



CITY COUNCIL SPECIAL MEETING
Tuesday, January 30, 2018
City Hall Council Chambers, 280 Madison Avenue N.,
Bainbridge Island, Washington

AGENDA

- 1. CALL TO ORDER/ROLL CALL - 6:30 PM**
- 2. CRITICAL AREAS ORDINANCE WORKSHOP (NO PUBLIC COMMENT)**
 - A.** Ordinance No. 2018-01 (Formerly Ordinance No. 2017-17) Relating to Critical Areas, Repealing Chapter 16.20 and Adopting a New Chapter 16.20, AB 17-135 - Planning
- 3. ADJOURNMENT - 8:30 PM**

City of Bainbridge Island

City Council Agenda Bill



PROCESS INFORMATION

Subject: Ordinance No. 2018-01 (Formerly Ordinance No. 2017-17) Relating to Critical Areas, Repealing Chapter 16.20 and Adopting a New Chapter 16.20, AB 17-135 - Planning	Date: 1/30/2018
Agenda Item: CRITICAL AREAS ORDINANCE WORKSHOP (NO PUBLIC COMMENT)	Bill No.: 17-135
Proposed By: Planning and Community Development	Referrals(s):

BUDGET INFORMATION

Department: Planning	Fund:	
Expenditure Req:	Budgeted?	Budget Amend. Req?

REFERRALS/REVIEW

:	Recommendation:	
City Manager:	Legal: Yes	Finance:

DESCRIPTION/BACKGROUND

The Growth Management Act of Washington (GMA) requires cities to periodically review and evaluate comprehensive plans and development regulations (RCW 36.70A.130). Following adoption of the Comprehensive Plan, the City's development regulations need to be updated to support the goals and policies articulated in the plan. The City's review of development regulations includes the Critical Areas Ordinance (CAO) update pursuant to state law that requires cities to designate and adopt regulations for the protection of critical areas. The City's CAO is codified in Bainbridge Island Municipal Code (BIMC) Chapter 16.20.

There has been a substantial public comment period for the CAO update, including nine regularly scheduled City Council meetings throughout August and December, 2017, and two public hearings on October 3 and November 14, 2017. On December 12, 2017, the Council approved a motion to schedule a public hearing for January 9, 2018, to allow for additional public comment regarding the proposed ordinance. The January 9, 2018, public hearing draft was updated to reflect additional public comment received, and is dated January 30, 2018.

The Council workshop is intended to give Council members the opportunity to discuss the January 30, 2018, public hearing draft with input provided by other agencies. The following documents are included in the background materials:

- Ordinance 2018-01 (formerly Ordinance 2017-17).
- A Frequently Asked Questions (FAQ) document dated January 30, 2018.

- A summary of public comments received through January 14, 2018.
- A summary of general public comments/concerns organized by topic and three categories of potential City Council action.
- The Revised Public Hearing Draft CAO, dated January 30, 2018: This draft includes proposed changes for Council consideration based on public comment received through January 14, 2018, and staff input. (For an explanation of the proposed changes, see the summary of the proposed changes included in the January 30, 2018, Public Hearing Draft, which is the next bulleted item).
- A summary of the proposed changes included in the January 30, 2018, Public Hearing Draft.
- The Best Available Science Summary with attachments.
- CAO and NVPA summary sheets.

RECOMMENDED ACTION/MOTION

I move to forward Ordinance No. 2018-01 to the February 27, 2018, Council meeting for further consideration.

ATTACHMENTS:

Description	Type
▣ Ordinance No. 2018-01	Backup Material
▣ January 30, 2018 Draft CAO	Backup Material
▣ FAQ	Backup Material
▣ Summary of Changes Based on Public Comment	Backup Material
▣ Summary of Comments by Topic and Potential Council Action	Backup Material
▣ Summary of Comments by Date	Backup Material
▣ BAS Summary	Backup Material
▣ BAS Summary Attachment 1	Backup Material
▣ BAS Summary Attachment 2	Backup Material
▣ CAO Summary Sheet	Backup Material
▣ NVPA Summary Sheet	Backup Material

ORDINANCE NO. 2018-01

AN ORDINANCE of the City of Bainbridge Island, Washington, relating to critical areas, repealing Chapter 16.20, and adopting an updated Chapter 16.20 of the Bainbridge Island Municipal Code.

WHEREAS, this ordinance was previously referred to as Ordinance No. 2017-17 but has now become Ordinance No. 2018-01 because the City Council did not vote on passage of the ordinance in 2017 and forwarded the ordinance for further Council discussion into 2018; and

WHEREAS, the adopted City of Bainbridge Island Comprehensive Plan supports the protection of environmentally critical areas through the adoption of development regulations; and

WHEREAS, the City of Bainbridge Island (“City”) is required by the Growth Management Act (“GMA”) (see, e.g., RCW 36.70A.130) to conduct a periodic legislative review and update of its comprehensive plan and development regulations to ensure consistency with updated state laws and population and employment projections; and

WHEREAS, June 30, 2017, was the deadline to update to the City’s Critical Areas Ordinance; and

WHEREAS, the City notified the Washington State Department of Commerce that although the City had been making progress on the review and update of its Comprehensive Plan, it would not meet the June 30, 2017, deadline; and

WHEREAS, the Department of Commerce accepted the City’s delayed action, requesting to be kept abreast of the City’s progress; and

WHEREAS, the State Growth Management Act (GMA) includes adopted goals and requirements to guide the development and adoption of comprehensive plans and development regulations, including requirements to designate and protect environmentally critical areas; and

WHEREAS, the City has considered those adopted goals, policies, and requirements in developing the proposed Critical Areas Ordinance Update; and

WHEREAS, the City’s Comprehensive Plan acknowledges the finite nature of the Island’s natural resources and the unpredictable cumulative impacts of climate change in our region by including integration of the precautionary principle to protect and preserve natural resources in accordance with WAC 365-195-920; and

WHEREAS, the City researched and assessed work of other jurisdictions related to standards and requirements for regulating critical areas, undertook a Best Available Science (BAS) review and public process in accordance with the requirements of the

GMA, developed Critical Areas Ordinance drafts, and held meetings and hearings throughout the code development process; and

WHEREAS, on April 27, May 5, 11, 18, and 25, and on June 1, 8, 15, 19, and 22 the Planning Commission discussed the Critical Areas Ordinance Update; and

WHEREAS, each of the 10 Planning Commission meetings included an opportunity for public comment on the 2017 Critical Areas Ordinance Update; and

WHEREAS, the Planning Commission conducted a public hearing on the Critical Areas Ordinance Update contained in this Ordinance No. 2018-01 on June 26, 2017; and

WHEREAS, the City notified the Department of Commerce on June 30, 2017, of its intent to revise its development regulations relating to critical areas; and

WHEREAS, the City issued a State Environmental Policy Act (“SEPA”) Determination of Non-Significance for this Ordinance No. 2018-01 on July 21, 2017; and

WHEREAS, the City Council reviewed and considered the 2017 Critical Areas Ordinance Update at regularly scheduled meetings on August 2, 8, and 22 and September 5, 12, and 19, 2017; and

WHEREAS, each of the six City Council meetings included an opportunity for public comment on the 2017 Critical Areas Ordinance Update; and

WHEREAS, the City provided for continuous public participation in the update process through, for example, notification of public meetings and public hearings, maintenance of a project page on the City’s website, notification through the City Manager’s Report, maintenance of a project email listserv, and development of informational materials available throughout the update process; and

WHEREAS, the City Council conducted a public hearing on Ordinance No. 2018-01 on October 3, 2017, and continued the public hearing until November 14, 2017, and further continued the public hearing on the ordinance until January 9, 2018; and

WHEREAS, the City Council considered and discussed revisions to Ordinance No. 2018-01 at regularly scheduled meetings on October 17 and 24, and December 12, 2017, as well as on January 9, ~~2018~~, and January 30, 2018; and

WHEREAS, there has been a substantial public comment period for the 2017 Critical Areas Ordinance Update, beginning on August 2, 2017, and continuing to the closure of the written comment period on November 20, 2017; and thereafter extended to January 9, 2018, and further extended to _____, 2018; and

WHEREAS, during the development of the recommended code revisions, the City has been provided feedback and comment on draft work products and guidance from

a wide variety of stakeholders, including members of the public, City staff, the Washington State Department of Fish and Wildlife, the Washington State Department of Ecology, the Suquamish Tribe, other stakeholders and experts, and the Bainbridge Island Planning Commission; and

WHEREAS, as required by law, the City Attorney’s Office conducted an evaluation of the proposed regulatory and administrative actions in this Critical Areas Ordinance Update and determined that those actions avoid unconstitutional takings of private property in the context of, for example, RCW 36.70A.020(6), RCW 36.70A.370, and the Washington State Attorney General’s “Advisory Memorandum and Recommended Process for Evaluating Proposed Regulatory or Administrative Actions to Avoid Unconstitutional Takings of Private Property;” and

WHEREAS, the City Council has determined that it is necessary to repeal Chapter 16.20 of the Bainbridge Island Municipal Code (“BIMC”) and replace it with an updated Chapter 16.20 BIMC, the Critical Areas Ordinance; and

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF BAINBRIDGE ISLAND, WASHINGTON, DOES ORDAIN, AS FOLLOWS:

Section 1. Chapter 16.20 BIMC is hereby repealed.

Section 2. An updated Chapter 16.20 BIMC is hereby adopted, as set forth in Exhibit A and as incorporated herein.

Section 3. This ordinance shall take effect and be in force on March 1, 2018, after its passage and publication as required by law.

PASSED by the City Council this _____ day of _____, 2018.

APPROVED by the Mayor this _____ day of _____, 2018.

Kol Medina, Mayor

ATTEST/AUTHENTICATE:

Christine Brown, City Clerk

FILED WITH THE CITY CLERK:	_____	2017
PASSED BY THE CITY COUNCIL:	_____	2018
PUBLISHED:	_____	2018
EFFECTIVE DATE:	_____	2018
ORDINANCE NUMBER:	2018-01	

Chapter 16.20

CRITICAL AREAS

- 16.20.010 Purpose and intent**
 - 16.20.020 Applicability**
 - 16.20.030 Protection of critical areas**
 - 16.20.040 Exemptions**
 - 16.20.050 Standards for existing development**
 - 16.20.060 Administration**
 - 16.20.070 Review procedures**
 - 16.20.080 Reasonable use exceptions**
 - 16.20.090 Trees and vegetation**
 - 16.20.100 Aquifer recharge areas**
 - 16.20.110 Fish and wildlife habitat conservation areas**
 - 16.20.120 Frequently flooded areas**
 - 16.20.130 Geologically hazardous areas**
 - 16.20.140 Wetlands**
 - 16.20.150 The Winslow Ravine**
 - 16.20.160 Performance and maintenance surety**
 - 16.20.170 Compliance and enforcement**
 - 16.20.180 Critical area reports**
 - 16.20.190 Definitions**
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Notes:

1. **Yellow** highlighted changes are for Council consideration based on public comments received through November 20, 2017.
2. **Green** highlighted changes are for Council consideration based on public comments received between November 21, 2017 – January 14, 2018.
3. **Blue** highlighted changes are for Council consideration based on staff review and input.

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16.20.010 Purpose and intent.

A. The purpose of this chapter is to designate and classify ecologically sensitive and hazardous areas as critical areas and to protect, maintain and restore these areas and achieve no net loss of their functions and values and allow for reasonable use of public and private property.

B. This chapter is intended to implement the goals, policies, guidelines, and requirements of the city comprehensive plan and the Growth Management Act (Chapter 36.70A RCW).

C. Critical areas provide a variety of valuable and beneficial biological and physical functions that benefit the city and its residents. Critical areas may also pose a threat to human safety or to public and private property. The beneficial functions and values provided by critical areas include, but are not limited to, water quality protection and enhancement, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation of flood waters, ground water recharge and discharge, erosion control, wave attenuation, and protection from hazards and the impacts of climate change. Groundwater recharge is of particular concern for the city because the Island's drinking water is supplied solely by groundwater.

D. By limiting adverse impacts to and alteration of critical areas, this chapter seeks to accomplish the following goals:

1. To conserve the biodiversity of plant and animal species, protect, maintain and restore healthy, functioning ecosystems through the protection of unique, fragile, and valuable elements of the environment, including, but not limited to, ground and surface waters, wetlands, fish and wildlife and their habitats;
2. Direct development, uses and activities to less environmentally sensitive sites and mitigate unavoidable impacts to critical areas by regulating alterations in and adjacent to critical areas;
3. Prevent cumulative adverse environmental impacts to water quality, water quantity, wetlands, and fish and wildlife habitat, and the overall net loss of wetlands, frequently flooded areas, aquifer recharge, and habitat conservation areas;
4. Protect members of the public and public resources and facilities from injury, loss of life, or property damage due to landslides and steep slope failures, erosion, seismic events, or flooding; and
5. Alert owners, potential purchasers, real estate agents, appraisers, lenders, builders, developers and other members of the public to natural conditions that pose a hazard or otherwise limit development.

E. This chapter is to be administered with flexibility and attention to site-specific characteristics. It is not the intent of this chapter to make a parcel of property unusable by denying its owner

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reasonable use of the property or to prevent the provision of public facilities and services necessary to support existing development.

16.20.020 Applicability

This chapter applies to all development, uses and activities within areas or adjacent to areas designated as critical areas unless identified as exempt in BIMC 16.20.040. No action shall be taken by any person, company, agency, governmental body (including the city), or applicant, which results in any alteration of a critical area except as consistent with the purposes, intent, requirements, development standards and goals of this chapter.

16.20.030 Protection of Critical Areas

A. All proposed development, uses and activities subject to this chapter shall utilize mitigation sequencing as follows:

1. Avoid the impact altogether by not taking a certain action or parts of an action;
2. Minimize impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
3. Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;
5. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments, and;
6. Monitor the impact and take appropriate corrective measures.

B. The precautionary principle shall be applied in the review of any action, taken or proposed, that does not conform to the requirements of this chapter. The burden of proof that the action will cause no net loss or harm to persons or property falls on the applicant or the property owner.

16.20.040 Exemptions

A. Exempt activities are those that will not have a significant impact on a critical area's structure and function and most are expected to be very short term. All exempt activities shall use reasonable methods to avoid potential impacts to critical areas. Exempt activities do not grant permission to degrade a critical area or ignore risk from natural hazards. Any incidental damage to, or alteration of, a critical area that is not a necessary outcome of the exempt activity shall be considered a violation of this chapter and subject to enforcement and restoration under BIMC 16.20.170.

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The following activities are exempt from the requirements of this chapter and do not require a critical area permit and are not subject to any review or approval process except where noted:

1. Emergency activities necessary to prevent an unanticipated and immediate threat to public health, safety or welfare or an immediate risk of danger to property which requires action within a time frame too short to allow compliance with this chapter. The person or agency undertaking such action shall notify the director within one working day following commencement of the emergency activity. Within 30 days, the director shall determine if the action taken was within the scope of the emergency actions allowed in this subsection. If the director determines that the action taken, or any part of the action taken, was beyond the scope of an allowed emergency action, then enforcement provisions of BIMC 16.20.170 shall apply.

After the emergency, the person or agency undertaking the action shall fully fund and conduct necessary restoration and/or mitigation for any impacts to the critical area and buffers resulting from the emergency action in accordance with an approved critical areas report and mitigation plan. Restoration and/or mitigation activities must be initiated within one year of the date of the emergency and completed in a timely manner.

2. Existing and ongoing agricultural activities. For the purpose of this chapter, “existing and ongoing” means the activity has been conducted and/or maintained within the past five years under a farm management plan or other best management practices not resulting in a net loss of critical area functions and values. New or expanded agricultural uses, activities, and accessory structures are not considered “existing and ongoing.” Existing, ongoing agricultural activities shall comply with applicable water quality regulations set forth in BIMC 15.20 and utilize best management practices to protect and enhance water quality.
3. Normal and routine repair and maintenance of existing structures that will not further impact or alter critical areas or buffers.
4. Normal and routine yard and garden activities including, but not limited to, cutting and mowing lawns, weeding, removal of noxious and invasive species, harvesting and replanting of garden plants and crops, incidental vegetable gardening, pruning and planting of noninvasive ornamental vegetation, intended to maintain the general condition and extent of such areas; provided, that such activities are limited to legally existing yard and garden areas, do not further expand into critical areas or associated buffers, do not significantly alter topography, and do not diminish water quality or quantity. Normal and routine activities cannot result in a change to the location, size at the ground level or configuration of existing yard and garden areas. Normal and routine activities do not include tree and vegetation activities pursuant to BIMC 16.20.090.B that require a critical area permit and city pre-approval.

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5. Normal and routine repair, maintenance and operation of existing retention/detention facilities, biofilters and other stormwater management facilities, irrigation and drainage ditches, and fish ponds; provided, that such activities shall not involve conversion of any wetland not currently being used for such activity. Any maintenance of ponds located in stream-habitat fish and wildlife habitat conservation areas shall require approval from the Washington Department of Fish and Wildlife.
6. Normal and routine repair and maintenance of existing utility structures within a right-of-way or existing utility corridor or easement, including the cutting, removal and/or mowing of vegetation above the ground that utilizes best management practices and does not expand the use, activity or structure further into any critical area.
7. Class I, II and III forest practices regulated pursuant to Chapter 76.09 RCW.
8. Minor site investigative work. Work necessary for land use review submittals, such as surveys, soil logs, percolation tests, and other related activities, where such activities do not require a critical area permit pursuant to BIMC 16.20.090 or construction of new roads. In every case, impacts to the critical area shall be minimized and disturbed areas shall be immediately restored. Minor site investigative work may include educational and scientific research activities.
9. Activities within the improved right-of-way. Replacement, modification, installation, or construction of utility facilities, lines, pipes, mains, equipment, or appurtenances, when such facilities are located within the improved portion of the public right-of-way or easement of a private street, except those activities that alter a wetland or watercourse, such as culverts or bridges, or result in the transport of sediment or increased stormwater.
10. The construction installation of low impact fencing within critical area buffers provided the location does not result in restricting wildlife movement, the location and installation is the least impactful to the critical area and buffer as possible, and there is no alternative to fencing to achieve the purpose of the fence.
11. Signs for marking critical area boundaries, interpretive signs and survey markers or property boundaries.

