and a site map with wetland acreages and ratings, test plot locations, and delineated stream channels will be included in the Year 10 monitoring report.

F.2.2.5 Vegetation

F.2.2.5.1 Baseline Monitoring Protocols

Monitoring plots will be established to measure native conifer density, native plant cover, and invasive plant cover to determine the Bank sites' progress in meeting performance standards.

- The **PFO WET** and **FO UPL** communities in the enhancement areas on Sites A, B, and C will employ a two-stage *systematic sampling* approach as described by Elzinga *et al*. (1998) with belt transects as the primary sampling unit for measuring conifer density and quadrats as the secondary sampling unit along the transects for measuring invasive plant cover. In the preservation areas, quadrats located along line transects will be used for measuring invasive plant cover.
- The **Riparian UPL** community will employ a *simple random sampling* approach as described in Elzinga *et al*. (1998) with quadrats for measuring the density and cover of native plants and invasive plant cover in Site A's riparian enhancement area.

A minimum of 1 percent of the total acreage of each PFO WET, FO UPL, and Riparian UPL plant communities, including non-credit generating areas, will be sampled. The minimum sampling area for each habitat type was determined based on methods described in Tiner (2017) and Krebs (1999), and in consultation with the IRT. Monitoring plot sizes were based on methods described in Gage and Cooper (2010) and Elzinga *et al*. (1998), and in consultation with the IRT.

During the monitoring period, additional monitoring plots (transects or quadrats) may be added if deemed necessary by the Corps and Ecology, after consultation with the IRT, to better represent the condition and establishment of the plant community. All monitoring plot locations (baseline start points, belt transect start points and bearing, and quadrats) will be recorded by handheld GPS and shown on site figures in monitoring reports. The same quadrat locations will be sampled during each monitoring period.

In addition, the wetland professional will establish consistent boundary rules for counting plants that fall along the belt transect and quadrat boundaries in the first year of monitoring and maintain consistency for counting plants that lie in or out of the plot throughout the monitoring years, following the guidance in Chapter 8, Elzinga *et al*. (1998).

F.2.2.5.2 Transects

Belt Transects

Native conifer density within the PFO WET and FO UPL enhancement areas on Sites A, B, and C will be measured using permanent belt transects. These transects will extend perpendicularly from a permanent baseline along an east or west bearing, generally following elevation gradients (**Figures F.1, F.2, F.3, and F.4**).

Each Bank site will have a baseline established at its northern extent along a designated boundary:

- **Site A**: West boundary abutting Northwest Drive
- **Site B**: East boundary abutting the offsite mitigation areas
- **Site C**: West boundary abutting undeveloped forestland

From these baselines, multiple belt transects will be laid out perpendicularly. Each belt transect will be 12 feet wide (6 feet on both sides of the centerline; **Figure F.1**). The baseline will be divided into 1 foot increments using AutoCAD Civil 3D, and the starting position for the belt transects will be randomly selected during the first monitoring event using a random number table. To ensure adequate spacing, only randomly generated numbers that result in at least 100 feet between transects will be accepted; other numbers that do not meet the spacing requirement will be excluded.

Once established, belt transects will remain fixed for all subsequent monitoring events. Their starting positions will be recorded using handheld GPS and permanently marked in the field.

Within each 12-foot-wide belt transect, all living planted conifers and volunteer conifers taller than 2 feet will be counted and documented. Density will be calculated by dividing the number of native conifer individuals by the total area of the belt transects within each enhancement area. Due to the complexity of the plant communities, conifer density will be reported as a combined value for both PFO WET and FO UPL communities.

Line Transects

Invasive plant cover within the PFO WET and FO UPL preservation areas will be measured using permanent quadrats placed along line transects. These transects will serve as visual guides to ensure the consistent spacing of quadrats, which are used to measure invasive plant cover in the preservation areas.

Line transects follow the same sampling layout protocols as belt transects and are established prior to the first monitoring event using randomly selected feet along the baseline. Once established, they remain permanent and extend perpendicularly from a baseline along an east or west bearing, generally following elevation gradients (**Figures F.1, F.2, F.3, and F.4**).

Transect Length and Accessibility

The length of both the belt and line transects will vary depending on the size and configuration of the enhancement or preservation areas that they span. Transects may have multiple segments depending on the mitigation method that they bisect. Because of accessibility constraints, transects may be terminated at stream crossings or in areas typically flooded or inundated greater than 1 foot of water during the growing season.

F.2.2.5.3 Quadrats

Overview

Invasive plant cover will be measured using 15 x 15-foot quadrats (225 ft^2) within the PFO WET and FO UPL preservation and enhancement areas on Sites A, B, and C (**Figures F.1, F.2, F.3, and F.4**). On Site A's Riparian UPL enhancement area, both the density and cover of native plants and invasive plant cover will be sampled using 15 x 15-foot (225 ft^2) quadrats. Within each quadrat, plant cover will be visually estimated to the nearest 1 percent. Where present, bare soil percentage will be recorded separately from vegetative percent cover.

For all habitat types, non-native invasive species presence and percent cover will be documented in monitoring reports as recorded at each quadrat for Years 1, 3, 5, 7, and 10. The cover of Himalayan blackberry, English hawthorn, English holly, tansy ragwort, traveler's joy, horse chestnut, and reed canarygrass will be documented separately for each habitat type, and reported in monitoring reports for Years 1, 3, 5, 7, and 10. There shall be zero tolerance for Japanese knotweed, giant knotweed, Himalayan knotweed, Bohemian knotweed (and hybrids), bindweeds, purple loosestrife, and English ivy. Additional species may be added pursuant to Article VI.B.2. Presence and eradication of these species must be noted in monitoring reports for Years 1, 3, 5, 7, and 10. Annual surveys for these species will occur.

Quadrat Placement and Distribution

The quadrat locations will be evaluated and field-verified to confirm that they are relatively evenly distributed across the plant communities. If necessary, alternate randomly selected plots will be substituted to avoid over-sampling (plot clusters) or under-sampling portions of the plant communities. If a quadrat is determined to be unusable during field monitoring (e.g., located in a stream or a drainage), the next quadrat along the belt or line transect will be used in the PFO WET or FO UPL communities, or a new randomly located quadrat will be used in the Riparian UPL community.

PFO WET and FO UPL Enhancement and Preservation Areas

Invasive plant species presence and percent cover will be sampled using quadrats placed along belt transects (enhancement areas) or line transects (preservation areas). During the first monitoring year:

- The first quadrat along each belt or line transect will be randomly selected between 0 and 100 feet using a random number table.
- Subsequent quadrats will be spaced at 100-foot intervals.
- The quadrats will be permanently located by handheld GPS for the remaining monitoring events, such that the same quadrat locations will be sampled during each monitoring period.
- Quadrats will be positioned along the center of the belt or line transect.