B. The following uses and activities qualify as exempt activities only after review and authorization by the city. These exempt activities do not require a critical area permit. Review and authorization may occur over-the-counter and will require a written letter of approval.

1. Activities within a portion of a wetland buffer or fish and wildlife habitat conservation area buffer separated from the critical area by an existing permanent substantial development, use or activity which serves to eliminate or greatly reduce the impact of the proposed activity on the critical area are exempt from establishing the full required buffer width; provided, that impacts to the critical area do not increase. The director shall review

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the proposal to determine the likelihood of associated impacts and may require the applicant to provide a critical areas report prepared by a qualified professional that demonstrates through a site assessment or functional analysis that the interrupted buffer area is functionally isolated from the critical area. The director shall consider the hydrologic, geologic, and/or biological habitat connection potential and the extent and permanence of the physical separation.

2. Fish, Wildlife and Wetland Restoration Activities. Fish, wildlife, and/or wetland restoration or enhancement activities not required as project mitigation; provided, that the project is approved by the jurisdictional agency (Washington State Department of Fish and Wildlife, U.S. Army Corps of Engineers, or other appropriate local, state, federal, or tribal jurisdiction).
3. Development, uses or activities within critical aquifer recharge areas that do not meet the applicability criteria of BIMC 16.20.110.A.

16.20.050 Standards for existing development

A. Existing structures and related improvements. Structures and related improvements that were legally built or vested prior to the effective date of Ordinance No. 2017-17 2018-01 that do not meet the requirements of this chapter may continue to exist in their present form, and may be altered, including remodeled, reconstructed, or expanded, if such alteration complies with the provisions of this Section and all other applicable sections of this Chapter.

B. Existing buildings that were legally built or vested prior to the effective date of Ordinance No. 2017-17 2018-01 may be altered only one time within the lifetime of the structure and:

1. The expansion of the footprint is outside a landslide hazard area or landslide hazard area setback unless required for safety or seismic upgrades;
2. Any expansion of the footprint is located only within a critical area buffer. No expansion of the footprint is allowed within a wetland or fish and wildlife habitat conservation area;
3. Any expansion of the footprint within a critical aquifer recharge area is located outside the Native Vegetation Protection Area pursuant to BIMC 16.20.090.E.
4. Cantilevers over critical areas are not allowed;
5. The expansion of the footprint at ground level does not exceed 500 square feet;
6. Any expansion of the footprint is used only as indoor living space or to accommodate accessibility;
7. Any expansion of the footprint is no closer to the critical area than the existing footprint; and

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8. If a building is harmed or destroyed by more than 50 percent of its square footage, the building must be reconstructed in compliance with the requirements of this Chapter.

C. Existing property improvements other than buildings, including driveways, parking areas, yards and landscaped areas, play areas, storage areas, decks less than 5 feet in height, patios, and similar improvements that were legally established or vested prior to the effective date of Ordinance No. ~~2017-17~~ 2018-01 may be altered if:

1. ~~There is no change in the location of the improvement~~ Any alteration is in substantially the same location as the original property improvement;
2. Any expansion of the footprint is located only within the required buffer. No expansion of the footprint is allowed within the critical area itself and cantilevers over critical areas are not allowed;
3. Any expansion of the footprint is no closer to the critical area than the existing footprint; and
4. Any expansion of the footprint within a critical aquifer recharge area is located outside the Native Vegetation Protection Area pursuant to BIMC 16.20.090.E.

D. Buffer modifications pursuant to BIMC 16.20.110 and 16.20.140 shall not be granted for existing development.

E. Alterations permitted by this Section must comply with other applicable city code or land use review requirements and require submittal of a critical areas permit application in accordance with the permit and review procedures required for the affected critical area(s).

16.20.060 Administration

A. Interpretation. The provisions of this chapter shall be held to be minimum requirements in their interpretation and application and shall be liberally construed to serve the purposes of this chapter.

B. Procedures. The director is authorized to adopt written procedures for the purpose of carrying out the provisions of this chapter.

C. Inventory of Critical Areas. This chapter shall apply to all critical areas located within the jurisdiction of the city. The approximate location and extent of these areas on Bainbridge Island is displayed on various inventory maps available at the city's Department of Planning and Community Development. Maps and inventory lists are guides to the general location and extent of critical areas. Critical areas not shown are presumed to exist on Bainbridge Island and are protected under all the provisions of this chapter. In the event that any of the designations shown

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on the maps or inventory lists conflict with the site-specific conditions, site-specific conditions shall control.

D. Suspension – Revocation. In addition to other penalties provided for elsewhere, the director may suspend or revoke a permit if it is found that the applicant or permittee has not complied with any or all of the conditions or limitations set forth in accordance with this chapter, has exceeded the scope of work set forth in the permit, or has failed to undertake the project in the manner set forth in the approved application.

E. Inadvertent discovery. Whenever a critical area or critical area buffer is discovered in the process of development, work on that portion of the development site shall be stopped immediately and the land owner shall report the discovery to the city as soon as possible. The city shall conduct a site investigation to verify the presence of a critical area or its buffer. Based upon the findings of the site investigation, the director may require submittal and approval of the applicable critical area permit, or may allow stopped work to resume. If required to approve the critical area permit, the landowner shall fully fund and conduct necessary restoration and/or mitigation for any impacts to the critical area and buffers resulting from the development activity in accordance with an approved critical areas report and mitigation plan. Restoration and/or mitigation activities must be initiated within one year of the date of the discovery and completed in a timely manner.

F. Assessment relief. The City of Bainbridge Island, in imposing special assessments, shall take into account the easements or perpetual conservation restrictions in critical areas.

G. Other laws and regulations. No permit granted pursuant to this chapter shall remove an applicant's obligation to comply in all respects with the applicable provisions of any other federal, state, or local law or regulation.

H. Conflict.

1. General. When any provision of any other chapter of the BIMC conflicts with this chapter (or any existing regulations, easements, covenants, or deed restrictions), that which provides more protection to critical areas shall apply.
2. Shoreline Master Program. In case of conflict between the provisions of this chapter and the provisions of the Shoreline Master Program, Chapter 16.12 BIMC, the provisions of the Shoreline Master Program, Chapter 16.12 BIMC, shall prevail unless the Critical Areas Ordinance provides greater protection for critical areas. However, the classification or designation of any of the shoreline of Bainbridge Island shall not change from what it is under the Shoreline Master Program as a result of any provisions of the Critical Areas Ordinance.

I. Severability. If any clause, sentence, paragraph, section or part of this chapter or the application thereof to any person or circumstances shall be adjudged by any court of competent

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jurisdiction to be invalid, such order or judgment shall be confined in its operation to the controversy in which it was rendered and shall not affect or invalidate the remainder of any part thereof to any other person or circumstances and to this end the provisions of each clause, sentence, paragraph, section or part of this law are hereby declared to be severable.

16.20.070 Review procedures

A. Permit required. Any proposal to alter any critical area and/or required buffer including, but not limited to, earthwork including grade and fill activity, alteration of site hydrology including water temperature and characteristics of water sources, removal or alteration of vegetation, and construction or siting of buildings, structures, facilities, utilities, hard surfaces and other related infrastructure, shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 040.

B. Applications for critical area permits, unless otherwise provided for in this chapter, shall be reviewed and approved, approved with conditions, or denied pursuant to the administrative review procedures in BIMC 2.16.030 unless a Reasonable Use Exception is requested. Critical area permit applications shall be reviewed based on the proposal's ability to comply with all of the following criteria:

1. The proposal minimizes the impact on critical areas in accordance with mitigation sequencing (BIMC 16.20.030.A);
2. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site;
3. The proposal is consistent with the general purposes of this chapter and the public interest;
4. Any alterations permitted to the critical area are mitigated in accordance with mitigation requirements in BIMC 16.20.030.A;
5. The proposal protects the critical area functions and values consistent with best available science and results in no net loss of critical area functions and values;
6. The proposal addresses cumulative impacts of the action; and
7. The proposal is consistent with other applicable regulations and standards.

C. The city may condition the proposed activity as necessary to mitigate impacts to critical areas and to conform to the standards required by this chapter.

D. Except as provided for by this chapter, any project that cannot adequately mitigate its impacts to critical areas in the sequencing order of preferences in BIMC 16.20.030.A shall be denied.

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E. Application required. Any application for land use or development proposals within critical areas or their buffers, unless an exempt activity pursuant to BIMC 16.20.040, requires submittal of the city's Master Land Use Application (P100) to the Department of Planning and Community Development in accordance with the requirements outlined in the city's Administrative Manual for Land Use Permits. The applicant shall not be granted any approval or permission to conduct development or land use in a critical area or its buffer prior to fulfilling the requirements of this chapter.

F. Support Information Requirements. A critical area permit application shall include the following:

1. A site plan drawn to scale identifying locations of critical areas and their buffers, location of proposed development, uses and activities, location and estimated quantity of earthwork and vegetation clearing and location and type of drainage features or infrastructure.
2. Any critical area report or study required by this chapter. Such reports or studies shall be prepared by qualified professionals in the area of concern as defined in BIMC 16.20.190 (Definitions), and in accordance with the requirements provided in BIMC 16.20.180 (Critical Areas Reports) as follows:
 - a. Aquifer recharge study: Hydrogeologist;
 - b. Geological hazard assessment: Engineering geologist; geotechnical engineer, provided that:
 - i. An engineering geologist may provide a study, including interpretation, evaluation, analysis, and application of geological information and data and may predict potential or likely changes in types and rates of surficial geologic processes due to proposed changes to a location, provided it does not contain recommended methods for mitigating identified impacts, other than avoidance, structural impacts to, or suitability of civil works; and
 - ii. Engineering geologists may not provide engineering recommendations or design recommendations, but may contribute to a complete geotechnical report that is co-sealed by a geotechnical engineer.
 - c. Stream buffer enhancement plan: Biologist with stream ecology expertise; fish or wildlife biologist; a civil engineer may provide studies for drainage, surface and subsurface hydrology, and water quality;
 - d. Wetland buffer enhancement plan, wetland critical area report, wetland mitigation plan: Wetlands specialist.

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- e. Habitat Management Plans: Wildlife biologist and/or fisheries biologist.
 - f. The director is authorized to retain experts at the applicant's expense and request review from other jurisdictional agencies to assist in the review of application materials; and
3. Any additional information determined as relevant by the director.

G. Notice on Title

1. The owner of any property with field-verified presence of critical area or buffer on which a development proposal is submitted shall file for record with the Kitsap County auditor a notice approved by the director in a form substantially as set forth in Subsection 2 of this Section. Such notice shall provide notice in the public record of the presence of a critical area and buffer, the application of this chapter to the property, and that limitations on actions in or affecting such areas may exist. The applicant shall submit proof that the notice has been filed for record before the city shall approve any development proposal for such site. The notice shall run with the land and failure to provide such notice to any purchaser prior to transferring any interest in the property shall be in violation of this chapter.
2. Form of Notice.

Critical Areas
and/or
Critical Areas Buffer Notice

Legal Description: _____

Present owner: _____

NOTICE: This property contains critical areas or their buffers as defined by the City of Bainbridge Island Ordinance No. _____. The property _____

_____ was the
subject of a development proposal for _____

_____ (type of permit) application # _____ filed on ____ (date) _____. Restrictions on use or alteration of the critical areas or their buffers may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of critical areas or critical area buffers and restrictions on their use through setback areas. A copy of the plan showing such setback areas and other restrictions or required enhancements is attached hereto.

Signature of owner _____

STATE OF WASHINGTON)
COUNTY OF _____)

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On this day personally appeared before me to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that they signed the same as their free and voluntary act and deed for the uses and purposes therein stated.

Given under my hand and official seal this ____ day of _____, _____.
NOTARY PUBLIC in and for the state of Washington, residing at _____.

16.20.080 Reasonable use exceptions

A. Applicability and Intent. The purpose of the reasonable use exception (RUE) process is to allow reasonable use of property and explore alternatives to development that would be permitted in accordance with the underlying zoning designation and standards. An applicant may request an RUE pursuant to this Section when a site assessment review pursuant to BIMC 15.20 or a pre-application conference demonstrates that:

1. The subject property is encumbered to such an extent by critical areas and/or critical area buffers that application of this chapter would deny all reasonable use of the subject property;
2. Reasonable use of the subject property cannot be achieved through Buffer Modification (BIMC 16.20.110 and 140) or a Habitat Management Plan (BIMC 16.20.110); and
3. Alternatives to development through an RUE are not available or acceptable.

B. During the pre-application process, the city may:

1. Determine whether the property qualifies for inclusion in any program that would eliminate the need for an RUE including, but not limited to, transfer or purchase of development rights, mitigation banking, and open space acquisition or other conservation mechanism. If the property qualifies for inclusion in one or more of such programs, the director shall notify the applicant in writing of such qualification and of the applicable rules and regulations, and shall send an application form for inclusion in such program(s). If the property is included in one or more of such programs, an RUE application is not required; or
2. Determine to offer to purchase the development rights rather than grant an RUE, and the applicant, at his/her sole discretion, may agree to sell said development rights rather than pursue an RUE.

C. RUE Request and Review Process. An application for an RUE shall include the city's Master Land Use Application; a critical area report or Habitat Management Plan, including mitigation plan, if necessary; and any other relevant information and reports that are necessary, as determined by the director, to process and prepare the recommendation on the application, such

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as permit applications to other agencies, special studies, and environmental documents prepared pursuant to the State Environmental Policy Act, Chapter 43.21C RCW (SEPA documents).

D. The director shall prepare a recommendation to the Hearing Examiner based on review of the submitted information and reports, a site inspection, and the proposal's compliance with the criteria in Subsection (E), below.

E. Hearing Examiner Review. The hearing examiner shall review the RUE application and conduct a public hearing pursuant to the provisions of the BIMC 2.16.100. The Hearing Examiner shall approve, approve with conditions, or deny the request based on the proposal's compliance with all of the RUE review criteria in Subsection (F), below.

F. Reasonable Use Review Criteria. Criteria for review and approval of reasonable use exceptions are as follows:

1. The application of this chapter would deny all reasonable use of the property;
2. There is no reasonable alternative to the proposal with less impact to the critical area or its required buffer;
3. The proposal minimizes the impact on critical areas in accordance with mitigation sequencing (BIMC 16.20.030);
4. The proposed impact to the critical area is the minimum necessary to allow reasonable use of the property;
5. The inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant, or of the applicant's predecessor, that occurred after February 20, 1992;
6. The proposed total lot coverage does not exceed 1,200 square feet for residential development;
7. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the property;
8. Any alterations permitted to the critical area are mitigated in accordance with mitigation requirements applicable to the critical area altered;
9. The proposal protects the critical area functions and values consistent with the best available science and results in no net loss of critical area functions and values;
10. The proposal addresses cumulative impacts of the action; and

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11. The proposal is consistent with other applicable regulations and standards.

G. Burden of Proof. The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application. The standard for the burden of proof shall be clear and convincing evidence.

16.20.090 Trees and vegetation

A primary goal of the city's comprehensive plan is protecting the Island's natural environment. The use of land on the Island should be based on the principle that the Island's environmental resources are finite and must be maintained at a sustainable level. Standards and review procedures for trees and vegetation within critical areas and their buffers are necessary to maintain or improve the functions and values of critical areas, implement the city's comprehensive plan, provide for reasonable maintenance or enhancement of views, and allow for appropriate vegetation maintenance and hazard tree removal. Tree or vegetation removal, coppicing or pruning is prohibited within critical areas and their buffers unless allowed pursuant to BIMC 16.20.090 (A) through (D) or approved by the director as provided in BIMC 16.20.090.F.

A. Applicability.

1. This Section applies to any tree and vegetation activity within geologically hazardous areas and their setbacks and wetlands and fish and wildlife habitat conservation areas and their buffers, and Native Vegetation Protection Areas as described in BIMC 16.20.100.E.