Riparian UPL Enhancement Area

Native plant density and native and non-native invasive plant percent cover will be sampled by quadrats. Quadrat coordinates of each permanent quadrat location will be generated using AutoCAD Civil 3D (**Figure F.2**). An example of the simple random sampling approach and grid pattern line intersections is shown on **Figure F.2**. Final quadrat locations will be identified by handheld GPS and permanently marked in the field.

F.2.2.6 Monitoring Plot Sizes

F.2.2.6.1 Plot Dimensions by Community Type

PFO WET and FO UPL communities' native conifer density will be sampled using 12-foot-wide belt transects of variable length within the enhancement areas. Invasive plant cover will be sampled using 15 x 15-foot (225 ft^2) quadrats in both enhancement and preservation areas.

Riparian UPL community native tree and shrub density and invasive plant cover will be sampled using 15- x 15-foot quadrats (225 ft^2).

F.2.2.6.2 Quadrat Placement and Alternative Plot Size

To the extent possible when permanent monitoring quadrats are established, each individual quadrat will be located to include only one mitigation method (enhancement versus preservation) based on as-built plantings and on the ground conditions. The enhancement and preservation areas form a complex and intricate landscape. Given the complexity of the landscape, if a quadrat overlaps more than one mitigation method, it will be:

- Assigned to the dominant method occupying the majority of the quadrat or
- Relocated slightly to fully encapsulate whatever method is being monitored.

Supplemental quadrats may be added at the discretion of the wetland professional during field monitoring to improve sampling accuracy. If the monitoring methodology as written does not accurately inform the IRT about the success of a particular habitat type even though it may be thriving, the Sponsor will coordinate with the IRT about changing the monitoring approach, which performance standards to apply in those areas, or how existing performance standards could be modified.

Where site conditions warrant, differently sized monitoring plots (transects or quadrats) may be used. The revised plot shape, size, and location will be recorded in the field, documented in the monitoring

report, explanation provided on why the change in plot size was necessary, and the revised plot location will be shown on the monitoring site map. Transect and quadrat locations will be shown on figures in the monitoring reports, and the same locations will be sampled during each monitoring event.

Table F.1. Monitoring Transects by Proposed Habitat Type

Habitat Type	Total Proposed Area (acres)	Accessible Monitoring Area (acres)	Area of Transects to meet Minimum[1] (acres)			Area of Transects Proposed[1] (acres)		
			Site A	Site B	Site C	Site A	Site B	Site C
Enhancement								
Riparian UPL	0.98	0.98	n/a	-	-	n/a	-	-
PFO WET & FO UPL	41.85	41.85	0.09	0.13	0.20	0.75	0.99	0.94

[1] Minimum 1 percent of area of habitat type that is accessible; stream crossings and areas with greater than 1 foot of inundation/flooding are excluded.

Table F.2. Monitoring Quadrats by Proposed Habitat Type

Habitat Type	Total Proposed Area (acres)	Accessible Monitoring Area (acres)	No. of Quadrats to meet Minimum[1]			No. of Quadrats Proposed[1]		
			Site A	Site B	Site C	Site A	Site B	Site C
Enhancement								
Riparian UPL	0.98	0.98	2	-	-	4	-	-
PFO WET & FO UPL	41.85	41.85	18	26	38	18	26	38
Preservation								
PFO WET & FO UPL	55.82	40.75	26	20	32	26	20	32
Total	**98.65**	**83.58**	**46**	**46**	**70**	**48**	**46**	**70**
			162			**164**		

[1] Minimum 1 percent of area of habitat type that is accessible; stream crossings and areas with greater than 1 foot of inundation/flooding are excluded.

F.3 Wildlife Features

The location of the constructed habitat piles intended for wildlife use on the Bank will be recorded on the as-built figure. Although there are no performance standards for the wildlife features or wildlife use, monitoring reports will include observations of wildlife use. Anecdotal indirect and direct observation of wildlife use and condition of habitat piles will be recorded during monitoring site visits.

F.4 Reports

The Sponsor will prepare and submit to the IRT monitoring reports that will inform the IRT of the status of Bank establishment and operation. These reports will document Bank conditions and provide the supporting information required to document the attainment of goals, objectives, and performance

standards, as a basis for a decision whether to award credits. Monitoring reports are due for Years 1, 3, 5, 7, and 10. The results of formal and informal monitoring conducted in Years 2, 4, 6, 8, and 9 shall be included in the subsequent monitoring report. Monitoring reports for each calendar year will be electronically submitted by February 1 of the following year, with a copy for each member of the IRT. Each monitoring report will contain the following information:

- Name and contact information of the entity responsible for preparing the report;
- Names and contact information of the wetland professionals who collected the monitoring data and authored the report; and
- Summary table comparing relevant performance standards for that year's report to monitoring results (**Table F.3**).

A. An overview of the current ecological condition of the Bank, including a survey of the plant communities, effectiveness of the enhancement activities accomplished to date, and progress of the Bank in achieving the specific performance standards of the Bank. To provide data for evaluating progress towards achievement of performance standards, vegetation plots, and photo points will be established at selected locations within the Bank to evaluate relevant performance standards. Vegetation data in the enhancement areas will include species presence, cover by species, and density as appropriate. IRT-approved vegetation measures and techniques will be used to demonstrate whether performance standards are being met. Experience in the field may indicate that other performance monitoring methods would provide more useful information; the Corps and Ecology, in consultation with the IRT, must approve in advance any changes in the means of gathering or reporting performance data.

All monitoring will be conducted by qualified wetland professionals. The data will be summarized in the monitoring reports using tables and/or figures, and the raw data used for compiling the summary will be located in an appendix to the report for reference. The monitoring report will also contain tables which list the applicable performance standards for the monitoring year, and whether the performance standard was met, along with any corrective actions proposed.

B. A detailed discussion about the likely cause and impact of any setback or failure that occurred and recommendations for future actions and strategies that might resolve those problems.

C. Pertinent additional information on such aspects of the Bank as hydrology, soils, vegetation, fish and wildlife use of the area, recreational and scientific use of the Bank, and natural events such as disease, wildfire, and flooding that occurred.

D. A description and schedule of maintenance actions undertaken since the previous monitoring report, and maintenance actions recommended to keep the Bank site on course to satisfy performance standards. Explanations of the need for any contingency or remedial measures, and detailed proposals for their implementation.

E. Photographs of the Bank taken from permanent photo points that are accurately identified on the as-built figures. The photographs are intended to document the progress of each component of the Bank, as well as the Bank in general, toward achieving the objectives and performance standards of the Bank. Such photo-monitoring will include general vantage points around the margin of the Bank, vantage points within the Bank, and at specific monitoring locations such as vegetation monitoring plots.