B. The following tree and vegetation activities do not require city review or pre-approval:

1. General pruning of trees and shrubs provided:
 - a. Pruning operations of trees that do not remove more than 10 percent of living material (branches, stems and leaves) of an individual tree within any three-year period;
 - b. Pruning operations conducted with an ISA-certified arborist on site that remove from 10 percent to 25 percent of living material within any three-year period;
 - c. No portion of a live branch or stem more than 6 inches in diameter is removed from any tree;
 - d. Pruning operations use the natural pruning system to maintain the characteristic growth pattern of trees and shrubs.
 - e. Pruning activities conform to applicable practices of ANSI A300 (Part 1 – 2017) Tree, Shrub and Other Woody Plant Management – Standard Practices (Pruning), as amended, or City of Bainbridge Island pruning standards ([hyperlink](#));
 - f. Trees and shrubs are not located in or overhanging a Type F stream;

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- g. The practice known as topping – the reduction of tree size by cutting live branches and leaders to stubs, without regard to long-term tree health or structural integrity is prohibited.
- 2. Specific pruning. The following pruning activities are allowed without the restrictions in B.1.a through c. above, provided that the structural integrity and long-term health of the vegetation is preserved.
 - a. Coppicing and pollarding. The coppicing or pollarding of big leaf maple (*Acer macrophyllum*), cottonwood (*Populus sp.*), willow (*Salix sp.*), hazelnut (*Corylus cornuta*) and vine maple (*Acer circinatum*) and any species listed in BIMC 16.20.090.B(3) is allowed, provided:
 - i. Total area of canopy removal shall not exceed 2,500 square feet.
 - ii. No ground or root disturbance occurs as part of the cutting.
 - iii. The stems or shoots of trees or shrubs are less than 6 inches in diameter at 4-1/2 feet high above ground or top of stump.
 - iv. Coppicing and pollarding may only occur once every three years.
 - v. Coppicing and pollarding of native species is not allowed in wetlands or fish and wildlife habitat conservation areas or their associated buffers.
 - vi. Coppicing of big leaf maple trees must retain a stump height equal or greater than previous live stump height or 16 inches above ground level, whichever is greater.
 - b. Within Native Vegetation Protection Areas delineated pursuant to BIMC 16.20.100.E, maintenance pruning of trees is allowed without the restrictions in B.1.a through c. above, provided the structural integrity and long-term health of the trees is preserved **and the trees are not located within another type of critical area;**
 - c. Maintenance pruning of hedges and shrubs without the restrictions in B.1.a through c. above, provided that the structural integrity and long-term health of the vegetation is preserved.
- 3. Invasive species removal. The removal of the following vegetation with hand labor or hand-held equipment provided: (a) the area of work is under 2,500 square feet in area and (b) any area of bare ground is planted with native species within the first appropriate growing season or otherwise protected by acceptable temporary erosion and sedimentation control strategies:
 - ~~a. Plants on the Kitsap County or Washington State Noxious Weed Control Board list of noxious weeds;~~
 - a. English ivy (*Hedera helix*) from tree trunks or ground surface;
 - b. Himalayan blackberry (*Rubus discolor*, *R. procerus*);
 - c. Evergreen blackberry (*Rubus laciniatus*);
 - d. English/Portuguese laurel (*Prunus laurocerasus/lusitanica*)
 - e. English holly (*Ilex aquifolium*);
 - f. Scotch broom (*Cytisus scoparius*);

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- g. English hawthorne (*Crataegus laevigata*); and
 - h. Poison oak (*Toxicodendron diversilobum*); and
 - i. Any plant on the Kitsap County or Washington State Noxious Weed Control Board list of noxious weeds, as amended, whether or not listed above.
4. Hazard tree removal within Native Vegetation Protection Areas delineated pursuant to BIMC 16.20.100.E in accordance with tree removal provisions set forth in BIMC 16.18 provided the tree(s) is not located within another type of critical area.

C. The following tree and vegetation activities require city review and pre-approval of a critical area permit:

1. Any tree or vegetation activity not included in BIMC 16.20.090.B.
2. Hazard trees.
 - a. Hazard tree removal or wildlife snag creation not within erosion and landslide hazard areas or a landslide hazard area setback at the top of slope is allowed provided that it shall comply with the following standards and submittal requirements:
 - i. A report from an International Society of Arboriculture (ISA) Tree Risk Assessment Qualified (TRAQ) arborist that documents the hazard and provides a replanting plan for replacement trees;
 - ii. Land owners are encouraged, but not required, to retain all or portions of removed hazard trees on site to provide wildlife habitat;
 - iii. The land owner shall replace any trees that are removed with new trees at a minimum ratio of two replacement trees for each tree removed (2:1) within the first appropriate growing season in accordance with an approved planting plan. Replacement trees may be planted at a nearby location. Replacement trees shall be species that are native and indigenous to the site and a minimum size of six feet in height measured from top of root flare, with a minimum trunk diameter of one inch measured at four inches above top of root flare for both evergreen and deciduous trees. Smaller replacement trees are acceptable, at a minimum ratio of three replacement trees for each tree removed (3:1) and a minimum size of three feet (36 inches) in height measured from top of root flare.
 - iv. If a tree to be removed provides critical habitat, such as an eagle perch, a qualified wildlife biologist shall be consulted to determine timing and methods of removal that will minimize impacts; and
 - v. Hazard trees determined to pose an imminent threat or danger to public health or safety, to public or private property, or of serious environmental degradation may be removed or pruned by the land owner prior to receiving approval from the city; provided, that within 14 days following such action, the land owner shall submit the report required by Section (i) directly above

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and a planting plan that demonstrates compliance with the provisions of this title.

- b. Hazard tree removal within erosion and landslide hazard areas and their setbacks at the top of slope is allowed provided that it shall comply with the standards and submittal requirements of both BIMC 16.20.090.C.2.a and the following:
 - i. No root disturbance or stump removal is permitted;
 - ii. Tree trunks, branches and stems may be left on a slope provided vegetative material does not result in a net increase in geological instability or create dangers to life or property.
 - iii. When removing more than one hazard tree, or more than two within a five-year period, the applicant shall demonstrate compliance with development standards in BIMC 16.20.130.D(1) as documented by a geotechnical engineer licensed in the State of Washington.

3. Coppicing, **pollarding** and other or vegetation activities.

- a. The coppicing, **pollarding** or removal of any species listed in BIMC 16.20.090.B(2) and (3) in an area greater than 2,500 square feet shall:
 - i. Include submittal of a replanting plan for city review and approval for any areas of bare ground; and
 - ii. Demonstrate compliance with development standards in BIMC 16.20.130.D(1) as documented by a geotechnical engineer licensed in the State of Washington if located within erosion and landslide hazard areas and their buffers at the top of the slope.

D. Seasonal limitations. No vegetation removal, unless required to conduct a risk inspection by a certified arborist, is allowed in erosion and landslide hazard areas and their setbacks at the top of the slope between October 1 and April 1 unless (i) a waiver is granted by the director or (ii) it is required due to an emergency involving immediate danger to life or property.

E. Any tree or vegetation activity requiring a critical area permit pursuant to BIMC 16.20.090.C must:

- 1. Be performed by a licensed contractor, forester, or certified arborist in the State of Washington who has submitted a signed "Statement of Tree and Vegetation Standards and Requirements Acknowledgment" in accordance with BIMC 16.20.090.F prior to start of work; and
- 2. Conform to applicable practices of ANSI A300 (Part 1 – 2017) Tree, Shrub and Other Woody Plant Management – Standard Practices (Pruning), as amended, or City of Bainbridge Island pruning standards ([hyperlink](#)).

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F. In order to assure compliance with the standards and requirements of this chapter, arborists, foresters and contractors or others involved in tree or vegetation operations in critical areas shall be required to sign and submit a “Statement of Tree and Vegetation Standards and Requirements Acknowledgment” to the city. This statement shall attest such professional’s knowledge of the City of Bainbridge Island’s tree and vegetation protection requirements. This statement shall be required in conjunction with normal city licensing requirements for persons performing work in the City of Bainbridge Island. The required statement shall be in substantially the following form:

“I, _____, a duly licensed professional contractor in the State of Washington, or forester or certified arborist, hereby attest that I have read and am knowledgeable of BIMC 16.20.090, “Trees and Vegetation”, of the City of Bainbridge Island.

“I further attest that, as a professional doing tree and/or vegetation work in the City of Bainbridge Island, I am accountable for following the city’s tree and vegetation standards and requirements, including obtaining a critical area permit, if required, prior to performing tree and/or vegetation work, as defined by BIMC 16.20.090, as well as following all conditions and requirements of said permit.

“I attest that if I fail to follow tree and vegetation requirements of BIMC 16.20.090, I will be in violation of BIMC 16.20.090 and thereby subject to a fine as specified in BIMC 16.20.170 and I will be held jointly responsible with the landowner for any restitution required as a result of environmental damage determined by the city to be the result of improper tree and/or vegetation activities at the site. This may result in monetary penalties as allowed by this chapter or State law.”

Private arborists, foresters and contractors or others involved in tree or vegetation operations who do not provide the above statement shall be prohibited from performing tree or vegetation services within critical areas and their buffers when a critical areas permit is required within the City of Bainbridge Island. Said professionals who do not provide this statement and perform tree or vegetation services in the City of Bainbridge Island shall be considered in violation of this chapter and will be prosecuted under this chapter, the city’s civil penalties ordinance, or as otherwise provided by law. All foresters, arborists, or contractors involved in tree or vegetation operations shall be jointly responsible with the landowner for any tree or vegetation violation and restitution required at a site as a result of tree or vegetation activity.

G. Permit and review procedures

1. Applications for critical area permits for tree or vegetation activities shall include:

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- a. City of Bainbridge Island Master Land Use Application (hyperlink);
 - b. A letter or report from an International Society of Arboriculture (ISA) certified arborist for any tree removal or coppicing greater than 2,500 square feet;
 - c. Documentation in letter format by a geotechnical engineer licensed in the State of Washington if required pursuant to BIMC 16.20.090.C.
 - d. A letter or report from an International Society of Arboriculture (ISA) Tree Risk Assessment Qualified (TRAQ) arborist for removal of any hazard tree;
 - e. A replanting plan if required pursuant to BIMC 16.20.090.C; and
 - f. Any additional information required by other sections of this Chapter.
2. A critical area permit for tree or vegetation activity shall not be approved if it creates or results in a net loss to one or more critical area functions or values.
3. The city may request technical review from qualified professionals or other agencies at the applicant's expense to ensure no net loss in critical area functions and values.

16.20.100 Aquifer recharge areas.

A. Applicability.

1. This Section applies to:
 - a. Any development, use or activity not associated with permitted principal and accessory residential uses pursuant to BIMC 18.09.020 with the potential to generate a pollutant identified by the U.S. EPA as a potential source of drinking water contamination (either in Appendix A of the Washington State Critical Aquifer Recharge Area Guidance Document or on the North American Industry Classification System as used by the city's Department of Public Works) or known to be deleterious to the environment or human health; and
 - b. Any development, use or activity within designated critical aquifer recharge areas, which include all parcels within the R-0.4, R-1 and R-2 zoning districts, that qualifies as a regulated use or allowed activity pursuant to BIMC 15.20.040 in accordance with the thresholds in BIMC 15.20.060 – Table 1.
2. ~~This Section does not apply to areas located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).~~

B. Permit review and procedures

1. Any development, use or activity described in BIMC 16.20.100.A.1 shall require a critical area permit.
2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070.

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3. Applications for critical area permits for aquifer recharge areas shall include:
 - a. City of Bainbridge Island Master Land Use Application (hyperlink); and
 - b. For proposals ~~as~~ described in BIMC 16.20.100.A.1.a.;
 - i. Hydrogeological Site Assessment meeting the requirements of BIMC 16.20.180.A, Critical area reports. If the applicant has completed a Site Assessment Review (SAR) in accordance with BIMC 15.19 that includes ~~these sufficient information to address the~~ elements listed in 16.20.180.A, the SAR will suffice to fulfill this requirement. Additional in-depth site assessment elements as detailed in 16.20.180.A may be required upon review of the SAR.
 - A. All hydrogeological site assessments must be prepared and stamped by a professional hydrogeologist licensed in Washington State in accordance with RCW 18.220 and WAC 308-15. Affected public water purveyors (Group A & B), affected Tribes, and the Kitsap Public Health District will be notified and invited to comment on all hydrogeological site assessments. The city will consider all recommendations submitted by these entities when considering permit conditions.
 - B. An aquifer recharge mitigation plan, meeting the requirements of BIMC 16.20.180, critical area reports, is required if aquifer recharge impacts are identified in the hydrogeological site assessment.
 - C. The city may require third-party independent review by a professional hydrogeologist of any required application materials.

C. Prohibited Activities and Uses. The following activities and uses are prohibited within critical aquifer recharge areas due to the probability or potential magnitude of their adverse effects on groundwater:

1. Landfills. Landfills, including hazardous or dangerous waste, municipal solid waste, special waste, wood waste, and inert and demolition waste landfills;
2. Underground Injection Wells. Class I, III, and IV wells and subclasses 5F01, 5D03, 5F04, 5W09, 5W10, 5W11, 5W31, 5X13, 5X14, 5X15, 5W20, 5X28, and 5N24 of Class V wells;
3. Chemical wood preservation and/or treatment facilities;
4. Storage, Processing, or Disposal of Radioactive Substances. Facilities that store (other than minor sources such as medicinal uses or industrial testing devices), process, or dispose of radioactive substances;
5. Hazardous liquid transmission pipelines;

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6. Commercial mining and chemical washing of metals, hard rock, sand, and gravel;
7. Hydrocarbon extraction, reprocessing, refinement, and storage;
8. Electroplating/metal finishing;
9. Facilities that treat, store, process, or dispose of hazardous waste; and
10. Other Prohibited Uses or Activities.
 - a. Activities that would significantly reduce the recharge to aquifers currently or potentially used as a potable water source; and
 - b. Activities that would significantly reduce the recharge to aquifers that are a source of significant baseflow to a stream.

D. Development standards

1. All proposals for new development or redevelopment shall incorporate low impact development techniques or other best management practices into the site design in order to disperse and/or infiltrate stormwater runoff to ensure that there is no net loss of infiltration as a result of the development or redevelopment.
2. No development, use or activity may exceed water or sediment quality standards or otherwise violate the anti-degradation requirements specified in WAC Chapters 173-200, 173-201A, and 173-204.

E. Native Vegetation Protection Area (NVPA) requirements. Native vegetation retention is a fundamental method for critical aquifer recharge area protection. Sixty-five percent or more of the development site should be protected for the purposes of retaining or enhancing existing native forest and vegetation cover to maximize aquifer recharge opportunities.

1. NVPA requirements
 - a. Designation of a NVPA is required for any development, use or activity in a critical aquifer recharge area that qualifies as a regulated use or allowed activity pursuant to BIMC 15.20.040 in accordance with the thresholds in BIMC 15.20.060 – Table 1.
 - b. Designation of a NVPA is not required for the following development, use or activity:
 - a. Removal of invasive species; and
 - b. Construction and use of public trails provided the standards set forth in BIMC 16.20.110.G.6.a through e. are met.
 - c. The location and configuration of the NVPA shall be determined through completion of a Site Assessment Review (SAR) in accordance with BIMC

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15.19. The city may require a professional forester, ISA-certified arborist or landscape architect to determine the location and configuration of the NVPA if needed to ensure the NVPA design standards set forth in BIMC 16.20.100.E.2.a. through c. are met.

- d. The NVPA shall include all existing native vegetation on a site, up to a maximum of 65 percent of the total site area. A lower percentage may be is allowed if needed necessary to achieve a development area of at least 12,500 square feet on a parcel.
 - e. The maximum area of the required NVPA may be reduced to 50 percent for public schools and public parks allowed in the underlying zoning district.
 - f. If the NVPA area is less than 65 percent of the total site area, no net loss of infiltration as a result of the development or redevelopment shall be demonstrated through the critical area permit review process. Replacement planting located in clusters or contiguous tracts may be required to maximize low impact development and aquifer recharge opportunities.
 - g. The total area required pursuant to c., above, shall be retained once established, although the location and configuration of the NVPA may change over time. Any alteration to the location or configuration of the NVPA shall be approved by the director and documented on a site plan included with a notice to title in accordance with BIMC 16.20.070.G. The city may require a NVPA stewardship plan prior to approving a change to the location and configuration of the NVPA.
2. NVPA design and use standards
- a. Healthy, existing trees and vegetation should be retained to the maximum extent possible. Healthy significant trees shall be priority trees for retention. Trees shall be retained in stands or clusters.
 - b. The NVPA shall be delineated to include:
 - i. A low perimeter-to-area ratio;
 - ii. A minimum width of 12 feet; and
 - iii. The critical root zone of all significant trees.
 - c. The NVPA shall be contiguous with abutting, off-site areas of other NVPAs, open space or critical areas to the extent feasible.
 - d. The NVPA may include landscaping or open space requirements pursuant to BIMC 18.15 and BIMC 17.12, respectively, and other critical areas and their buffers pursuant to other sections of this chapter if they contain native vegetation.
 - e. The following uses and activities are allowed within the NVPA provided they do not result in an adverse impact to infiltration capacity or a net loss of critical area functions and values:
 - i. Tree and vegetation activities specified in BIMC 16.20.090.
 - ii. Installation of native plants.
 - iii. Removal of invasive plant species.

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- iv. Passive recreation, including pervious trails.
- v. Potable water wells and well houses.
- vi. Low impact fencing or signs marking the NVPA boundary.
- vii. On-site sewage drainfield reserve facilities, if the applicant can demonstrate that (a) the proposed facility will not adversely affect the function or characteristics of the NVPA; and (b) construction of the system will not require the use of heavy equipment or removal of vegetation, including significant trees.
- viii. Storm drainage facilities if the applicant can demonstrate that (a) the proposed use will not adversely affect the function or characteristics of the NVPA, (b) the system meets the low impact design (LID) standards of BIMC 15.20, and (c) construction of the system will not require the use of heavy equipment or removal of vegetation, including significant trees.
- ix. Accessory solar panels, small wind energy generators, composting bins, rainwater harvesting barrels, and cisterns, as defined in BIMC 18.36.
- x. Other structures or hard surfaces with a total footprint of no greater than 200 square feet.
- xi. Driveways may be allowed to pass through the NVPA if (a) siting of the driveway within the NVPA is determined by the director to be necessary to achieve greater native vegetation retention and use of non-structural low impact design practices, (b) site utilities are installed within the footprint of the driveway, (c) siting of the driveway avoids removal of significant trees to the maximum extent feasible and (d) the total area required pursuant to BIMC 16.20.100.E.1 is achieved, which may require replanting of areas comprised on non-native vegetation.
- xii. Other structures or activities may be allowed through review and approval of a NVPA stewardship plan prepared in accordance with BIMC 16.20.180.H.

3. NVPA protection.

- a. The NVPA, including the critical root zone of significant trees, shall be protected during construction as provided in BIMC 18.15.010.C.4 or as specified by an ISA-certified arborist.
- b. The NVPA shall be documented on a site plan included with a notice to title in accordance with BIMC 16.20.070.G.

16.20.110 Fish and wildlife habitat conservation areas

A. Applicability. This Section applies to all fish and wildlife habitat conservation areas as classified in BIMC 16.20.110.B except those located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).

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B. Fish and Wildlife Habitat Conservation Areas include:

1. Streams. Within the city of Bainbridge Island, streams shall include those areas which meet the definitions in BIMC 16.20.190 (Definitions). Streams shall be classified in accordance with the Washington Department of Natural Resources water typing system (WAC 222-16-030), which is hereby adopted in its entirety by reference and summarized as follows:
 - a. Type F: streams which contain fish habitat pursuant to BIMC 16.20.190 (Definitions);
 - b. Type Np: perennial non-fish habitat streams; and
 - c. Type Ns: seasonal non-fish habitat streams.
2. Habitats recognized by federal or state agencies for federal- and/or state-listed endangered, threatened, sensitive and candidate/monitored species which presence is documented in maps or databases available to City of Bainbridge Island.
3. Areas that contain habitats and species of local importance. Any person may nominate for designation a species or habitat of local importance. Nominations will be processed pursuant to definitions in BIMC 16.20.180 and nomination criteria developed by the director.
4. Biodiversity areas and corridors as defined in the 2008 Washington Department of Fish and Wildlife Priority Habitat and Species List, or as amended.
5. All areas within the city of Bainbridge Island meeting one or more of the preceding criteria in this Section 16.20.110.B, regardless of any formal identification or mapping, are hereby designated critical areas and are subject to the provisions of this chapter and shall be managed consistent with the best available science, such as the Washington Department of Fish and Wildlife's most recent Management Recommendations for Priority Habitat and Species.

C. Mapping

The location and extent of all mapped critical areas shown on the city of Bainbridge Island critical area maps are approximate and shall be used as a general guide only. The type, extent and boundaries shall be determined in the field by a qualified professional according to the requirements of this chapter. The critical area maps (provide hyperlink) are adopted as part of this chapter and are incorporated herein by this reference. Washington Department of Natural Resource (DNR) and Washington Department of Fish and Wildlife maps are not the only source of data. Any request to change the city's existing map shall be accompanied by a report from a qualified professional that includes a description of the critical area and a summary of how it meets the definitions in BIMC 16.20.190. The inventory and cited resources are to be used as a

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guide for the city, project applicants, and/or property owners and may be continuously updated as new or altered critical areas are identified

D. Permit and review procedures

1. Any development, use or activity within any fish and wildlife habitat conservation area shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 16.20.040.
2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070 and any applicable state or federal management recommendations.
3. Applications for critical area permits for fish and wildlife habitat conservation areas shall include:
 - a. City of Bainbridge Island Master Land Use Application (hyperlink);
 - b. Habitat Management Plan (HMP), prepared in accordance with BIMC 16.20.180, if a fish and wildlife habitat area described in BIMC 16.20.110.B.2 through 4 occurs within or adjacent to the project site; and
 - c. Buffer enhancement plan, prepared in accordance with BIMC 16.20.180, if only stream buffer modification is requested.
4. The city may request technical review of a HMP from other agencies to ensure consistency with state, federal or tribal management recommendations.

E. Development Standards – Streams

1. All designated streams require a buffer pursuant to Table 1. Buffers shall remain as undisturbed native or enhanced vegetation areas for the purpose of protecting the integrity, function, and value of stream resources. Any buffer modification proposed shall be through an approved Buffer Enhancement Plan. No uses or activities shall be allowed within the buffer unless allowed by this Section. If the buffer has previously been disturbed, the director may require the disturbed buffer area be enhanced, including revegetation with native plant species, revegetated pursuant to an approved Buffer Enhancement Plan meeting the requirements of BIMC 16.20.160.180. No refuse, including but not limited to household trash, yard waste and commercial/industrial refuse, shall be placed in the buffer.
2. The required minimum buffers listed in Table 1 are based on the assumption that the buffer is well vegetated with native species appropriate to the site. If the buffer does not consist of vegetation adequate to provide stream protection and buffer functions, the director may require that the buffer be planted to achieve such protection and function.

Table 1. Stream Buffers

Stream Type	Buffer Width
F	200
Np	100
Ns (connected to F or Np)	75
Ns (not connected to F, Np)	50

3. Buffer distances shall be measured from the ordinary high water mark (OHWM) or from the top of each bank where the OHWM cannot be identified.
4. The buffer width shall be increased to include streamside wetlands which provide overflow storage for stormwater, feed water back to the stream during low flow, or provide shelter and food for fish. In braided channels, the ordinary high water mark or top of bank shall be defined to include the entire stream feature.
5. Streams in Ravines - Buffers. For streams in ravines outside the Mixed Use Town Center with ravine sides 10 feet or greater in height, the buffer width shall be the greater of:
 - a. The buffer width required for the stream type; or
 - b. A buffer width which extends 25 feet beyond the top of the ravine.
6. Increased buffer provisions. The director may increase buffer widths, up to 50 percent greater than the applicable buffer set in this chapter for critical areas with known locations of endangered, threatened, or state monitor or priority species for which a habitat management plan indicates a larger buffer is necessary to protect habitat values for such species. Such determination shall be based on site-specific and project-related conditions.
7. Structure or hard surface setback. A structure or hard surface setback line of fifteen feet is required from the edge of any stream buffer. Minor structural or impervious surface intrusions into the areas of the setback, such as but not limited to fire escapes, open/uncovered porches, landing places, outside walkways, outside stairways, retaining walls, fences and patios, may be permitted if the department determines upon review of an analysis of buffer functions submitted by the applicant, that construction and/or maintenance of such intrusions will not encroach into the stream buffer or adversely impact the stream. The functional analysis shall include a functional methodology supported by best available science. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by Section 16.20.070 (Notice on Title).
8. Buffer Modification. On each site, only one of the following modifications to buffer widths may be allowed provided the applicant demonstrates the need for modification through mitigation sequencing pursuant to BIMC 16.20.030.

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- a. Buffer Width Averaging. The width of a required buffer may be averaged if the applicant can demonstrate that averaging can provide equal or greater functions and values as would be provided under the required buffer and all of the following conditions are met:
 - ii. The total area of buffer after averaging is equal to the area required without averaging.
 - iii. Averaging cannot result in the any portion of the buffer being reduced more than 25 percent of its required width.
- b. Buffer Width Reduction. The width of a required buffer may be reduced if the applicant can demonstrate that the reduction will provide equal or greater functions and values as would be provided under the required buffer and all of the following conditions are met:
 - i. The buffer may not be reduced more than 25 percent of its required width.
 - ii. Native vegetation on other portions of the site is retained in order to offset habitat loss from buffer reduction.
- c. Any request for buffer modification outlined above shall be reviewed in conjunction with the underlying land use or construction permit. A critical area permit is not required. Requests for buffer averaging or buffer reduction shall include a buffer enhancement plan prepared by a qualified consultant that meets the requirements of BIMC 16.20.180. Buffer enhancement plans shall be reviewed pursuant to the criteria in BIMC 16.20.070.
- d. The city may request technical review of a buffer enhancement plan from other agencies to ensure consistency with state, federal or tribal management recommendations.
- e. Any other buffer modification, other than non-compensatory enhancement, requires a Reasonable Use Exception pursuant to BIMC 16.20.080.

F. Development Standards – Other Fish and Wildlife Habitat Conservation Areas

- 1. All development, uses and activities within known fish and wildlife habitat conservation areas require submittal and approval of a Habitat Management Plan (HMP) as specified in BIMC 16.20.180, Critical area reports. The HMP shall consider measures to retain and protect the fish and wildlife habitat and shall consider the effects of land use intensity, buffers, setbacks, impervious surfaces, erosion control and retention of existing native vegetation.
- 2. In the case of bald eagles, the HMP shall comply with the federal Bald and Golden Eagle Protection Act (16 USC 668) to avoid impacting eagles and their habitat.

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G. Standards for specific development, uses and activities. The following development, uses and activities may be allowed within fish and wildlife habitat conservation areas and their buffers. Any proposal for the following development, uses and activities requires a critical area permit pursuant to BIMC 16.20.070 and shall comply with the standards of this Section and other applicable state, federal and local regulations. The director may waive the requirement for a HMP when project impacts are demonstrated to be de minimis through mitigation sequencing pursuant to BIMC 16.20.030.

1. Stream Crossings. Any private or public road or driveway expansion or construction proposed to cross streams classified within this chapter shall comply with the following minimum development standards. All other state and local regulations regarding water crossing structures shall apply, and the use of the *Water Crossing Design Guidelines* (WDFW, 2013), or as amended, is encouraged.
 - a. Bridges or bottomless culverts shall be required for all Type F streams. Other alternatives may be allowed upon (i) submittal of a Habitat Management Plan which demonstrates that other alternatives would not result in significant impacts to the fish and wildlife conservation area and (ii) as determined through the Hydraulic Project Approval (HPA) process administered by the Washington Department of Fish and Wildlife. The plan must demonstrate that fish habitat will not be reduced in area or function.
 - b. Crossings shall not occur in fish-bearing streams unless no other feasible crossing site exists. For new development proposals, if existing crossings are determined to adversely impact salmon spawning or passage areas, new or upgraded crossings shall be located as determined necessary through coordination with Washington Department of Fish and Wildlife;
 - c. Bridge piers or abutments shall not be placed in either the floodway or between the ordinary high water marks unless no other feasible alternative placement exists;
 - d. Crossings shall not diminish flood carrying capacity;
 - e. Crossings shall serve multiple properties whenever possible;
 - f. Where there is no reasonable alternative to providing a conventional culvert, the culvert shall be the minimum length necessary to accommodate the permitted activity.
2. Stream Relocations. Stream relocations may be allowed only for the purpose of flood protection and/or fisheries restoration and only when consistent with a Washington Department of Fish and Wildlife Hydraulic Project Approval (HPA) process and the following minimum performance standards:
 - a. The channel, bank, and buffer areas are replanted with native or equivalent vegetation that replicates a natural, undisturbed riparian condition;
 - b. For those waters designated as Frequently Flooded Areas pursuant to BIMC 15.16, a professional engineer licensed in the State of Washington provides information demonstrating that the equivalent base flood storage volume and function will be maintained; and

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- c. Relocated stream channels are designed to meet or exceed the functions and values of the stream to be relocated.
- 3. Pesticides, Fertilizers and Herbicides. No pesticides, herbicides or fertilizers may be used in fish and wildlife conservation area or their buffers, except those approved by the U.S. Environmental Protection Agency (EPA) and approved under a Washington Department of Ecology Water Quality Modification Permit for use in fish and wildlife conservation area environments and applied by a licensed applicator in accordance with the safe application practices on the label.
- 4. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that includes Fish and Wildlife Habitat Conservation Areas shall comply with the following procedures and development standards:
 - a. The open water area of lakes, streams, and tidal lands shall not be permitted for use in calculating minimum lot area.
 - b. Land division approvals shall be conditioned so that all required buffers are designated as an easement or covenant encumbering the buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat, short plat or binding site plan.
 - c. In order to avoid the creation of non-conforming lots, each new lot shall contain at least one building site that meets the requirements of this chapter, including buffer requirements for fish and wildlife habitat conservation areas. Each lot must also have access and a sewage disposal system location that are suitable for development that do not adversely impact the fish and wildlife conservation area.
 - d. After preliminary approval and prior to final land division approval, the director may require that the common boundary between a required buffer and the adjacent lands be identified using permanent signs. In lieu of signs, alternative methods of buffer identification may be approved when such methods are determined by the director to provide adequate protection to the aquatic buffer.
- ~~5. Agricultural Restrictions. New agricultural activities and new structures accessory to agriculture use are prohibited in fish and wildlife habitat conservation areas and their buffers. Existing, ongoing agricultural activities shall utilize best management practices so as not to result in a net loss of the functions and values of wetlands. Existing, ongoing agriculture shall avoid impacts to streams by either:~~
 - ~~a. Implementation of a farm resource conservation and management plan agreed upon by the Kitsap Conservation District and agriculture operator to protect and enhance water quality; or~~
 - ~~b. Installation of fencing no closer to the stream than the outer edge of its required buffer.~~

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6. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches, interpretive centers, and viewing platforms, **may be are** allowed in fish and wildlife conservation area or their buffers **if there are no reasonable alternatives for meeting trail planning objectives and it is demonstrated through a Habitat Management Plan that the proposal will not result in a net loss of critical area functions and when** the following standards are met.
 - a. Trails and related facilities shall be placed on existing road grades, utility corridors, or any other previously disturbed areas if present at the site and consistent with **applicant's** trail planning objectives.
 - b. Trails and related facilities shall be planned to minimize removal of trees, shrubs, snags and important wildlife habitat and disturbance to soil and existing hydrological characteristics;
 - c. Viewing platforms, interpretive centers, benches and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected conservation area. Viewing platforms shall be limited to one hundred (100) square feet in size, unless demonstrated that a larger structure will not result in a net loss of fish and wildlife habitat functions;
 - d. Trail planning shall utilize mitigation sequencing in BIMC 16.20.030 to first avoid siting trail and trail-related facilities within fish and wildlife habitat conservation areas and their required buffers. **Trails and trail-related facilities are allowed in fish and wildlife conservation area or their buffers if there are no reasonable alternatives for meeting the applicant's trail planning objectives and it is demonstrated through a Habitat Management Plan that the proposal will not result in a net loss of critical area functions.**
 - e. Trails shall be limited to non-motorized use. Trail width shall not exceed **six five** feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.
7. Utilities. Placement of utilities within designated fish and wildlife conservation area may be allowed pursuant to the following standards:
 - a. Construction of utilities may be permitted in fish and wildlife conservation area or their buffers, only when no practicable or reasonable alternative location is available and the utility meets the requirements for installation, replacement of vegetation and maintenance outlined below.
 - b. Sewer or on-site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in fish and wildlife conservation area or their buffers when the applicant demonstrates it is necessary to meet state and/or local health code requirements; there are no other practicable alternatives available; and construction meets the requirement of this Section. Joint use of the sewer utility may be allowed.
 - c. New utilities shall not be allowed in fish and wildlife conservation area with known locations of federal or state listed endangered, threatened or sensitive species, heron

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rookeries or nesting sites of raptors which are listed as state candidates except in those circumstances where an approved Habitat Management Plan indicates that the utility will not significantly impact the conservation area;

- d. New Utility Construction. Utility construction and maintenance shall protect the environment of fish and wildlife conservation area and their buffers.
 - i. New utilities shall be aligned whenever possible to avoid cutting or root damage to trees greater than 12 inches in diameter at breast height (four and one-half feet) measured on the uphill side.
 - ii. Any area of disturbance shall be revegetated with appropriate native or equivalent vegetation at not less than pre-construction vegetation densities or greater, immediately upon completion of construction or as soon thereafter as possible due to seasonal growing constraints. The utility or landowner responsible for installation shall ensure that such vegetation survives.
 - iii. Any additional access for maintenance shall be provided wherever possible at specific points rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet; and shall be contiguous to the location of the utility corridor on the side away from the conservation area.
- e. Utility maintenance shall include the following measures to protect the environment of regulated fish and wildlife habitat conservation areas.
 - i. Utility towers shall not be sandblasted or spray-painted. Lead-based paint is prohibited.
 - ii. Pesticides, fertilizers and herbicides: No pesticides or fertilizers may be used in fish and wildlife habitat conservation areas or their buffers, except those applied by a licensed applicator in accordance with the safe application practices on the label.

8. Bank Stabilization.

- a. A stream channel and bank may be stabilized when naturally occurring earth movement threatens existing structures (defined as requiring a building permit pursuant to the applicable building code), public improvements, unique natural resources, public health, safety or welfare, or the only feasible access to property, and, in the case of streams, when such stabilization results in maintenance of fish and wildlife habitat, flood control, and improved water quality.
- b. Where bank stabilization is determined to be necessary, bioengineering or other non-structural methods should be the first option for protection. Structural methods, or hard stabilization, may only be utilized where it can be demonstrated by a professional engineer licensed in the State of Washington that an existing primary residential structure or essential public facility cannot be safely maintained without such measures, and that the resulting hard stabilization is the minimum length necessary to provide a stable building area for the structure. The director may require

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that bank stabilization be designed by a professional engineer licensed in the State of Washington with demonstrated expertise in hydraulic actions of shorelines. Bank stabilization projects may also require a City of Bainbridge Island clearing or grading permit and Hydraulic Project Approval from the Washington Department of Fish and Wildlife.

- c. Nonstructural streambank protective techniques are preferred to bulkheads or other types of streambank armoring. Nonstructural techniques include but are not limited to vegetation plantings and bioengineering.
- 9. Fencing and Signs. Prior to approval or issuance of permits for land divisions or other new development, the director may require that the common boundary between a required buffer and the adjacent lands be identified using fencing or permanent signs. In lieu of fencing or signs, alternative methods of buffer identification may be approved when such methods are determined by the director to provide adequate protection ~~to~~ for the buffer.
- 10. Forest Practice, Class IV General and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this chapter, and the Stormwater Management standards in Chapters 15.20 and 15.21 BIMC, including the maintenance of buffers, where required.
- 11. Road/Street Repair and Construction. Any private or public road or street expansion or construction which may be allowed in a Fish and Wildlife Habitat Conservation Area or its buffer shall comply with the following minimum development standards:
 - a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;
 - b. Expansion or construction of any private or public road shall only be allowed when adverse impacts can be avoided;
 - c. Public and private roads should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.; and
 - d. The road or street construction is the minimum necessary, as required by the Department of Public Works, and shall comply with the Department of Public Works' guidelines to provide public safety and mitigated stormwater impacts.
 - e. Construction time limits shall be determined in consultation with Washington Department of Fish and Wildlife in order to ensure habitat protection.

16.20.120 Frequently flooded areas.

A. Designation and mapping. Frequently flooded areas include all areas of special flood hazard as mapped within the city, and other areas that could be threatened by flooding. The city uses Chapter 15.16, Flood Damage Prevention, adopted herein by reference, which provides the basis for establishing areas of special flood hazard.