F. A monitoring map showing the vegetation communities (differentiating between preservation and enhancement habitats) and locations of all vegetation monitoring plots; and the locations of photo points, habitat features, fences, and signs.

Table F.3. Monitoring Tasks Summary

Bank Year · Report	Performance Standard	Monitoring Task	Monitoring Area	Expected Site Visits
Year 0 As-built	A	Provide plant installation as-built plan and figure(s)	Sites A, B, C - All habitat types	90 days after installation
Year 1 Monitoring Report	3B	Collect non-native invasive plant presence and percent cover	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	3C	Collect reed canarygrass percent cover	Sites A, B, C - PFO WET and FO UPL Enhancement and Preservation	
	3D	Document presence and eradication of zero tolerance, high importance non-native, invasive plants	Sites A, B, C - All habitat types	
	3F	Collect native conifer density	Sites A, B, C - PFO WET and FO UPL Enhancement	
	3G	Collect native tree and shrub density	Site A - Riparian UPL Enhancement	
Year 3 Monitoring Report	3B	Collect non-native invasive plant presence and percent cover	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	3C	Collect reed canarygrass percent cover	Sites A, B, C - PFO WET and FO UPL Enhancement and Preservation	
	3D	Document presence and eradication of zero tolerance, high importance non-native, invasive plants	Sites A, B, C - All habitat types	
	3F	Collect native conifer density	Sites A, B, C - PFO WET and FO UPL Enhancement	
	3G	Collect native tree and shrub cover	Site A - Riparian UPL Enhancement	
Year 5 Monitoring Report	3B	Collect non-native invasive plant presence and percent cover	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	3C	Collect reed canarygrass percent cover	Sites A, B, C - PFO WET and FO UPL Enhancement and Preservation	
	3D	Document presence and eradication of zero tolerance, high importance non-native, invasive plants	Sites A, B, C - All habitat types	
	3E	Qualitatively assess preservation areas for changes from human activities or significant natural changes	Sites A, B, C - PFO WET and FO UPL Preservation	
	3F	Collect native conifer density	Sites A, B, C - PFO WET and FO UPL Enhancement	
	3G	Collect native tree and shrub cover	Site A - Riparian UPL Enhancement	
Year 7 Monitoring Report	3B	Collect non-native invasive plant presence and percent cover	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	3C	Collect reed canarygrass percent cover	Sites A, B, C - PFO WET and FO UPL Enhancement and Preservation	

Bank Year · Report	Performance Standard	Monitoring Task	Monitoring Area	Expected Site Visits
	3D	Document presence and eradication of zero tolerance, high importance non-native, invasive plants	Sites A, B, C - All habitat types	
	3F	Collect native conifer density	Sites A, B, C - PFO WET and FO UPL Enhancement	
	3G	Collect native tree and shrub cover	Site A - Riparian UPL Enhancement	
Year 10 Monitoring Report	2A	Conduct wetland and stream OHWM delineation	Sites A, B, C - All habitat types	Mar-Jun
	3B	Collect non-native invasive plant presence and percent cover	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	3C	Collect reed canarygrass percent cover	Sites A, B, C - PFO WET and FO UPL Enhancement and Preservation	
	3D	Document presence and eradication of zero tolerance, high importance non-native, invasive plants	Sites A, B, C - All habitat types	
	3E	Qualitatively assess preservation areas for changes from human activities or significant natural changes	Sites A, B, C - PFO WET and FO UPL Preservation	
	3F	Collect native conifer density	Sites A, B, C - PFO WET and FO UPL Enhancement	
	3G	Collect native tree and shrub cover	Site A - Riparian UPL Enhancement	
Years 1, 3, 5, 7, 10 / Monitoring Reports	--	Record photos from established photo points	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	--	Qualitatively assess condition of signs and fencing, new or expanded encroachments, evidence of new garbage	Sites A, B, C - All habitat types	Jun-Sep, one time in year
	--	Anecdotal observations of wildlife use, including types of wildlife and observations of their sign(s) and condition of habitat piles	Sites A, B, C - All habitat types	Jun-Sep, one time in year

F.5 Remedial Action during the Establishment Period of the Bank

If one or more components of the Bank do not achieve performance standards or comply with any other requirement of this Instrument, the following sequence of remedial actions will be taken.

A. If the monitoring reports, or inspection by representatives of the IRT agencies, indicate persistent failure to achieve and maintain the prescribed performance standards, the Sponsor will propose adaptive management actions to correct the shortcomings. A thorough analysis of vegetation and wetland monitoring data may result in the identification of other factors, not identified in the performance standards or monitoring data, causing the project to fall short of its objectives. The Corps and/or Ecology, following consultation with the IRT and the Sponsor, may also direct adaptive management actions if the Corps and/or Ecology identify a need for corrective action and no adaptive management plan acceptable to the IRT has been submitted within a reasonable period of time. The adaptive management plan shall specify the nature of further examination of areas for

potential causes of failure and/or corrective action to be conducted, the schedule of completion for those activities, and a monitoring plan for assessing the effectiveness of the corrective action. The objective of the adaptive management plan shall be to attain the originally prescribed Bank objectives, either through achieving the original performance standards or through new standards subsequently developed based on evaluation of the Bank site as it matures and is assessed. The Sponsor shall also implement all mitigation that the Corps and/or Ecology, in consultation with the IRT, determine is reasonably necessary to compensate for those authorized impacts to the aquatic environment that have not been successfully redressed by the Bank pursuant to the requirements of this Instrument. If modified or replacement performance standards are proposed, the Sponsor may not initiate activities designed to achieve those replacement standards until those performance standards are approved by the Corps and/or Ecology, following consultation with the IRT. During the period that a specific component of the Bank is out of compliance, the Corps and/or Ecology, following consultation with the IRT, may direct that credits generated by that Bank component may not be sold, used, or otherwise transferred.

B. If remedial actions taken by the Sponsor under the provisions of the preceding paragraph do not bring that performance standard of the Bank into compliance with the requirements of this Instrument, including any approved changes to the Instrument, the Sponsor may request approval to discontinue efforts to achieve one or more performance standards for the Bank. If the Corps and Ecology, following consultation with the IRT, approve of the proposal to discontinue efforts to achieve one or more performance standards, they need not be accomplished but no additional credits may be awarded for those performance standard(s). At the discretion of the Corps and Ecology, following consultation with the IRT, the Sponsor may also be released from future maintenance and monitoring obligations for those performance standard(s), provided that releasing the Sponsor from those obligations does not adversely affect the remainder of the Bank, or affect credits already sold, used, or transferred to date.

C. If the Corps and Ecology, following consultation with the IRT, determine that the failure of one or more performance standards of the Bank to comply with the requirements of this Instrument adversely affects the ability of the Bank to achieve its goals or objectives, or if the Sponsor does not make a reasonable effort to bring the Bank into compliance with this Instrument, the Corps and Ecology, following consultation with the IRT, may terminate this Instrument and the operation of the Bank pursuant to Article IV.J.