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B. Development in frequently flooded areas shall be subject to the provisions in Chapter 15.16, Flood Damage Prevention. ~~Areas within the city's shoreline jurisdiction are regulated by the city's shoreline master program (Chapter 16.12).~~

16.20.130 Geologically hazardous areas.

A. Applicability.

1. This chapter applies to all geologically hazardous areas classified pursuant to BIMC 16.20.130.B except as specified in subsection (2) of this section.

~~2. This section does not apply to geologically hazardous areas located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).~~

B. Classification.

1. Geologically hazardous areas include erosion hazard areas, landslide hazard areas, and seismic hazard areas (including fault and liquefaction hazard areas). Zone of influence areas are not considered geologically hazardous areas.
2. Geologically hazardous areas shall be classified based upon landslide history and the presence of unstable soils, steepness of slopes, erosion potential, and seismic hazards. Areas in this category are a potential threat to public health, safety, and welfare when construction is allowed. While some potential risk due to construction can be reduced through engineering design, construction in these areas should be avoided when the potential risk cannot be reduced to a level comparable to the risk if the site were initially stable prior to construction. Classification and rating shall be based upon the risk to the environment and to development in geologically hazardous areas.

C. Permit and review procedures.

1. Any development, use or activity proposed on a site containing any geologically hazardous area or a landslide hazard area setback shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 16.20.040 or is allowed without review pursuant to BIMC 16.20.090.
2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070.
3. Applications for critical area permits for geologically hazardous areas shall include:

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- a. City of Bainbridge Island Master Land Use Application ([hyperlink](#)); and
- b. Indemnification. An indemnification or hold harmless agreement shall be required for all projects in geologically hazardous areas, except erosion hazard areas and landslide hazard area setbacks. The form of the agreement shall be approved by the city and executed prior to the commencement of construction or any land disturbing activity.
- c. Notice. A notice of intent to construct on a landslide hazard area or reduce the standard setback in a landslide hazard area shall be given pursuant to BIMC 2.16.085.C.2. The notice of intent shall be issued within 14 days of a complete application pursuant to BIMC 2.16.055. The notice shall include a 21-day comment period and no permits or approval of reduced setbacks shall be issued before the end of the comment period.
- d. Geological Hazards Assessment. A geological hazards assessment is required for all projects in geologically hazardous areas and landslide hazard area setbacks in accordance with BIMC 16.20.180, Critical area reports. To protect public health, safety and welfare, the director may require third party review of any geological hazards assessment or geotechnical report in cases where there may be potential for substantial damage to life, property or the environment should the proposed engineering solution fail. When a third-party review is required, costs incurred for a qualified third party geologist or geotechnical engineer to perform the review shall be borne by the applicant.

D. Development Standards – General. The following development standards apply to all activities within any geologically hazardous area or associated landslide hazard area setback:

1. The proposed activity shall not create a net increase in geological instability, either on- or off-site, which is defined as follows:
 - a. The subject parcel shall not be less stable after the planned development than before; and
 - b. The adjacent parcels shall not have greater risk or be less stable after the planned development than before.
2. The proposed activity shall not increase the risk of life safety due to geological hazards above professionally acceptable levels.
3. The proposed activity shall not increase the risk due to geological hazards above professionally acceptable levels for:
 - a. Property loss of any habitable structures or their necessary supporting infrastructure on-site or;
 - b. Risk to any off-site structures or property of any kind; and

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4. Proposed buildings shall be constructed using appropriate engineering methods that respond to the geologic characteristics specific to the site in order to achieve a high standard of safety and meet professional practice standards and codes.
5. The proposed activity shall not further degrade the values and functions of the associated critical areas.
6. Unless allowed pursuant to BIMC 16.20.090 or as part of an approved building permit, removal of vegetation from an erosion or landslide hazard area or setback is prohibited.

E. Development Standards -- Landslide Hazard Areas. The following requirements shall apply to any land disturbing activity or construction within a landslide hazard area or its setback as described herein:

1. Prohibited activities. Development of habitable structures and critical facilities is prohibited in landslide hazard areas and landslide hazard area setbacks.
2. Allowed activities. The following minor development may be allowed in landslide hazard areas on slopes forty (40) percent or greater and landslide hazard area setbacks if the development standards of this Section are met:
 - a. Surface water management, including outfalls
 - b. Septic facilities, including drainfields
 - c. Trails and stairs
 - d. Cable lifts and trams
 - e. Public or private utilities or streets
 - f. Seismic or other safety upgrades to protect existing habitable structures
 - g. Other non-habitable structures
3. Any land disturbing activity or construction within a landslide hazard area or its setback shall meet the following requirements:
 - a. All development proposals shall be designed to avoid impacts to geologically hazardous areas. The development shall be designed to minimize the footprint of building in other disturbed areas, minimize removal of vegetation, minimize topographic change, and retain open space to the maximum extent practicable;
 - b. Development design shall utilize clustering, under-structure parking, multi-level construction, and tiered foundations to the extent feasible to minimize impervious lot coverage, slope disturbance, and changes to the natural topography;

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- c. Access shall be in the least sensitive part of the site, and common access drives and utility corridors are required to the extent feasible;
 - d. Roads, walkways and parking areas shall be designed to parallel the natural contours to the extent feasible;
 - e. Cut and fill slopes shall be prepared and maintained to control against erosion and instability; and
 - f. Drainage and stormwater designs in zones of influence shall incorporate elements of low impact design, add examples to the extent feasible, and shall be designed in such a manner that stormwater outlet discharges do not create additional impacts.
4. Factors of safety. Factors of safety in accordance with Table 2 are required. Analysis of dynamic conditions shall be based on the minimum horizontal acceleration for the probabilistic maximum considered earthquake as established by the currently adopted version of the International Building Code.

Table 2. Factors of safety and standard setbacks

Structure, use or activity	Static factor of safety	Dynamic (seismic) factor of safety	Standard setback
Habitable structure	1.5	1.0	Top of slope: Height of slope up to maximum of 75 feet Bottom of slope: Height of slope
High-risk non-habitable structure	1.3	As determined by geological hazards assessment.	Top of slope: Height of slope up to maximum of 75 feet Bottom of slope: Height of slope
Lower-risk non-habitable structures	As determined by geological hazards assessment.	As determined by geological hazards assessment.	Height of slope up to 75 feet.
Other structure or use	As determined by geological hazards assessment.	As determined by geological hazards assessment.	Height of slope up to 75 feet.
Tree and vegetation activities in accordance with BIMC 16.20.090	n/a	n/a	25 feet only from top of slope.

5. Setback requirement. Setbacks from landslide hazard areas are required. A setback shall be established from all edges of a landslide hazard area as follows:

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- a. A standard setback in accordance with Table 2; or
 - b. A setback established by the findings of a geological hazards assessment prepared by a licensed geologist or geotechnical engineer that protects and minimizes the risk of property damage, death or injury resulting from a potential landslide impact. The geological hazards assessment shall require a third-party independent review by a qualified geologist or geotechnical engineer at the cost to the applicant;
 - c. A setback less than 20 feet is prohibited for habitable structures;
 - d. The setback for tree and vegetation activities in accordance with BIMC 16.20.090 is 25 feet only from the top of slope.
 - e. No setback is required for slopes forty (40) percent or greater with a vertical elevation change of up to twenty (20) feet, if compliance with development standards in BIMC 16.20.130.(D) and (E) is documented by a geotechnical engineer licensed in the State of Washington;
 - f. The setback may be increased beyond that specified in subsection (a) above if the director determines a larger setback is necessary to prevent risk of damage to proposed adjacent development and the associated critical areas.
6. For the purposes of establishing the factors of safety and setback using Table 2, the following categories shall apply:
 - a. Habitable structure: residences, accessory dwelling units, garages;
 - b. High-risk non-habitable structure: decks, patios, pool/hot tub, driveways, trams, cable lifts, carports;
 - c. Lower-risk habitable structure: storage shed, boathouse, stairs, pathways, structures intended for short-term use;
 - d. Other structures or uses: septic facilities including drainfields, drainage outfalls, bulkheads, landscape walls, other utilities; and
 - e. If a proposed structure, use or activity is not included in BIMC 16.20.130.E.6(a) through (d), the category shall be determined by the City Engineer.
7. Zone of influence. A zone of influence shall be established 300 feet upslope from slopes greater than 40 percent and 200 feet upslope from slopes greater than 15 percent but less than 40 percent that are determined to be geologically hazardous areas to assess changes in land use and hydrology that may affect the stability of the geologically hazardous area.
 - a. The applicant shall have the stormwater pollution prevention plan (erosion control plan) for the project reviewed by a geotechnical engineer to determine if there are any potentially adverse impacts to the landslide hazardous area. The report shall contain recommendations to avoid adverse impacts to the geologically hazardous area. Concentrated discharge of stormwater shall only

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be allowed where specifically recommended in the report and authorized by the City Engineer.

- b. If the geotechnical engineer or the City Engineer determines that there are potential adverse impacts, the applicant shall provide a geotechnical analysis containing information specified by the City Engineer which analyzes the potential impacts to the geological hazard from the proposed development in the zone of influence and meets the standards of this section.
8. Field marking requirements. Proposed clearing and work limit lines and landslide hazard setbacks shall be marked in the field for inspection and approval by the city prior to start of any land disturbing activity. Field marking shall remain in place until construction is completed and final inspection is completed by the city.

16.20.140 Wetlands.

A. Applicability

1. This chapter applies to:
 - a. All wetlands designated pursuant to BIMC 16.20.140.B except as specified in subsection (2) of this Section.
 - b. All wetland buffers as shown in the tables in BIMC 16.20.140.I.

~~2. This Section does not apply to wetlands located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).~~

B. Identification and designation.

1. Identification of wetlands and delineation of their boundaries pursuant to this chapter shall be done in accordance with the federal wetland delineation manual and applicable regional supplements (as updated), as required by WAC 173-22-035. All areas within the city meeting the wetland designation criteria, regardless of any formal delineation, are hereby designated as wetlands and are subject to provisions of this chapter unless specified in BIMC 16.20.190.
2. Wetland delineations shall be conducted by a qualified professional, in accordance with BIMC 16.20.070.
3. The wetland boundary shall be marked in the field and surveyed by a licensed surveyor. The surveyed wetlands shall be sized and mapped on a scaled site plan. The director may require the wetland delineation to be verified in the field by the Army Corps of Engineers or the Washington State Department of Ecology when there is uncertainty in the wetland boundary or there was unauthorized wetland disturbance. The requirement for a licensed

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surveyor to survey the wetland boundaries may be waived in limited circumstances, such as when there is no access to the wetland property or there is no proposed impact to the wetland and wetland buffer, with authorization from the director.

4. Wetland delineations shall be valid for five years from the date of the delineation.
5. A wetland delineation shall be required for any proposed development within 300 feet of a designated wetland. If any portion of the designated wetland is on a different site than the proposed development, the location of the wetland boundary may be determined using best professional judgement.

C. Wetland Categories. Wetlands shall be rated according to the Washington State Wetland Rating System for Western Washington – 2014 Update (Ecology Publication No. 14-06-029, October 2014), as revised. The wetland categories determined by the rating are as follows:

1. Category I wetlands are:
 - a. Relatively undisturbed estuarine wetlands larger than one acre;
 - b. Wetlands that are, or may be in the future, identified by scientists of the Washington Natural Heritage Program/Department of Natural Resources as wetlands of high conservation value;
 - c. Bogs;
 - d. Mature forested wetlands larger than one acre;
 - e. Wetlands in coastal lagoons; and
 - f. Wetlands that perform many functions well and score 23 points or more in the wetland rating. These wetlands are those that represent a unique or rare wetland type, are more sensitive to disturbance than most wetlands, or are relatively undisturbed and contain ecological attributes that are impossible to replace within one human lifetime.
2. Category II wetlands are:
 - a. Wetlands with a moderately high level of functions and score 20 to 22 points in the wetland rating.
 - b. Estuarine wetlands smaller than one acre or disturbed estuarine wetlands larger than one acre.
3. Category III wetlands are:
 - a. Wetlands with a moderate level of functions and score between 16 to 19 points in the wetland rating.
4. Category IV wetlands are:

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- a. Wetlands with a low level of functions, scoring less than 16 points in the wetland rating.
5. Date of Wetland Rating. The wetland rating categories in this Section shall be applied to wetland studies including but not limited to delineations, on or after the date of adoption of the ordinance codified in this chapter. The wetland rating shall be valid for five years unless the state rating system changes or the wetland and/or the wetland buffer have been altered since the rating.
6. A wetland rating pursuant to BIMC 16.20.140.C shall be required for any proposed development within 300 feet of a designated wetland. If any portion of the designated wetland is on a different site than the proposed development, the rating may be determined using best professional judgement.
7. Illegal modifications. Wetland rating categories shall not change due to illegal modifications.

D. Mapping

The location and extent of all mapped critical areas shown on the City of Bainbridge Island critical area maps are approximate and shall be used as a general guide only. The type, extent and boundaries shall be determined in the field by a qualified professional according to the requirements of this chapter. The critical area maps (provide hyperlink) are adopted as part of this chapter and are incorporated herein by this reference. In addition, the National Wetlands Inventory and Soil Maps produced by the U.S. Department of Agriculture, National Resources Conservation Service may be useful in helping to identify potential wetland areas. The inventory and cited resources are to be used as a guide for the city, project applicants, and property owners, and may be continuously updated as new or altered critical areas are identified.

E. Protection of Wetlands

1. Any action taken pursuant to this chapter shall result in equivalent or greater functions and values of the wetlands and wetland buffers associated with the proposed action, as determined by the best available science. All actions and developments shall be designed and constructed in accordance with mitigation sequencing as described in BIMC 16.20.030 and WAC 197-11-768.
2. Applicants must first demonstrate an inability to avoid or reduce impacts, before compensation of impacts will be allowed. No activity or use shall be allowed that results in a net loss of the functions or values of critical areas.
3. Permanent protection of critical areas that are part of an approved mitigation plan or buffer enhancement plan shall be achieved through a Notice to Title recorded at the Kitsap County Auditor's Office, or similar means of protection in perpetuity.

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F. Permit and review procedures

1. Any development, use or activity within any wetland and/or its required buffer shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 16.20.040.
2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070.
3. Applications for critical area permits for wetlands shall include:
 - a. City of Bainbridge Island Master Land Use Application (hyperlink); and
 - b. Wetland critical areas report prepared in accordance with BIMC 16.20.180.F if wetland or buffers occur within or adjacent to the project site; and
 - c. Wetland mitigation report, prepared in accordance with BIMC 16.20.180.G, if wetland and buffer impacts are anticipated; or
 - d. Buffer enhancement plan, prepared in accordance with BIMC 16.20.180.D, if only buffer modification is requested.

G. Prohibited activities

1. The following development, uses and activities are prohibited in all wetlands:
 - a. Draining, excavation, placement of fill material and flooding not associated with an exempt or regulated use
 - b. Forest Practices – Class IV General or Conversion Option Harvest Plan
 - c. New or expanded agriculture
 - d. On-site sewage facility
2. The following development, uses and activities are prohibited in Category I and II wetlands:
 - a. Fish hatchery
 - b. Golf course
 - c. Mineral extraction
 - d. Public facility
 - e. Public communications tower
 - f. New public road/street
 - g. New private access road or driveway
 - h. Stormwater retention/detention facility
 - i. Primary utility

H. Standards for specific development, uses and activities. The following development, uses and activities may be allowed within wetlands and their required buffers. Any proposal for the

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following development, uses and activities requires a critical area permit pursuant to BIMC 16.20.140.F and shall comply with the standards of this Section and other applicable state, federal and local regulations.

- ~~1. Agricultural restrictions. New agricultural activities and new structures accessory to agriculture use are prohibited in wetlands and their buffers. Existing, ongoing agricultural activities shall utilize best management practices so as not to result in a net loss of the functions or values of wetlands. Existing, ongoing agriculture uses other than those occurring in grazed wet meadows shall avoid impacts to wetlands by either:~~
 - ~~a. Implementation of a farm resource conservation and management plan agreed upon by the Kitsap Conservation District and agriculture operator to protect and enhance water quality; or~~
 - ~~b. Installation of fencing no closer to the wetland than the outer edge of its required buffer.~~
2. Road/street repair and construction: Any private or public road or street repair, maintenance, expansion or construction may be allowed within a wetland or its required buffer only when all of the following conditions are met:
 - a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;
 - b. Publicly owned or maintained road or street crossings should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.; and
 - c. The road or street repair and construction are the minimum necessary to provide safe roads and streets.
 - d. Mitigation shall be performed in accordance with specific project mitigation plan requirements.
3. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that includes regulated wetlands shall comply with the procedures and standards listed below. When a parcel contains a wetland, city policy shall always be to primarily protect the functions and values of the wetland, while recognizing the value of the development rights provided to the property by its zoning.
 - a. Density Calculation.
 - i. The actual density that will allowed to be built upon a parcel containing a wetland shall ultimately be determined during the site specific review of the parcel's planned development.
 - ii. In determining the actual density of a parcel based on a specific site plan, the site plan shall locate all buildings outside of any wetland and its required buffers;

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- iii. The number of development rights allowed for any residentially-zoned parcel shall be its size in square feet divided by the number of square feet per home that is required by its zoning;
 - iv. If the land can be subdivided such that all setbacks, buffers, and other zoning requirements can be observed, and no zoning variances are requested, the density from the wetland, except the area with permanent open water, can be transferred within the property;
 - v. To the extent that the number of allowable development rights cannot be used on-site, they may be sold, traded, or transferred by the property owner through the transfer of development rights program pursuant to Chapter 18.37 BIMC;
 - vi. Property owners may voluntarily extinguish development rights that are provided by the underlying zoning, but the city shall not extinguish any of these rights outside the aforementioned transactions.
- b. Land division approvals shall be conditioned to require that wetlands and wetland buffers be designated as an easement or covenant encumbering the wetland and wetland buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat or binding site plan, and title.
- c. In order to implement the goals and policies of this chapter, to accommodate innovation, creativity, and design flexibility, and to achieve a level of environmental protection that would not be possible by typical lot-by-lot development, the use of the clustered development or similar innovative site planning is strongly encouraged for projects with regulated wetlands on the site.
4. Surface Water Management. Surface water structures or discharges from stormwater facilities may be allowed within wetlands and their required buffers only when the applicant has an approved Site Assessment Review (SAR) pursuant to the requirements of BIMC 15.20 and the proposal meets criteria in Appendix I-D, Guidelines for Wetlands when Managing Stormwater, from Washington State Department of Ecology's 2012 Stormwater Management Manual for Western Washington, as amended in 2014.
5. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches and viewing platforms, ~~are may be~~ allowed in wetlands or wetland buffers only when the following standards are met:
- a. Trails and related facilities shall be placed on existing road grades, utility corridors, or any other previously disturbed areas if present at the site and consistent with trail planning objectives.
 - b. Trails and related facilities shall be planned to minimize removal of trees, soil disturbance, and maintain existing hydrological characteristics, shrubs, snags, and important wildlife habitat.
 - c. Viewing platforms and benches, and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected

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wetland. Viewing platforms shall be limited to one hundred (100) square feet in size, unless demonstrated through a wetland critical areas report and mitigation plan that a larger structure will not result in a net loss of wetland functions.