F.6 Maintenance during the Establishment Period of the Bank

General maintenance will be performed throughout the year to address conditions that may limit the success of the Bank and attainment of performance standards and objectives. The Sponsor is responsible for all site maintenance activities throughout the establishment period of the Bank. Maintenance activities will include, but are not limited to, plant maintenance (including replanting, repairing any areas subject to erosion, weed control around plantings, mowing, controlling invasive species, controlling and deterring voles, beaver, and deer foraging on plants), and general maintenance (including fence repair, signage replacement, access maintenance, and clean-up of garbage).

F.6.1 Beaver Management

Beavers are native to the Silver Creek sub-watershed and are expected to use portions of the Bank. Beaver activity, including felling trees, building dams, constructing lodges, is considered a naturally occurring process in the development of natural and self-sustaining habitat. The Bank is designed to prevent impact to adjacent properties, and appropriate maintenance activities are approved in advance if they are required to prevent flooding of neighboring properties.

Beaver Management Areas are identified on **Figures F.2, F.3, and F.4,** where beaver activity is near offsite areas. Flow management devices (e.g. pond leveler) may be a necessary adaptive management tool to reduce the extent of flooding outside of the Beaver Management Areas. The Beaver Management Areas will be inspected annually for changes in hydrology that would impact adjacent public and private infrastructure. If the Sponsor identifies areas of concern within the Beaver Management Areas, the Sponsor will evaluate adaptive management actions and implement actions as feasible and necessary to reduce the extent of flooding outside of the identified area. The Sponsor will be responsible for obtaining any permits necessary for maintenance work. Descriptions of the conditions and maintenance activities will be included in the annual monitoring reports. All disturbances to the Bank resulting from maintenance activities will be restored. Additional Beaver Management Areas within the Bank may be identified as beaver activity and site conditions change over time and will be documented in annual monitoring reports.

It is expected that beaver activity will eventually alter or affect the hydrology within the Bank. If beaver activity occurs that requires additional action on the part of the Sponsor, the IRT and appropriate regulatory agencies will be consulted.

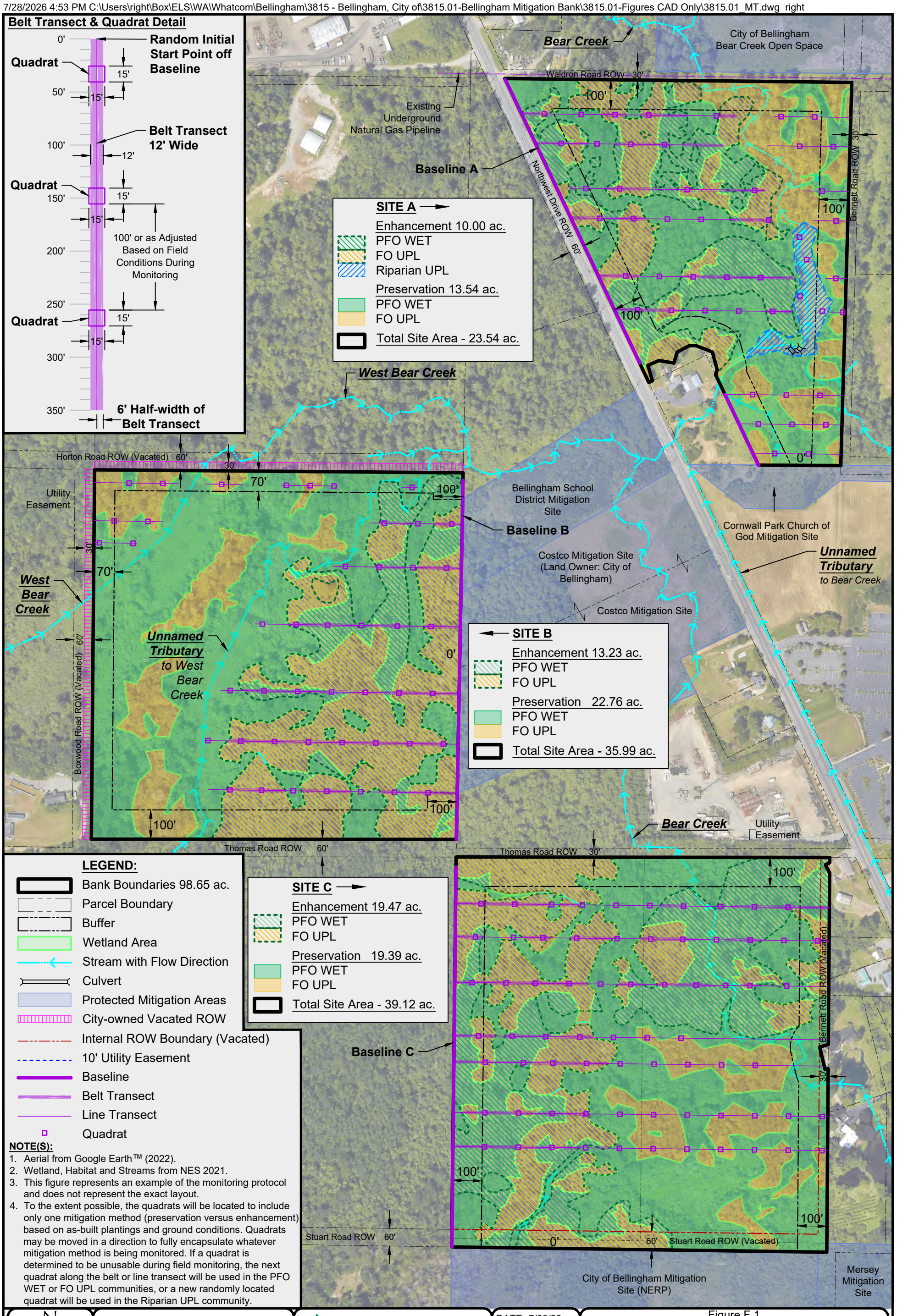
F.7 References

Elzinga, C.L., D.W. Salzer, J.W. Willoughby. 1998. *Measuring and Monitoring Plant Populations.* U.S. Bureau of Land Management. BLM Technical Reference 1730-1. Denver, Colorado.

Gage, E. and D. J. Cooper. 2010. *Vegetation Sampling for Wetland Delineation - A Review and Synthesis of Methods and Sampling Issues.* U.S. Army Corps of Engineers Research and Development Center, Cold Regions Research and Engineering Laboratory, ERDC/CRREL CR10-02.

Krebs, C.J. 1999. *Ecological Methodology,* 2nd ed. Addison-Wesley Educational Publishers, Inc., New York.

Tiner, R.W. 2017. *Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping, 2nd edition.* CRC Press, New York.



NOTE(S):

1. Aerial from Google Earth™ (2022).
2. Wetland, Habitat and Streams from NES 2021.
3. This figure represents an example of the monitoring protocol and does not represent the exact layout.
4. To the extent possible, the quadrats will be located to include only one mitigation method (preservation versus enhancement) based on as-built plantings and ground conditions. Quadrats may be moved in a direction to fully encapsulate whatever mitigation method is being monitored. If a quadrat is determined to be unusable during field monitoring, the next quadrat along the belt or line transect will be used in the PFO WET or FO UPL communities, or a new randomly located quadrat will be used in the Riparian UPL community.

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PRJ. MGR: KB/MKM
CHK:
PROJECT NO: 3815.01

Figure F.1
VEGETATION MONITORING
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

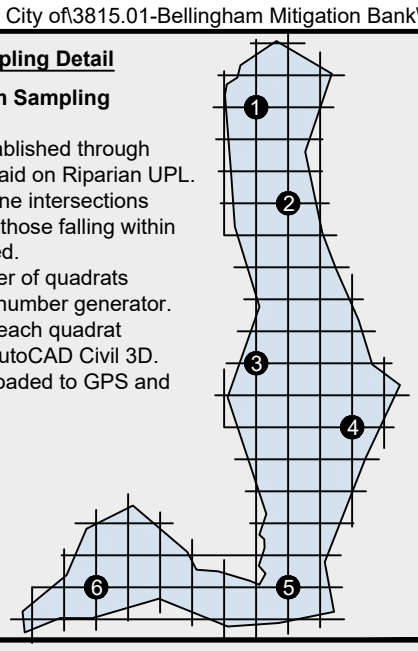
LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Underground Natural Gas Pipeline
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- OHWM
- Culvert
- Protected Mitigation Areas
- Proposed Habitat Pile (6-8)
- Construction Access & Staging Area
- Baseline
- Belt Transect
- Line Transect
- Quadrat
- Beaver Management Area

Riparian UPL Sampling Detail

Simplified Random Sampling Approach

1. Grid pattern established through AutoCAD and overlaid on Riparian UPL.
2. All grid pattern line intersections assigned numbers; those falling within the stream discarded.
3. Adequate number of quadrats chosen by random number generator.
4. Coordinates for each quadrat determined using AutoCAD Civil 3D.
5. Coordinates uploaded to GPS and located in the field.



SITE A

Proposed Credit Generating Area 14.30 ac.

Enhancement 10.00 ac.

PFO WET	3.11 ac.	Credit Generating Area
	1.24 ac.	Buffer
FO UPL	2.83 ac.	Credit Generating Area
	1.84 ac.	Buffer
Riparian UPL	0.83	Credit Generating Area
	0.15 ac.	Buffer

Preservation 13.54 ac.

PFO WET	5.37 ac.	Credit Generating Area
	3.35 ac.	Buffer
FO UPL	2.16 ac.	Credit Generating Area
	2.66 ac.	Buffer

Total Site Area - 23.54 ac.

NOTE(S):

1. Any beaver dams or obstructions in flow in Beaver Management Area will be managed to prevent potential flooding to adjoining properties.
2. Additional Beaver Management Areas within the Bank may be identified as beaver activity and site conditions change over time and will be documented in annual monitoring reports.
3. This figure represents an example of the monitoring protocol and does not represent the exact layout.
4. To the extent possible, the quadrats will be located to include only one mitigation method (preservation versus enhancement) based on as-built plantings and ground conditions. Quadrats may be moved in a direction to fully encapsulate whatever mitigation method is being monitored. If a quadrat is determined to be unusable during field monitoring, the next quadrat along the belt or line transect will be used in the PFO WET or FO UPL communities, or a new randomly located quadrat will be used in the Riparian UPL community.

Existing Underground Natural Gas Pipeline

Waldron Road ROW 30'

Bear Creek

Baseline

Belt Transect A-1

Belt Transect A-2

Belt Transect A-3

Site A Construction Access & Staging Area

Belt Transect A-4

Belt Transect A-5

Belt Transect A-6

100' min.

100'

Line Transect

Quadrat

See Detail

Northwest Drive ROW 60'

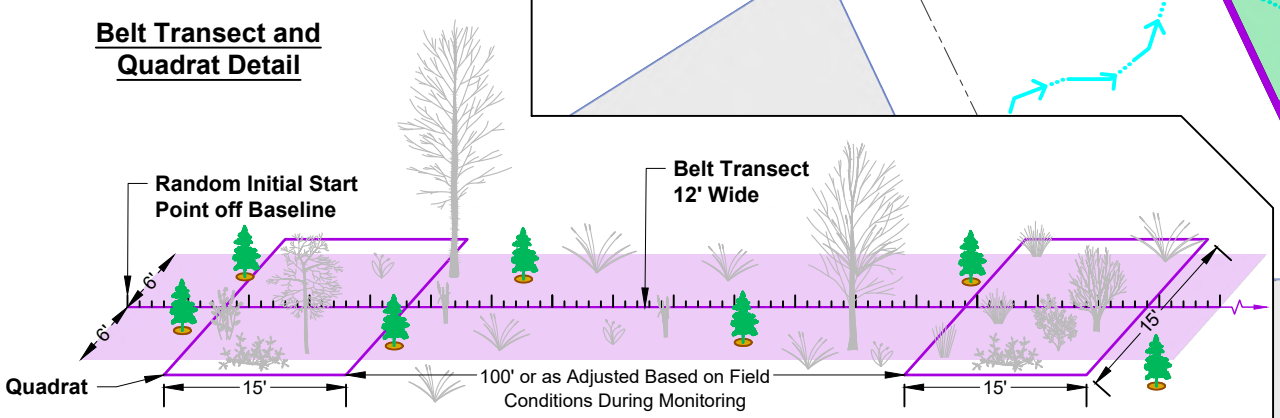
Bennett Road ROW 30'

Beaver Management Area A

Cornwall Park Church of God Mitigation Site

Continues

Belt Transect and Quadrat Detail



N W E S

0 150 300

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PROJECT NO: 3815.01

Figure F.2
MONITORING - SITE A
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Protected Mitigation Areas
- City-owned Vacated ROW
- Proposed Habitat Pile (6-8)
- Pedestrian Access for Construction Access & Staging
- 10' Utility Easement
- Baseline
- Belt Transect
- Line Transect
- Quadrat
- Beaver Management Area

NOTE(S):

1. Any beaver dams or obstructions in flow in Beaver Management Area will be managed to prevent potential flooding to adjoining properties.
2. Additional Beaver Management Areas within the Bank may be identified as beaver activity and site conditions change over time and will be documented in annual monitoring reports.
3. This figure represents an example of the monitoring protocol and does not represent the exact layout.
4. To the extent possible, the quadrats will be located to include only one mitigation method (preservation versus enhancement) based on as-built plantings and ground conditions. Quadrats may be moved in a direction to fully encapsulate whatever mitigation method is being monitored. If a quadrat is determined to be unusable during field monitoring, the next quadrat along the belt or line transect will be used in the PFO WET or FO UPL communities.