- d. Trail planning shall utilize mitigation sequencing in BIMC 16.20.030 to first avoid siting trail and trail-related facilities within wetlands and their required buffers. Trails and trail-related facilities ~~are may be~~ allowed within wetlands or wetland buffers if there are no reasonable alternatives for meeting ~~applicant's~~ trail planning objectives and it is demonstrated through a wetland critical areas report and mitigation plan that the proposal will not result in a net loss of wetland functions.
 - e. Trails shall be limited to non-motorized use. Trail width shall not exceed ~~six five~~ feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.
6. Utilities. Installation of utilities within wetlands or their required buffers may be allowed when the following standards are met:
- a. Construction of new utilities outside the road right-of-way or an existing utility corridor may be permitted in wetlands or wetland buffers, only when no reasonable alternative location is available and the utility meets the requirements for installation, replacement of vegetation and maintenance outlined below, and as required in the filing and approval of applicable permits and special reports required by this chapter.
 - b. Sewer or On-site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in wetland buffers only when:
 - i. The applicant demonstrates it is necessary to meet state and/or local health code minimum design standards (not requiring a variance for either horizontal setback or vertical separation); and/or
 - ii. There are no other practicable or reasonable alternatives available and construction meets all other applicable requirements of this Section. Joint use of the sewer utility corridor by other utilities may be allowed.
 - c. New utilities shall not be allowed when the wetland or buffer has known locations of federal or state listed endangered, threatened, monitored or sensitive species, heron rookeries or nesting sites of raptors which are listed as species of concern, except in those circumstances where an approved Habitat Management Plan indicates that the utility corridor will not significantly impact the wetland or wetland buffer;
 - d. New utility construction and maintenance shall protect the wetland and buffer environment by utilizing the following methods:
 - i. New utilities shall be aligned to avoid tree removal to the greatest extent practicable.
 - ii. Any area of disturbance resulting from installation of a utility shall be revegetated with appropriate native or equivalent vegetation at preconstruction densities or

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- greater, immediately upon completion of construction, or as soon thereafter as possible, if due to seasonal growing constraints. The utility or landowner responsible for installation shall ensure that such vegetation survives.
- iii. Any access for maintenance shall be provided as much as possible at specific points, rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet; and shall be contiguous to the location of the utility corridor on the side away from the wetland. Mitigation will be required for any additional access through restoration of vegetation in disturbed areas.
 - iv. The director may require additional mitigation measures.
 - v. Utility maintenance shall include the following measures to protect the wetland and buffer environment:
 - A. Painting of utility equipment such as power towers shall not be sprayed or sandblasted. Lead-based paints are prohibited.
 - B. No pesticides, herbicides or fertilizers may be used in wetland areas or their buffers except those approved by the U.S. Environmental Protection Agency (EPA) and Washington Department of Ecology and applied by a licensed applicator in accordance with the safe application practices on the label.
7. Parks. Development of public park and recreation facilities may be allowed; provided, that no alteration of wetlands or wetland buffers is allowed except as allowed in BIMC 16.20.040 (Exemptions) and BIMC 16.20.140.H (Standards for specific development, uses and activities).

I. Wetland Buffers

- 1. Buffers shall remain as undisturbed native or enhanced vegetation areas for the purpose of protecting the integrity, function, and value of wetland resources. Any buffer modification proposed shall be through an approved Buffer Enhancement Plan meeting the requirements of BIMC 16.20.180. No uses or activities shall be allowed within the buffer unless allowed by this Section. If a buffer on a site subject to land use review or a building permit application has previously been disturbed, the director may require the disturbed buffer area be enhanced, including revegetation with native plant species, pursuant to an approved Buffer Enhancement Plan meeting the requirements of BIMC 16.20.180. No refuse, including but not limited to household trash, yard waste and commercial/industrial refuse, shall be placed in the buffer.
- 2. All regulated wetlands shall be surrounded by a buffer, based upon *Appendix 8-C, Section 8C.2.3 of Wetlands in Washington State – Volume 2: Guidance for Protecting and Managing Wetlands* (Ecology Publication #05-06-008), as amended. Standard buffer widths are shown in Tables 1 through 4. If a wetland meets more than one of the criteria listed in each table, the buffer needed to protect the wetland is the widest one.

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3. Standard buffer widths are based on impact of land use, which is categorized as follows:
 - a. High impact land use includes commercial development, industrial development, institutional development, residential (all residential zoning classifications other than R-0.4, R-1 and R-2) development, new agriculture (high-intensity such as dairies, nurseries, greenhouses, raising and harvesting crops requiring annual tilling, raising and maintaining animals), forestry activities, and high-intensity recreation such as golf courses and ballfields.
 - b. Moderate impact land use includes residential development (R-0.4, R-1 and R-2 residential zoning classifications), new agriculture (moderate-intensity such as orchard and hay fields), paved trails, and construction of temporary logging roads.
 - c. Low impact land use includes low-intensity open space such as passive recreation, natural resources preservation, and unpaved trails.
4. The required minimum buffers listed in Tables 3 through 6 are based on the assumption that the buffer is well vegetated with native species appropriate to the site. If the buffer does not consist of vegetation adequate to provide wetland protection and buffer functions, the director may require that the buffer be planted to achieve such protection and function.

Table 3: Category I Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Buffer Width	Other Protection
Natural Heritage Wetlands	Low Moderate High	125 ft 190 ft 250 ft	No additional discharge of surface water. No septic systems within 300 ft. Restore degraded parts of the buffer
Bogs	Low Moderate High	125 ft 190 ft 250 ft	No additional surface discharges. Restore degraded parts of the buffer.
Forested	Low Moderate High	125 ft 190 ft 250 ft	If forested wetland scores high for habitat, maintain connectivity to other natural areas.
Estuarine	Low Moderate High	100 ft 150 ft 200 ft	N/A
Wetlands in Coastal Lagoon	Low Moderate High	100 ft 150 ft 200 ft	N/A
High level of function for habitat (score for habitat is 8-9 pts.)	Low Moderate High	150 ft 225 ft 300 ft	Maintain connectivity to other natural areas. Restore degraded parts of the buffer.

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Wetland Characteristics	Impact of Land Use	Buffer Width	Other Protection
Moderate level of function for habitat (score for habitat is 5-7pts.)	Low Moderate High	75 ft 110 ft 150 ft	N/A
High level of function for water quality improvement and low for habitat (score for water quality pts.; habitat less than 5 pts.)	Low Moderate High	50 ft 75 ft 100 ft	No additional discharges of untreated runoff.
Not meeting any of the above criteria.	Low Moderate High	50 ft 75 ft 100 ft	N/A

Table 4: Category II Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Buffer Width	Other Protection
High level of function for habitat (score for habitat is - 9 pts.)	Low Moderate High	150 ft 225 ft 300 ft	Maintain connectivity to other natural areas.
Moderate level of function for habitat (score for habitat is 5-7pts.)	Low Moderate High	75 ft 110 ft 150 ft	N/A
Estuarine	Low Moderate High	75 ft 110 ft 115 ft	N/A
Not meeting any of the above criteria	Low Moderate High	50 ft 75 ft 100 ft	N/A

Table 5: Category III Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Buffer Width	Other Protection
Moderate level of function for habitat (score for habitat is 5-7pts.)	Low Moderate High	75 ft 110 ft 150 ft	N/A
Not meeting above criterion	Low Moderate	40 ft 60 ft	N/A

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	High	80 ft	
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Table 6: Category IV Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Buffer Width	Other Protection
All	Low Moderate High	25 ft 40 ft 50 ft	N/A

5. Buffer Measurement. All buffers shall be measured on a horizontal plane from the delineated wetland edge as marked in the field a qualified professional.
6. Fencing and Signs. This section applies to those wetlands and their buffers that are within 200 feet of regulated development activities.
 - a. Wetland buffers shall be temporarily fenced or otherwise suitably marked between the area where the construction activity occurs and the buffer. Fences shall be made of a durable protective barrier and shall be highly visible. Silt fences and plastic construction fences may be used to prevent encroachment on wetlands or their buffers by construction. Temporary fencing shall be removed after the site work has been completed and the site is fully stabilized per city approval.
 - b. The director may require that permanent signs and/or fencing be placed on the common boundary between a wetland buffer and the adjacent land. Such signs will identify the wetland buffer. The director may approve an alternate method of wetland and buffer identification, if it provides adequate protection to the wetland and buffer.
7. Structure or hard surface setback. A structure or hard surface setback line of fifteen feet is required from the edge of any wetland buffer. Minor structural or impervious surface intrusions into the areas of the setback, such as but not limited to fire escapes, open/uncovered porches, landing places, outside walkways, outside stairways, retaining walls, fences and patios, may be permitted if the department determines upon review of an analysis of buffer functions submitted by the applicant, that **construction and/or maintenance of** such intrusions will not **encroach into the wetland buffer or** adversely impact the wetland. The functional analysis shall include a functional methodology supported by best available science. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by Section 16.20.070 (Notice on Title).
8. Buffer Modification. On each site, only one of the following modifications to buffer widths may be allowed provided the applicant demonstrates the need for modification

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through mitigation sequencing pursuant to BIMC 16.20.030 and the modification that results in the retention of the greatest area of buffer is used.

- a. Buffer Width Averaging. The width of a required buffer may be averaged if the applicant can demonstrate that averaging can provide equal or greater functions and values as would be provided under the required buffer and all of the following conditions are met:
 - i. The total area of buffer after averaging is equal to the area required without averaging.
 - ii. Averaging cannot result in the any portion of the buffer being reduced more than 25 percent of its required width.
- b. Buffer Width Reduction. The width of a required buffer may be reduced if the applicant can demonstrate that the reduction will provide equal or greater functions and values as would be provided under the required buffer this will improve the protection of wetland functions and all of the following conditions are met:
 - i. The buffer may not be reduced more than 25 percent of its required width.
 - ii. Native vegetation on other portions of the site is retained in order to offset habitat loss from buffer reduction.
- c. The required buffer widths for proposed land uses with high-intensity impacts to wetlands may be reduced to those required for moderate-intensity impacts under the following conditions:
 - i. For wetlands that score moderate or high for habitat (5 points or more for the habitat function), the width of the buffer may be reduced if both of the following criteria are met:
 - ii. A relatively undisturbed, vegetated corridor at least 100-feet wide is provided if the wetland contains any priority habitats as defined by the Washington Department of Fish and Wildlife. “Relatively undisturbed” and “vegetated corridor” are defined in the Western Washington Wetland Rating System. The corridor must be protected for the entire distance between the wetland and the priority habitat by some type of legal protection, such as a Notice to Title.
 - iii. Measures to minimize the impacts of different land uses on wetlands, such as the examples in Table 5, are applied.
 - iv. For wetlands that score less than 5 points for habitat, the buffer width may be reduced to that required for moderate land use impacts by applying measures to minimize the impacts of different land uses on wetlands, such as the examples in Table 5.
- d. Any request for buffer modification outlined above shall be reviewed in conjunction with the underlying land use or construction permit. A critical area permit is not required.

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Requests for buffer averaging or buffer reduction shall include a Buffer Enhancement Plan prepared by a qualified professional that meets the requirements of BIMC 16.20.180.D. Buffer enhancement plans shall be reviewed pursuant to the criteria in BIMC 16.20.070.

- e. Any other buffer modification resulting in a reduced buffer area, other than non-compensatory enhancement, requires a Reasonable Use Exception pursuant to BIMC 16.20.080.

Table 5: Examples of measures to minimize impacts to wetlands from different types of activities.

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities that Cause the Disturbance
Lights	• Direct lights away from wetland.	Parking lots, warehouses, manufacturing, residential
Noise	• Locate activity that generates noise away from wetland. • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source. • For activities that generate relatively continuous, potentially disruptive noise, such as heavy industry or manufacturing, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer wetland buffer.	Manufacturing, residential
Toxic runoff*	• Route all new runoff away from wetland. • Establish covenants limiting use of pesticides within 150 feet of wetland. • Apply integrated pest management.	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	• Retrofit stormwater detention and treatment for roads and existing adjacent development. • Prevent channelized flow from lawns	Parking lots, roads, manufacturing, residential

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	that directly enters the buffer. • Use Low Impact Development techniques consistent with BIMC 15.20.	areas, landscaping
Change in water regime	Infiltrate or treat, detain, and disperse new runoff into buffer.	Impermeable surfaces, lawns, tilling
Pets and human disturbance	• Plant buffer with dense, impenetrable native vegetation appropriate for region. • Install low impact fencing at buffer perimeter. • Place wetland and its buffer in separate open space tract or protect with conservation easement.	Residential areas
Dust	Utilize best management practices to control dust.	Tilled fields
* These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.		

J. Wetland mitigation requirements.

1. Mitigation sequencing. All development, uses and activities proposed to impact wetlands shall be mitigated according to this Section and the mitigation sequencing steps outlined in BIMC 16.20.010.030. The applicant shall demonstrate to the satisfaction of the director that each step of mitigation sequencing has been adequately addressed prior to approval of impacts to wetlands.
2. Compensatory mitigation shall be required for development, uses or activities that result in the loss of wetland acreage or in the reduction of wetland functions or values.
3. Mitigation report. Where mitigation is required under the sequencing in subsection (1), a mitigation plan is a required component of a critical areas report meeting the requirements in BIMC 16.20.180, Critical area reports.
4. Wetland replacement.
 - a. The ratios shown in Table 7 shall be used to determine the required amount of wetland mitigation. The first number specifies the amount of wetland area to be restored, rehabilitated, created or enhanced, and the second number specifies the amount of wetland area lost. The director may decrease these ratios when there are findings of special studies coordinated with agencies with expertise which demonstrate that no net loss of wetland function or value is attained under the decreased ratio.

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- b. Mitigation requirements may also be determined using the credit/debit tool described in Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Final Report (Ecology Publication #10-06-011, March 2012), or as revised) consistent with Table 7.

Table 7: Replacement Ratios for Wetlands

Category and Type	Re-establishment or Creation	Rehabilitation	1:1 Re-establishment or Creation (R/C) and Enhancement (E)	Enhancement Only
I – Mature Forested	6:1	12:1	1:1 R/C and 10:1 E	24:1
I – Highly functioning Based on functions	4:1	8:1	1:1 R/C and 6:1 E	16:1
I – Bog or Natural Heritage Site	Not considered possible	6:1 of a Bog	Case by Case	Case by Case
I – Estuarine	Case by Case	6:1 – Estuarine	Case by Case	Case by Case
II – Estuarine	Case by Case	4:1 – Estuarine	Case by Case	Case by Case
II – Others	3:1	86:1	1:1 R/C and 4:1 E	12:1
III	2:1	4:1	1:1 R/C and 2:1 E	8:1
IV	1.5:1	3:1	1:1 R/C and 2:1 E	6:1

5. Approaches to compensatory mitigation.

- a. Compensatory mitigation may occur at the site of the allowed impacts or at an off-site location. Considerations for determining whether off-site mitigation is preferable include, but are not limited to one or more of the following:
- On-site conditions do not favor mitigation success due to soil conditions, hydrology or adverse impacts of adjacent land uses;
 - On-site conditions are isolated from other aquatic or riparian habitats;
 - An off-site location is beneficial to larger ecosystem or watershed functions;

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- iv. An off-site location has greater likelihood of success or will provide greater functional benefits;
 - v. The proposal for an off-site location uses a watershed approach consistent with Selecting Wetland Mitigation Sites Using a Watershed Approach (Western Washington) (Ecology Publication #09-06-32, December 2009).
- b. Off-site compensatory mitigation may include the use of a wetland mitigation bank or an in-lieu fee program, if such instruments are available within the city limits.
- c. Advanced mitigation. Compensatory mitigation in advance of proposed impacts may be allowed on a case-by-case basis for projects with pre-identified impacts consistent with Interagency Regulatory Guide: Advance Permittee-Responsible Mitigation (Ecology Publication #12-06-015, December 2012).
6. Monitoring requirements. The city shall require monitoring reports on an annual basis for a minimum of five years and up to ten years, or until the director determines the mitigation project has met the performance standards specified in the wetland mitigation plan. The wetland mitigation plan shall provide specific performance standards for monitoring the mitigation project. Performance standards shall be project-specific and use best available science to aid the director in evaluating whether or not the project has achieved success.

16.20.150 The Winslow Ravine – Special Rules in Mixed Use Town Center.

A portion of the “Winslow Ravine” which contains a ravine, a Type F stream, and several wetlands, is located in the Mixed Use Town Center (MUTC) zoning designation. In order to accommodate more dense development within the MUTC, and recognizing the significant distance from the top of the ravine to the stream and its adjacent wetlands, in lieu of the buffer and setback rules provided for streams (BIMC 16.20.100) and wetlands (BIMC 16.20.130), an applicant may select the prescriptive option or the mitigated option with respect to the Winslow Ravine within the MUTC as described below:

A. “Option A” - Prescriptive Standards.

CATEGORIES	BUFFER WIDTH STANDARD	MINIMUM STRUCTURE AND HARD SURFACE SETBACK	OTHER DEVELOPMENT STANDARDS
Streams and wetlands associated with the Winslow Ravine within the MUTC	50 feet measured from the top of the Winslow Ravine	15 feet beyond the buffer	No development, uses or activities are allowed within the buffer. Refuse, including but not limited to household trash, yard waste and

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			commercial/industrial refuse, shall not be located in the buffer and shall be removed if present.
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B. “Option B” - Mitigated Standards. The applicant shall demonstrate by submittal of necessary studies and proposed mitigation, that measures can and will be taken to ensure that the functions and values provided by the buffers prescribed under “Option A” are retained or improved.

CATEGORIES	BUFFER WIDTH STANDARD	MINIMUM STRUCTURE AND HARD SURFACE SETBACK	OTHER DEVELOPMENT STANDARDS
Streams and wetlands associated with the Winslow Ravine within the MUTC	25 feet measured from the top of the Winslow Ravine	15 feet beyond the buffer	No development, uses or activities are allowed within the buffer <u>other than public access meeting the standards of BIMC 16.20.110.G.6.a through e</u> . If the buffer has previously been disturbed, the disturbed buffer area shall be revegetated pursuant to an approved Buffer Enhancement Plan meeting the requirements of BIMC 16.20.D. Refuse, including but not limited to household trash, yard waste and commercial/industrial refuse, shall not be located in the buffer and shall be removed if present.

C. Permit and review procedures

1. Any development, use or activity within the Winslow Ravine shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 16.20.040.
2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070.
3. Applications for critical area permits for the Winslow Ravine shall include:
 - a. City of Bainbridge Island Master Land Use Application (hyperlink); and

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- b. Buffer enhancement plan, prepared in accordance with BIMC 16.20.180.D, if Option B, above is proposed.

16.20.160 Performance and maintenance surety.

A. Performance Surety. The director shall decide when a performance surety is required of an applicant, and the acceptable form of such surety. The amount and the conditions of the surety shall be consistent with the purposes of this chapter; provided, that the minimum amount of the surety, when required, shall be 125% of the estimated cost of performance. A performance surety shall not be required when the actual cost of performance, as documented in a form acceptable to the director, is less than \$1,000. The director shall release the surety upon determining that:

1. All activities, including any required compensatory mitigation, have been completed in compliance with the terms and conditions of the permit and the requirements of this chapter;
2. A maintenance surety has been posted by the applicant, where deemed appropriate by the director.
3. Until such written release of the surety, the principal or surety cannot be terminated or canceled.

B. Maintenance Surety. When a maintenance surety is required, the holder of a development permit issued pursuant to this chapter shall post a surety for an amount and in a form acceptable to the director, with conditions sufficient to guarantee that maintenance of structures, improvements, and mitigation required by the permit or by this chapter perform satisfactorily for a minimum of two years after they have been completed. The director shall release the maintenance surety upon determining that performance standards established for evaluating the effectiveness and success of the structures, improvements, and/or compensatory mitigation have been satisfactorily met for the required period. For compensation projects, the performance standards shall be those contained in the mitigation plan developed and approved during the review process. The maintenance surety applicable to a compensation project shall not be released until the director determines that performance standards established for evaluating the effect and success of the project have been met.

C. Deposit Instruments. The deposit instrument for the performance or warranty deposit shall be cash, a non-revocable letter of credit, an assignment of funds, bond or other readily accessible source of funds approved by the director. The deposit instruments shall be on a form acceptable to the director. Any issuer of a deposit instrument shall pay invoices presented by the city pursuant to this chapter within 45 days. A bond will be accepted only for amounts over \$1,000.00 or when State Law requires a bond. Interest on deposited funds will accrue to the benefit of the depositor, except that any interest earned on a cash deposit will be retained by the city for account administration.

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D. Default on deposit.

1. If the work covered by the deposit is not completed within the time specified in the notice given under this chapter, the city shall obtain the proceeds of the deposit and do the work covered by the deposit. The city may either have its employees or a contractor do the work.
2. If, at any time, the director determines that actions or inactions associated with permit work have created an emergency situation endangering public health, safety, or welfare, creating a potential liability for the city, or such an emergency precludes the notification of applicants as provided in this chapter while still minimizing or avoiding the effects of the emergency, the city may use the deposit to cover costs incurred by the city to correct the emergency situation. The city may either have employees of the city or a contractor do the work. If the city uses the deposit as provided by this Section, the applicant shall be notified in writing within four working days of the commencement of emergency work. The notice must state the work that was completed and the nature or timing of the emergency that necessitated the use of the deposit without prior notification.
3. The permittee is responsible for all costs incurred by the city in doing the work covered by the deposit. The city shall release or refund any proceeds of a deposit remaining after subtracting all costs incurred. The permittee shall reimburse the city for any amount expended by the city that exceeds the deposit.
4. If the city uses any of the deposit it shall, within 30 days, provide the owner of the permit an itemized statement of all proceeds and funds used.

16.20.170 Compliance and enforcement.

A. It is a violation of this chapter for any person to fail to comply with a requirement of this chapter. It is further a violation of this chapter for any person to:

1. Initiate or maintain, or cause to be initiated or maintained, the use, construction, placement, alteration, or demolition of any structure, land, or property within the city without first obtaining permits or authorizations required by this chapter, or in a manner that violates the terms or conditions of such permits or authorizations;
2. Misrepresent any material fact in any application, plans or other information submitted to obtain permits or authorizations under this chapter; or
3. Remove or deface any sign, notice, complaint, or order required by or posted in accordance with this chapter.

B. When a critical area or its buffer has been altered in violation of this chapter, all ongoing development work shall stop and the critical area shall be restored. The city shall have the authority to issue a stop work order to cease all ongoing development work, and order

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restoration, rehabilitation, or replacement measures at the owner's or other responsible party's expense to compensate for violation of provisions of this chapter.

C. Restoration plan required. All development work shall remain stopped until a restoration plan is prepared and approved by the director. Such a plan shall be prepared by a qualified professional using the best available science and shall describe how the actions proposed meet the minimum requirements described in Subsection (D) below. The director shall, at the violator's expense, seek expert advice in determining the adequacy of the plan. Inadequate plans shall be returned to the applicant or violator for revision and resubmittal.

D. Minimum performance standard for restoration.

1. For alterations to frequently flooded areas, wetlands, and habitat conservation areas, the following minimum performance standards shall be met for the restoration of a critical area; provided, that if the violator can demonstrate that greater critical area function or values can be obtained through the application of different standards, these standards may be modified:
 - a. The historic structural and functional values shall be restored, including water quality and habitat functions;
 - b. The historic soil types and configuration shall be replicated;
 - c. The critical area and buffers shall be replanted with native vegetation that replicates the vegetation historically found on the site in species types, sizes, and densities. The historic functions and values should be replicated at the location of the alteration; and
 - d. Information demonstrating compliance with the requirements in Section BIMC 16.20.110 shall be submitted to the director.
2. For alterations to flood and geological hazard areas, the following minimum performance standards shall be met for the restoration of a critical area; provided, that if the violator can demonstrate that greater safety can be obtained, these standards may be modified:
 - a. The hazard shall be reduced to a level equal to, or less than, the pre-development hazard;
 - b. Any risk of personal injury resulting from the alteration shall be eliminated or minimized; and
 - c. The hazard area and buffers shall be replanted with native vegetation sufficient to minimize the hazard.
3. All restoration plans shall include a detailed estimate of the cost for implementation of the restoration plan.

E. Site investigations. The director is authorized to make site inspections and take such actions as are necessary to enforce this chapter. The director shall present proper credentials and make a reasonable effort to contact any property owner before entering onto private property.

F. Penalties. Any development or activity carried out contrary to the provisions of this chapter shall constitute a public nuisance and may be enjoined as provided by the statutes of the State of Washington. Enforcement of this chapter and the imposition of penalties for violations of this chapter shall be as provided for in Chapter 1.26 BIMC; provided, that in addition to the civil penalties provided for in BIMC 1.26.090, an additional penalty shall be imposed on any person, party, firm, corporation, property owner, or other legal entity who fails to complete a required restoration plan, who conducts any disturbance (including cutting or removing vegetation) of a critical area or its associated buffer in violation of this chapter, or who is otherwise in violation of this chapter, including a violation of BIMC 16.20.090.E. For such violations, the additional penalty shall be in the amount equal to 200% of the cost of restoration as approved under a restoration plan pursuant to Subsections (C) and (D) above for a minor violation and a minimum of \$2,500 for a major violation. The director shall determine whether the disturbance is a minor or major violation. Any person, party, firm, corporation, or other legal entity who knowingly and willfully refuses to complete a required restoration pursuant to Subsections (C) and (D) above shall be guilty of a misdemeanor punishable by not more than 30 days in jail and/or not more than a \$1,000 fine.

16.20.180 Critical area reports.

A. Aquifer recharge areas hydrogeological site assessment.

1. The hydrogeological site assessment shall include:
 - a. A site map drawn to scale which indicates the location of known or geologically representative wells (abandoned and active), springs, and surface water features within 1,000 feet of the project property boundary;
 - b. A description of the site-specific hydrogeological characteristics. At a minimum this will include a description of the lithology, depth and static water level of known underlying aquifer(s) and depiction of groundwater flow direction and patterns on the site map;
 - c. A description of the proposed land use and activities specifically detailing water consumption; an inventory of all chemical use, storage, transportation, production (including process wastewater), and disposal; and any potential pollutant identified by the U.S. EPA as a potential source of drinking water contamination (Appendix A of the Washington State Critical Aquifer Recharge Area Guidance Document) or known to be deleterious to the environment or human health; and
 - d. A general discussion of surface and groundwater quality and quantity in the area and the identification of the potential adverse quality and quantity impacts to groundwater and surface water features within 1,000 feet of the project.
2. In-depth Site Assessment Elements. The required elements of the in-depth site assessment for a given development or re-development will be based on the initial site

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assessment review by the city, the Kitsap Public Health District, affected Tribes, and affected public water purveyors.

One or more of the elements listed below may be required based upon the proposed project activity, complexity of underlying hydrogeological conditions, and the perceived potential to adversely impact groundwater or surface water quality or quantity. One or more of these elements may also be required if the applicant chooses to demonstrate that mitigation measures are not necessary to protect the quantity or quality of groundwater or surface water or that the project does not pose a risk of detriment to groundwater or surface water. Additional in-depth site assessment elements may include:

- a. Lithologic characteristics and stratigraphic relationships of the affected aquifer(s) and overlying geologic units and soil types including thickness, horizontal and vertical extent, permeability, and infiltration rates of surface soils.
- b. Delineation of identified structural features such as faults, fractures, and fissures.
- c. Aquifer characteristics including determination of recharge and discharge areas, transmissivity, storage coefficient, hydraulic conductivity, porosity, and estimate of groundwater flow direction, velocity and patterns for the affected aquifer(s).
- d. Estimate of precipitation and evapotranspiration rates for the project area.
- e. Preparation of appropriate hydrogeological cross sections depicting underlying lithology and stratigraphy, aquifer(s), and potential or probable contaminant pathways to both surface and groundwater from a chemical release.
- f. Determination of background or existing groundwater quality underlying the project area and water quality of surface water bodies.
- g. Contaminant fate and transport including probable migration pathways and travel time of potential contaminant release(s) from the site through the unsaturated zone to the aquifer(s) and through the aquifer(s), and how the contaminant(s) may be attenuated within the unsaturated zone and the aquifer(s) with consideration to advection, dispersion, and diffusion of contaminants in the groundwater.
- h. Delineation of areas potentially affected by contaminant migration on the ground surface and/or through potentially affected aquifer(s).
- i. Determination of the degree of continuity between groundwater and nearby surface water including potential impacts to baseflow in streams from proposed groundwater withdrawals, and potential impacts to surface water quality from site runoff or contaminated groundwater discharge.
- j. Assessment of the potential for pumping-induced seawater intrusion.
- k. Nitrate Loading Assessment. For projects that have the potential to adversely impact groundwater quality by nitrate loading, the applicant shall test existing wells and/or required test wells for nitrate as nitrogen and calculate the current and projected future groundwater nitrate concentrations at full project build-out, at appropriate point(s) of compliance, as determined by project characteristics, and in a methodology approved by the city. If the calculated nitrate loading in the intended water supply equals or exceeds 5 milligrams per liter nitrate as nitrogen, the applicant

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shall develop a mitigation plan with the point(s) of compliance determined based on project characteristics.

- l. Multiple-stage (or phased) development must consider impacts of the total build-out of the project to allow for an assessment of the cumulative impacts of the entire development on critical aquifer recharge areas.

B. Aquifer Recharge Mitigation Plan.

For proposals requiring aquifer recharge area impact mitigations, the applicant shall develop for approval by the city a mitigation plan for the proposed development. Affected public water purveyors (Group A & B), affected Tribes, and the Kitsap Public Health District will be notified and invited to comment on all mitigation plans. The city will consider all recommendations submitted by these entities when developing appropriate permit conditions.

The city may, based on performance criteria and monitoring results, require additional amendments to the plan. The city reserves the right to submit mitigation plans for a third-party review at the applicant's expense and to reject any proposed land use or activity that poses significant risk to groundwater or surface water quality or quantity that cannot be satisfactorily mitigated.

1. The mitigation plan shall contain the project's permit conditions and, as applicable:
 - a. A description of the mitigation measures to be taken, how they will be implemented, and performance criteria.
 - b. A groundwater and surface water monitoring program to measure potential impacts of the development to underlying aquifer(s) and surface water. The monitoring plan will describe monitoring, maintenance, and reporting requirements.
 - c. A contingency plan describing spill response and corrective actions to be taken if a release of a pollutant occurs or monitoring results indicate that mitigation measures are not effectively protecting groundwater and surface water resources and human health. The city shall have the authority to impose additional required corrective actions where such measures are necessary to protect groundwater and surface water resources or human health. Where appropriate contingencies are not feasible and result in an activity posing unacceptable risk to groundwater or surface water resources or human health, the city shall deny the proposal.
 - d. Multiple-stage (or phased) development must consider mitigation for each phase of development as well as the total build-out of the project to allow for an assessment of the cumulative impacts of the entire development on critical aquifer recharge areas.
 - e. Conditions that would arise that warrant ceasing the project operation altogether.
 - f. Wellhead Protection Mitigation. Where a wellhead protection plan addressing the project area exists, the city shall use the recommendations contained in the wellhead protection plan as a basis for formulating required mitigation measures. In the absence of such a mitigation plan, the city shall contact the owner of the public water system (Group A and B) impacted by the proposed project and jointly develop

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mitigation measures, a summary of which shall be signed by the applicant and recorded with the applicant's property title.

g. Nitrate Loading Mitigation.

- i. General Requirements. If a calculated nitrate loading concentration for a project at the designated point(s) of compliance per BIMC 16.20 170.X is equal to or greater than 5 milligrams per liter nitrate as nitrogen, then the applicant shall be required to place a notification on the documents of title for the property affected. A monitoring plan shall be developed to monitor the nitrate level and include a contingency plan to be implemented if the nitrate level exceeds 10 milligrams per liter nitrate as nitrogen.
- ii. Land Divisions. If the calculated nitrate loading concentration for a land division at the designated point(s) of compliance per BIMC 16.20 170.X is equal to or greater than 5 milligrams per liter nitrate as nitrogen, then the applicant shall:
 - (A) Develop a mitigation plan to minimize the nitrate loading rate; and
 - (B) Develop a contingency plan to be implemented if the nitrate concentration exceeds 10 milligrams per liter nitrate as nitrogen; and
 - (C) Submit the contingency plan with the final plat application. The contingency plan must be approved by the city, and then recorded with the Kitsap County Auditor as part of the final plat. Conditions of the contingency plan shall be listed on the face of the plat.
- iii. Mitigation of nitrate in groundwater from on-site septic systems may include decreasing the density of septic system drainfields.

2. Recording of Mitigation Plan Summaries.

- a. General Requirements. The city may require that the applicant record a city-approved summary of the mitigation plan on the property title. A copy of the recorded summary shall be provided to the city in hard copy and electronic format. If a property owner can demonstrate, to the satisfaction of the city, that mitigation measures are no longer necessary, the city shall approve the addition of language on the title for the property nullifying the mitigation requirements.
- b. Land Divisions. The mitigation plan must be approved by the city, and then recorded with the Kitsap County Auditor as part of the final plat. Conditions of the mitigation plan shall be listed on the face of the plat.

3. Performance Surety. The director may require that the applicant provide a performance surety to ensure conformance with mitigation requirements of the Aquifer Recharge Mitigation Plan pursuant to BIMC 16.20.180.B.