SITE B

Proposed Credit Generating Area 29.19 ac.

Enhancement 13.23 ac.

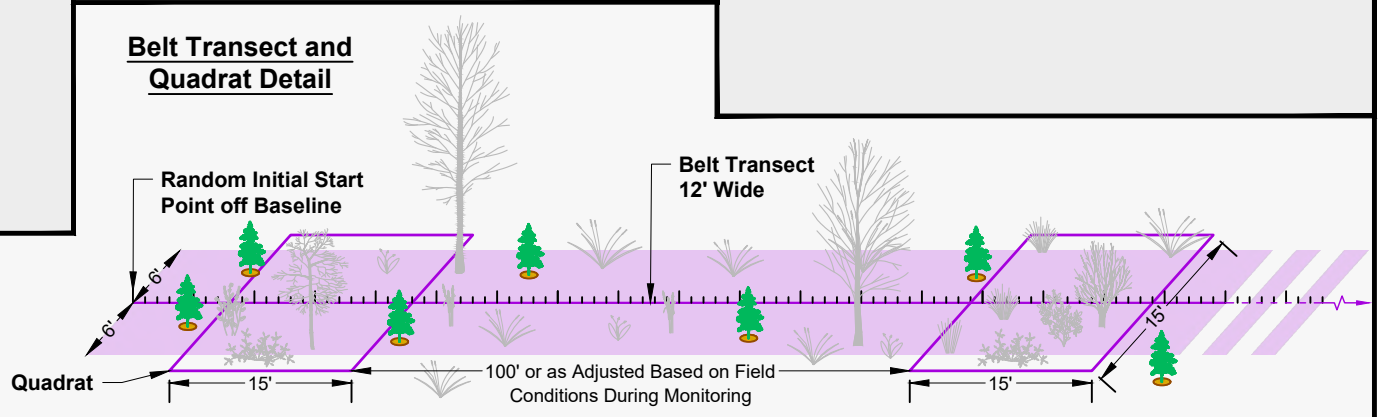
PFO WET	2.65 ac. Credit Generating Area 0.28 ac. Buffer
FO UPL	8.65 ac. Credit Generating Area 1.65 ac. Buffer

Preservation 22.76 ac.

PFO WET	14.63 ac. Credit Generating Area 3.56 ac. Buffer
FO UPL	3.26 ac. Credit Generating Area 1.31 ac. Buffer

Total Site Area - 35.99 ac.

Belt Transect and Quadrat Detail



Continues

Horton Road ROW (Vacated) 60'

30'

10'

10'

Q

Line Transect

Quadrat

70'

100'

Baseline

Bellingham School District Mitigation Site

B-1.2

B-1.1

Belt Transect B-1

Quadrat

100' min.

Belt Transect B-2

30'

West Bear Creek

70'

J

B-2.2

B-2.1

Costco Mitigation Site

J

B-3.3

B-3.2

B-3.1

Belt Transect B-3

Flooding & Inundating Limit Accessibility ~12 ac.

J

0'

Costco Mitigation Site (Land Owner: City of Bellingham)

See Detail

B-4.1

Belt Transect B-4

Boxwood Road ROW (Vacated) 60'

K

N

L

B-5.1

Belt Transect B-5

B-6.3

B-6.2

B-6.1

Belt Transect B-6

M

100'

100'

P

10'

Beaver Management Area B

Thomas Road ROW 60'

Site B Pedestrian Access Construction Access & Staging (City Owned Property)

Unnamed Tributary to West Bear Creek

N

W E

S

0 150 300

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PROJECT NO: 3815.01

Figure F.3
MONITORING - SITE B
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

LEGEND:

- Bank Boundaries 98.65 ac.
- Parcel Boundary
- Buffer
- Wetland Area (with Wetland Identifier)
- Stream with Flow Direction
- Protected Mitigation Areas
- Proposed Habitat Pile (6-8)
- Pedestrian Access for Construction Access & Staging
- Internal ROW Boundary (Vacated)
- 10' Utility Easement
- Baseline
- Belt Transect
- Line Transect
- Quadrat
- Beaver Management Area

NOTE(S):

1. Any beaver dams or obstructions in flow in Beaver Management Area will be managed to prevent potential flooding to adjoining properties.
2. Additional Beaver Management Areas within the Bank may be identified as beaver activity and site conditions change over time and will be documented in annual monitoring reports.
3. This figure represents an example of the monitoring protocol and does not represent the exact layout.
4. To the extent possible, the quadrats will be located to include only one mitigation method (preservation versus enhancement) based on as-built plantings and ground conditions. Quadrats may be moved in a direction to fully encapsulate whatever mitigation method is being monitored. If a quadrat is determined to be unusable during field monitoring, the next quadrat along the belt or line transect will be used in the PFO WET or FO UPL communities.

SITE C

Proposed Credit Generating Area 30.22 ac.

Enhancement 19.47 ac.

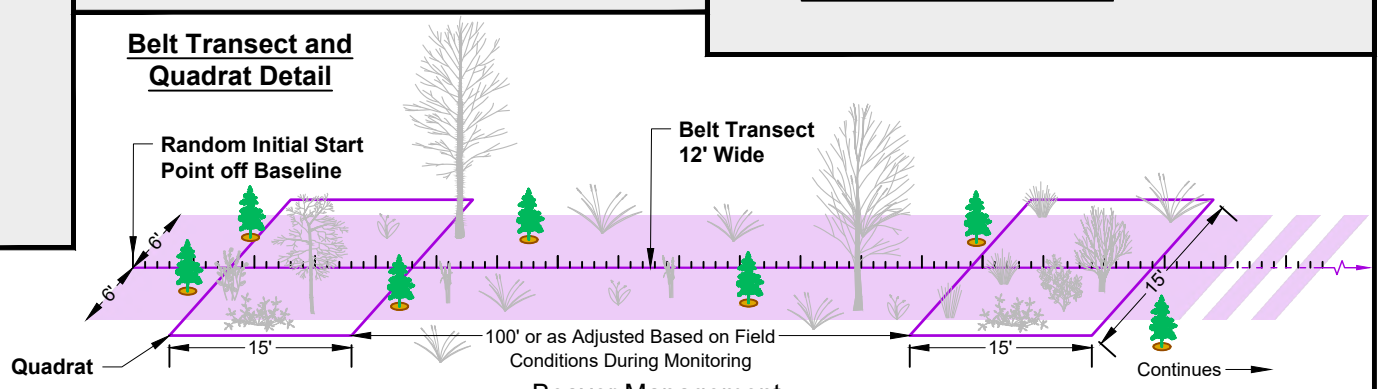
PFO WET	7.13 ac. Credit Generating Area 2.47 ac. Buffer
FO UPL	7.48 ac. Credit Generating Area 2.39 ac. Buffer

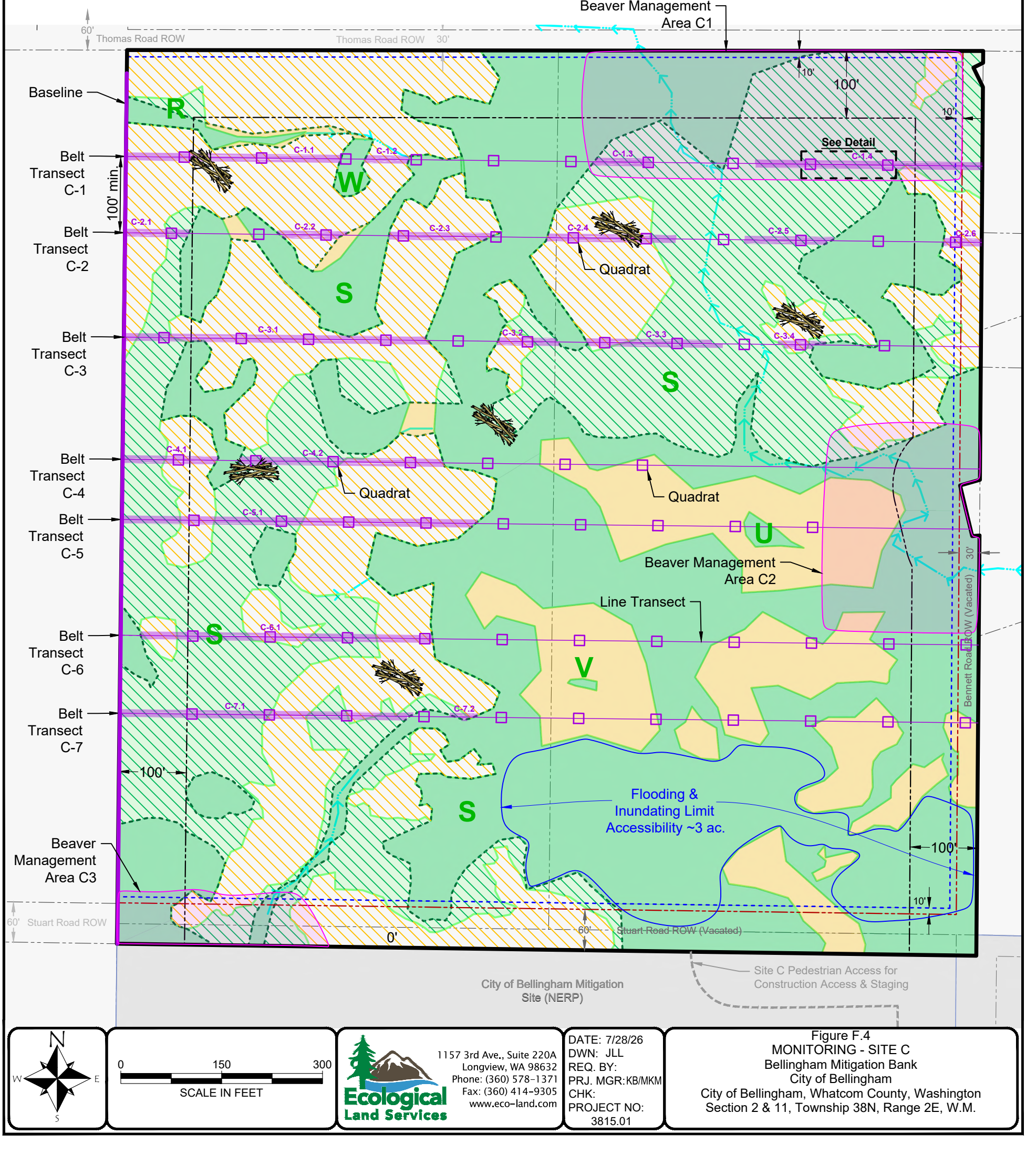
Preservation 19.39 ac.

PFO WET	11.77 ac. Credit Generating Area 3.60 ac. Buffer
FO UPL	3.84 ac. Credit Generating Area 0.18 ac. Buffer

Total Site Area - 39.12 ac.

Belt Transect and Quadrat Detail





N W E S

0 150 300

SCALE IN FEET

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Figure F.4
MONITORING - SITE C
Bellingham Mitigation Bank
City of Bellingham
City of Bellingham, Whatcom County, Washington
Section 2 & 11, Township 38N, Range 2E, W.M.

APPENDIX G

LONG-TERM PROTECTION AND MANAGEMENT

G.1 Conservation Easements

A. The Sponsor will ensure, pursuant to Article III.D. of this Instrument, that an appropriate conservation easement is granted and recorded dedicating in perpetuity the property constituting the Bank that is to be enhanced and preserved for credit. The conservation easement must be approved by the Corps and Ecology, following consultation with the IRT, and shall be recorded with the Whatcom County Auditor. A copy of the recorded easement shall be provided to all members of the IRT. The conservation easement shall reflect that it may not be removed, modified, or transferred without written approval of the Corps and Ecology, in consultation with the IRT. The Corps and Ecology may consider any alteration or rescission of the conservation easement a default of the Sponsor's obligations under this Instrument and may institute appropriate action pursuant to Article IV.J. The Sponsor shall provide no less than 60 days written notice to the IRT of any transfer of fee title or any portion of the ownership interest in the Bank real property to another party. Use prohibitions reflected in the conservation easement will preclude the Bank from being used for activities that would be incompatible with the establishment and operation of the Bank. All restrictions shall be granted in perpetuity without encumbrances or other reservations, except those encumbrances or reservations approved by the Corps and Ecology and not adversely affecting the ecological viability of the Bank. Any portion of the site not encumbered by the conservation easement will not be credited for use in the Bank.

B. The conservation easement shall provide that all structures, facilities, and improvements within the Bank, including roads and fences, that are merely incidental to the functionality of the Bank site but are necessary to the Bank management and maintenance activities, shall be maintained by the Sponsor or its assignee for as long as it is necessary to serve the needs of long-term management and maintenance. All structures, facilities, and improvements that directly and substantially contribute to the functionality of the Bank will be included within the responsibilities delineated in the Long-Term Management and Maintenance Plan.

G.2 Long-term Management and Maintenance Plan

A. The Sponsor is responsible for ensuring that a Long-Term Management and Maintenance Plan is developed and implemented to protect and maintain in perpetuity the aquatic functions and values of the Bank site. Once the establishment period of the Bank has terminated pursuant to Article IV.K. of this Instrument, pursuant to a Long-Term Management and Maintenance Agreement, the Sponsor will assume responsibility for implementing the Long-Term Management and Maintenance Plan, as provided in Article IV.M of this Instrument, unless the Sponsor assigns this responsibility pursuant to the provisions of Article IV.M. and Section G.2.D of this Appendix. The Long-Term Steward will enter into a Long-Term Management and Maintenance Agreement with the Corps and Ecology, which will document the commitment on the part of the Long-Term Steward to adhere to the Long-Term Management and Maintenance Plan.

B. The Long-Term Management and Maintenance Plan will consist of enumerated objectives. The Long-Term Steward will document that the Bank is achieving each objective by submitting status reports to the IRT on a schedule approved by the IRT. A primary goal of the Bank is to create a self-sustaining natural aquatic system that achieves the intended level of aquatic ecosystem functionality with minimal human intervention, including long-term site maintenance. As such, natural changes to the vegetative community, other than changes caused by noxious weeds, that occur after all Bank performance standards have been met are not expected to require remediation.

C. If the Sponsor elects to request the approval of the IRT to assign long-term management and maintenance to a Long-Term Steward pursuant to Article IV.M.2., the long-term management and maintenance assignment agreement will reflect that the assignee has assumed (1) the obligation, owed to the IRT and manifested through execution of a Long-Term Management and Maintenance Agreement with the Corps and Ecology, of accomplishing the Long-Term Management and Maintenance Plan; as well as (2) the legal responsibility for continued accomplishment and maintenance of the compensatory mitigation requirements associated with all impacting projects that satisfied their mitigation requirements through the application of Bank credits. The Corps and Ecology will also execute this assignment agreement. In the event of such an assignment, a Long-term Management and Maintenance Endowment Fund must be established by the Sponsor and transferred to the Long-Term Steward.

D. The Long-Term Management and Maintenance Plan (see section G.2.E of this Appendix) shall be revised by the Sponsor prior to the end of the establishment period to, inter alia, reflect current site conditions. The Sponsor shall submit such revised plans to the Corps and Ecology for review and approval either with or prior to submitting the Long-Term Management and Maintenance Agreement (see Article IV.M).

E. Bellingham Mitigation Bank Long-Term Management and Maintenance Plan

The Long-Term Management and Maintenance Plan includes the following elements necessary to provide long-term protection for the aquatic ecosystem and habitat resources of the Bank site. These specific elements of the Long-Term Management and Maintenance Plan are tailored to meet the minimum specific protection needs of the Bank site. The particular characteristics of the Bank site at the end of the establishment period may necessitate including other elements not specified below, that are needed to protect the ecosystem resources present at the Bank. Funding for the long-term management elements are as described under Article III.C of the Instrument.

1. **Site Reconnaissance**. Annually patrol the Bank site for signs of trespass and vandalism. Maintenance will include reasonable actions to deter trespass and repair vandalized Bank features.
2. **Sign/Fence Maintenance & Garbage Removal**. Monitor the condition of structural elements and facilities of the Bank site, such as signage, fencing, and new garbage deposition. This includes provisions to maintain and repair these improvements as necessary to achieve the objectives and functional performance goals of the Bank and comply with the provisions of the conservation easement. Improvements that are no longer needed to facilitate or protect the ecological

function of the Bank may be removed or abandoned if consistent with the terms and conditions of the conservation easement and approved by the IRT.

3. **Knotweed Control**. Inspect the Bank site annuallyto locate and eradicate any occurrence of Japanese knotweed (*Fallopia cuspidatum*), giant knotweed (*Fallopia sachalinense*), Himalayan knotweed (*Persicaria polystachyum*), Bohemian knotweed *(Fallopia* x *bohemicum*), and related hybrids. The IRT anticipates that this long-term control will involve identifying and eradicating a relatively small number of recurrences each year. In the event the Corps and Ecology, in consultation with the IRT, determines that the watershed within which the Bank is located becomes infested with these species in the future, so that its effective control on the Bank site is either no longer practicable or unreasonably expensive, the IRT will consider appropriate changes to the Long-Term Management and Maintenance Plan.
4. **Noxious Weed Control**. Inspect the Bank site annually to locate and control noxious weeds other than knotweed. Noxious weed control measures may include mechanical vegetation control, herbicide treatments, and new plantings.
5. **LTMM Report**. The long-term monitoring reporting schedule will be determined when the revised Long-term Management and Maintenance Plan is submitted to the Corps and Ecology prior to the end of the establishment period. Monitoring will evaluate whether the Bank continues to function as intended through site observation and established photo-points. Monitoring will include:
   a. Assessing overall site conditions, including evidence of disturbance, unauthorized uses, or changes in ecological function;
   b. Evaluating vegetation communities, including species composition, structural development, and presence or spread of invasive or noxious species.
   c. Documenting all management or maintenance actions conducted since the previous monitoring event.
   d. Identifying any emerging issues that may require adaptive management.

   Following each monitoring event, the Long-Term Steward will prepare a Long-Term Management Report summarizing findings, management actions, and recommended follow-up measures. The report will be provided to the IRT. Each report must include, at a minimum:

   - **Reporting period**. Identify the time period covered. Information collected during non-reporting years must be included in the next monitoring report.
   - **Site map**. A map showing the locations of management and maintenance actions.
   - **Ecological condition**. An overview of the current ecological condition of the Bank.
   - **Monitoring and management summary**. Detailed descriptions and explanations of monitoring results, management tasks performed, and any contingency actions implemented or proposed, including identified causes.
   - **Uncompleted tasks**. Identify required management, monitoring, or maintenance tasks that were not completed, explanations for why they were not accomplished (e.g., invasive species removal, fence repair), and a timeframe for addressing them.

- **Photographic documentation**. Photographs from established photo points and a current aerial image of the Bank sites.
- **Recommended program changes**. Recommend any changes to the management, maintenance, or monitoring program based on monitoring results. Any changes to the plan will require an amendment.

Annual cost estimates for long-term management elements are summarized in the table below.

Bellingham Mitigation Bank Long-Term Maintenance & Monitoring Cost Estimate				
	Activities	**Hours**	**Rate**	**Annual Cost**
1.	Site reconnaissance, incl. maintenance for trespass and vandalism	24	$100.00	$2,400
2.	Sign and fence maintenance; Garbage removal	24	$100.00	$2,400
3. & 4.	Noxious weed patrol & control	120	$100.00	$12,000
5.	LTMM report development	45	$200.00	$900
			Total	$17,700
			Total Annual Expenditure with 10% Contingency	$19,470