C. Habitat management plan.

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1. A habitat management plan (HMP) is a detailed report that outlines and documents the location of fish and wildlife conservation areas, any planned incursions or habitat impacts and a strategy for limiting impacts.
2. HMP review. All HMPs shall be submitted to the Washington State Department of Fish and Wildlife habitat biologist and to the Suquamish Tribe for review and comment within 14 days of a complete application pursuant to BIMC 2.16.055. If the HMP recommends mitigation involving federally listed threatened or endangered species, migratory waterfowl or wetlands, the U.S. Fish and Wildlife Service shall receive a copy of the draft HMP. Within that same time frame, the city's Environmental Technical Advisory Committee shall be asked to review the HMP and provide comments.
3. Map. The HMP shall contain a map prepared at an easily readable scale, showing:
 - a. The location of the proposed development site;
 - b. Property boundaries;
 - c. The relationship of the site to surrounding topographic and aquatic features and any connectivity to other wildlife habitat and corridors;
 - d. Proposed building locations;
 - e. A legend which includes acreage of the parcel, scale, north arrow, and date of map revision.
4. Report. The HMP shall contain a report that includes:
 - a. A description of the nature and intensity of the proposed development
 - b. Identification of existing habitat functions and values;
 - c. An analysis of the effect of the proposed development, activity or land use change upon the wildlife species and habitat features and processes identified for protection;
 - d. Any review comments received from a habitat biologist from the Washington State Department of Fish and Wildlife, and the Suquamish Tribe and U.S. Fish and Wildlife Service;
 - e. Demonstration of consistency with current Washington State Department of Fish and Wildlife Habitat Management Recommendations for the applicable habitat or species. If the recommendations are not followed, the HMP report should identify the best available science guidance that is being followed or applied;
 - f. A description of proposed seasonal activity restrictions in accordance with the Washington State Department of Fish and Wildlife Habitat Management Recommendations;
 - g. An analysis of the feasibility to maintain wildlife corridors and connectivity, if applicable;
 - h. A plan identifying proposed measures to mitigate any adverse impacts to wildlife habitats created by the proposed development. Proposed mitigation measures shall be specific to the affected habitat or species; and

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- i. A schedule for periodic monitoring, and a contingency plan with corrective actions if conservation or mitigation actions do not lead to the desired outcome.
5. HMP adequacy. If there is a disagreement between the director and the applicant as to the adequacy of the HMP, the issue of plan adequacy shall be resolved by consulting with the Washington Department of Fish and Wildlife. If the Washington Department of Fish and Wildlife is not available to review the HMP in a timely manner, the applicant may choose to have the city refer the HMP to a third party consultant at the expense of the applicant. After consultation with such State departments or third party consultant, the director shall make a final decision on the adequacy of the HMP.
6. Timing. An HMP must be developed and approved prior to issuance of a building permit or underlying land use application and must be implemented before the city grants a certificate of occupancy, as applicable.
7. Performance Surety. The director may require that the applicant provide a performance surety to ensure conformance with mitigation requirements of the habitat management plan pursuant to BIMC 16.20.G.

D. Buffer Enhancement Plan

1. As part of a buffer modification request, the applicant shall submit a buffer enhancement plan that assesses the functions and values of the buffer and the effects of the proposed modification on those functions and values.
2. The buffer enhancement plan shall clearly demonstrate that equal or greater protection of the functions and values of critical areas and their buffers can be achieved through the buffer modification than could be achieved through providing the required buffer using an appropriate function assessment methodology.
3. The buffer enhancement plan shall identify how the applicant proposes to mitigate any adverse impacts to the critical area or buffer created by the proposed development.
4. The buffer enhancement plan shall be prepared in accordance with the applicable requirements of BIMC 16.20.170.G, Wetland mitigation plans.

E. Geological Hazards Assessment

1. A geological hazards assessment shall contain the following site- and proposal-related information at a minimum:
 - a. Site and Construction Plans. The report shall include a copy of the site plans for the proposal showing:

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- i. The type and extent of geologic hazard areas, any other critical areas, and buffers on, adjacent to, or within a zone or distance of potential significant influence as determined by a professional engineer/ geologist;
 - ii. Proposed development, including the location of existing and proposed structures, fill, storage of materials, and drainage facilities, with dimensions indicating distances to the floodplain, if available;
 - iii. The topography, as determined by a professional engineer or geologist, of the project area and all hazard areas addressed in the report; and
 - iv. Clearing limits.
 - b. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region. The assessment shall include, but not be limited to:
 - i. A description of the surface and subsurface geology, including complexes, hydrology, soils, and vegetation found in the project area and in all hazard areas addressed in the report;
 - ii. A detailed overview of the field investigations, published data, and references; data and conclusions from past assessments of the site; and site specific measurements, test, investigations, or studies that support the identification of geologically hazardous areas; and
 - iii. A description of the vulnerability of the site to seismic and other geologic events.
 - c. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties.
 - d. Minimum Buffer and Building Setback. The report shall make a recommendation for the minimum no-disturbance buffer and minimum building setback from any geologic hazard based upon the geotechnical analysis. Where the recommended buffers are less than the standard setbacks set forth in BIMC 16.20.130, the rationale and basis for the reduced buffer shall be clearly articulated and demonstrate that the protection standard set forth in that section has been met.
 - e. A review of, and recommendations relating to, the low impact development (LID) infeasibility criteria in the 2014 Stormwater Management Manual for Western Washington, as amended, demonstrating reasonable consideration of all applicable LID practices.
2. Landslide Hazard and Erosion Hazard Areas. In addition to the basic geologic hazards assessment, an assessment for an erosion hazard or landslide hazard area shall include the following information at a minimum:

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- a. Erosion Control. An erosion control plan prepared by a civil engineer shall be submitted to the city prior to the issuance of a building permit.
 - b. The applicant shall provide a geotechnical analysis containing the following information:
 - i. Site Plan. The critical area report shall include a copy of the site plan for the proposal showing:
 - A. The height of slope, slope gradient, and cross-section of the project area;
 - B. The location of springs, seeps, or other surface expressions of ground water on or a zone or distance of potential significant influence as determined by a professional engineer/ geologist; and
 - C. The location and description of surface water run-off features.
 - c. Hazards Analysis. The hazards analysis component of the critical areas report shall specifically include:
 - i. A description of the extent and type of vegetative cover;
 - ii. A description of subsurface conditions based on data from site-specific explorations;
 - iii. Descriptions of surface and ground water conditions, public and private sewage disposal systems, fills and excavations, and all structural improvements;
 - iv. An estimate of slope stability and the effect construction and placement of structures will have on the slope over the estimated life of the structure;
 - v. An estimate of the bluff retreat rate that recognizes and reflects potential catastrophic events such as seismic activity or a one hundred-year storm event;
 - vi. Consideration of the run-out hazard of landslide debris and/or the impacts of landslide run-out on down slope properties;
 - vii. A study of slope stability including an analysis of proposed cuts, fills, and other site grading;
 - viii. Recommendations for building siting limitations; and
 - ix. An analysis of proposed surface and subsurface drainage, and the vulnerability of the site to erosion; and
 - x. A description of the potential modes of failure.
3. Geotechnical Engineering Report. The technical information for a project within a landslide hazard area shall include a geotechnical engineering report prepared by a licensed engineer that presents engineering recommendations for the following:
- a. Parameters for design of site improvements including appropriate foundations and retaining structures. These should include allowable load and resistance capacities for bearing and lateral loads, installation considerations, and estimates of settlement performance;
 - b. Recommendations for drainage and subdrainage improvements;

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- c. Earthwork recommendations including clearing and site preparation criteria, fill placement and compaction criteria, temporary and permanent slope inclinations and protection, and temporary excavation support, if necessary; and
 - d. Mitigation of adverse site conditions including slope stabilization measures for seismically unstable soils, surface water management, location and methods of erosion control, a vegetation management and/or replanting plan, and/or other means for maintaining long-term soil stability if appropriate.
- 4. Seismic Hazards Areas. In addition basic geologic hazards assessment, an assessment for a seismic hazard area shall also meet the following requirements:
 - a. Fault Hazard. The applicant shall provide a geologic/geotechnical analysis containing information specified by the City Engineer that documents the presence or absence of any surface deformation on the site in areas mapped by the city. If deformation is located, the applicant shall provide a geotechnical analysis containing information specified by the City Engineer, which concludes that the development proposal as mitigated meets the standards of this section.
 - b. Liquefaction Hazard. The applicant shall provide a geotechnical analysis containing information specified by the City Engineer that meets the standards of this section (as mitigated).
 - c. Seismic Landslide Hazard. The applicant shall provide the same analysis and plan as required for landslide hazard areas.
- 5. Tsunami Hazards. The city shall provide applicants for development in low lying shoreline areas and other areas where flood elevation is controlled by tide level with information on tsunami hazards.

F. Wetland critical areas report.

A wetland critical areas report shall include, but not necessarily be limited to, the following:

- 1. A site plan showing the following:
 - a. Surveyed wetland boundaries based upon a delineation by a wetland specialist or wetland boundaries recorded using a differential global positioning system, based upon a delineation by a wetland specialist.
 - b. Location of required buffers pursuant to BIMC 16.20.130.I or as proposed through buffer modification.
 - c. Site boundary property lines and roads;
 - d. Internal property lines, rights-of-way and easements;
 - e. Existing physical conditions of the site, including buildings, fences and other structures, existing hard surfaces, utilities, etc.
 - f. Contours at the smallest readily available intervals;

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- g. Hydrologic mapping showing patterns of surface water movement and known subsurface water movement into, through, and out of the site;
 - h. Location of all test holes and vegetation sample sites, numbered to correspond with flagging in the field and field data sheets; and
 - i. An aerial photograph with overlays displaying the site boundaries and wetland delineation.
- 2. A report including the following:
 - a. Vicinity map
 - b. Location information (parcel number and address)
 - c. General site conditions including topography, size and surface area of all wetlands identified and water bodies within one-quarter mile of the site
 - d. Analysis of functional values of existing wetlands
 - e. Summary of proposed development, use or activities and potential impacts to wetlands
 - a. f. Copies of rating forms and maps from the Wetland Rating System for Western Washington – Revised (2014) or as amended.
 - f. Required buffers pursuant to BIMC 16.20.130.I.
 - g. Complete U.S. Army Corps of Engineers wetland determination data forms
 - j. National Wetland Inventory map
 - k. Wetland mitigation plan, if compensatory mitigation is required.
- G. Wetland mitigation plan.
 - 1. Compensatory mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans – Version 1 (Ecology Publication #06-06-011b, March 2006), as revised, and, if applicable, Selecting Wetland Mitigation Sites Using a Watershed Approach (Western Washington)(Ecology Publication 09-06-032, December 2009) and meet the following standards:
 - a. All critical area restoration, creation and/or enhancement projects required pursuant to this chapter either as a permit condition or as a result of an enforcement action shall follow a mitigation plan prepared by an expert approved by the director. The applicant or violator shall receive written approval of the mitigation plan by the director prior to commencement. Compensatory mitigation is not required for allowed activities which utilize best management practices to protect the functions and values of regulated critical areas.
 - b. Purpose of Mitigation Plan. The mitigation plan shall provide information on land acquisition, construction, maintenance and monitoring of the replaced critical area. The mitigation plan shall recreate as nearly as possible the original critical area in terms of its acreage, function, geographic location and setting.
 - c. Mitigation Plan Submittal Requirements. A complete mitigation plan shall consist of plot plans, a written report, and performance bonds, as required below. The plot

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plans and written report shall be prepared by qualified professionals approved by the director.

2. Plot Plan Requirements. The following information shall be submitted on one or more plot plans (as determined by the director):
 - a. A legal description and a survey (boundary and topography) prepared by a licensed surveyor of the proposed development site, compensation site, and location of existing critical area(s) on each. This shall include wetland delineation and existing wetland acreage.
 - b. Scaled plot plan(s) indicating:
 - i. Proposed construction;
 - A. Zoning setback and critical area buffer requirements;
 - B. Construction phasing and sequence of construction;
 - C. Site cross-sections, percent slope, existing and finished grade elevations;
 - D. Soil and substrate conditions;
 - E. Grading and excavation plan, including erosion and sediment control plans needed for construction and long-term survival; substrate stockpiling locations and techniques, and source controls needed for critical area construction and maintenance;
 - F. Landscape plans indicating species, types, quantities, locations, size, spacing or density of planting; planting season or timing; planting instructions, watering schedule and nutrient requirements; source of plant materials or seeds; and, where appropriate, measures to protect plants from destruction or predation; and
 - G. Water control structures and water-level maintenance practices needed to achieve the necessary hydrocycle/hydroperiod characteristics, etc.
3. Written Report Requirements. A written report shall accompany the plot plan(s) and shall provide the additional information required below. In addition, the report should be used as needed to clarify or explain elements of the plot plan(s).
 - a. Baseline Information.
 - i. Wetland delineation and existing wetland acreage;
 - ii. Vegetative, faunal and hydrologic characteristics;
 - iii. Soil and substrate conditions;
 - iv. Relationship within watershed and to existing streams, wetlands, ponds, or saltwater;
 - v. Existing and proposed adjacent site conditions; and
 - vi. Existing and proposed ownership.
 - b. Environmental Goals and Objectives. The report shall contain a description of the environmental goals and objectives to be met by the compensation plan. The goals and objectives shall be related to the functions and values of the original critical area

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or, if out-of-kind wetland mitigation, the type of wetland to be emulated. This analysis shall include, but is not limited to the following:

- c. Site selection criteria;
 - i. Identification of compensation goals;
 - ii. Identification of functions and values;
 - iii. Dates for beginning and completion of the project and compensation plan;
 - iv. A complete description of the relationship between and among structures and functions sought;
 - v. Review of available literature and/or known like-projects to date in restoring or creating the type of critical area proposed;
 - vi. Likelihood of success of the proposed compensation project at duplicating the original critical area. This shall be based on experiences of comparable projects identified in the literature review or existing projects, if any; and
 - vii. Likelihood of the ability of the created or restored critical area to provide the functions and values of the original critical area. This shall be based on such factors as surface water and groundwater supply and flow patterns; dynamics of the ecosystem; sediment or pollutant influx and/or erosion, periodic flooding and drought, etc.; presence of invasive flora or fauna; potential human or animal disturbance; and previous comparable projects, if any.
- d. Performance Standards. Specific criteria shall be provided for evaluating whether or not the goals and objectives of the project are met and for beginning remedial action or contingency measures. Such criteria may include water quality standards, survival rates of planted vegetation, species abundance, and diversity targets, habitat diversity indices, or other ecological, geological or hydrological criteria.
- e. Detailed Specifications. Written specifications and descriptions of compensation techniques shall be provided. These shall include, but not be limited to, items in Subsection C.2 of this Section.
- f. Monitoring Program. A program outlining the approach for monitoring construction of the compensation project and for assessing a completed project shall be provided. Monitoring may include, but is not limited to:
 - i. Establishing vegetation plots to track changes in plant species composition and density over time;
 - ii. Using photo stations to evaluate vegetation community response;
 - iii. Sampling surface and subsurface waters to determine pollutant loading, and changes from the natural variability of background conditions (pH, nutrients, heavy metals);
 - iv. Measuring base flow rates and storm water runoff to model and evaluate water quality predictions, if appropriate;
 - v. Measuring sedimentation rates, if applicable; and
 - vi. Sampling fish and wildlife populations to determine habitat utilization, species abundance and diversity.
 - vii. A protocol shall be included outlining how the monitoring data will be evaluated by agencies that are tracking the progress of the compensation project. A monitoring report shall be submitted annually, at a minimum, documenting

milestones, successes, problems, and contingency actions of the compensation project. The compensation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than seven years.

- viii. Contingency Plan. Identification of potential courses of action, and any corrective measures to be taken when monitoring or evaluation indicates project performance standards are not being met.

- A. Performance and Maintenance Surety and Demonstration of Competence. A demonstration of financial resources, administrative, supervisory, and technical competence and scientific expertise to successfully execute the compensation project shall be provided. A compensation project manager shall be named and the qualifications of each team member involved in preparing the mitigation plan and implementing and supervising the project shall be provided, including educational background and areas of expertise, training and experience with comparable projects. In addition, a surety ensuring fulfillment of the compensation project, monitoring program, and any contingency measure shall be posted pursuant to BIMC 16.20.180.

- 4. City Consultation. The city may consult with and solicit comments from any federal, state, regional, or local agency, including tribes, having any special expertise with respect to any environmental impact prior to approving a mitigation proposal which includes critical areas compensation. The compensation project proponents should provide sufficient information on plan design and implementation in order for such agencies to comment on the overall adequacy of the mitigation proposal.
- 5. Permit Conditions. Any compensation project prepared pursuant to this section and approved by the director shall become part of the application for the permit.

H. Native Vegetation Protection Area (NVPA) Stewardship Plan.

- 1. A NVPA stewardship plan may be completed by the property owner. The city may request additional information or technical review from qualified professionals or other agencies at the applicant's expense to ensure no net loss in critical area functions and values.
- 2. The basic components of a NVPA stewardship plan are a site plan and narrative report:
 - a. The site plan shall include:
 - i. Location and dimensions of proposed development within NVPA
 - ii. Limits of construction and existing and proposed grade changes
 - iii. Location of trees and critical root zones of all trees within the limits of construction and area of grade changes
 - iv. Location and species of tree(s) proposed for removal and replanting, if required.

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- b. The narrative report shall include:
 - i. Project narrative (Step 2 from the SAR Guidesheet, revised as needed)
 - ii. Description of measures taken to avoid, minimize and reduce adverse impacts to the NVPA
 - iii. Description of proposed development within NVPA including any decrease in native vegetative area and increase in hard surfaces
 - iv. Assessment of any potential damage to tree(s) whose critical root zone is within the limits of construction and area of grade changes (e.g., windthrow, root damage)
 - v. Description of tree(s) and vegetation proposed for removal and replanting, if required, including size, species and condition
 - vi. Description of protection measures for trees and vegetation to be retained
 - vii. Description of measures to preserve forest litter and surface topography to most closely mimic natural hydrology
 - viii. Planting plan including location, species and size of trees and vegetation to be replanted, if required.
 - ix. Description of performance standards and monitoring actions (e.g., plant survival count, percent canopy coverage estimate) sufficient to document success of any required replanting.

16.20.180 Definitions.

- A. For the purposes of this chapter, the following definitions shall apply:
 - 1. “Accessibility” means the that a building or structure can be independently used by people with a variety of disabilities.
 - 2. “Adverse impact” means a condition that creates, imposes, aggravates, or leads to inadequate, unsafe, or unhealthy conditions on a site.
 - 3. “Agricultural activities” means the normal actions associated with the production of crops such as plowing, cultivating, minor drainage, and harvesting; and/or raising or keeping of livestock, including operation and maintenance, and repair of farm and stock ponds, drainage ditches, irrigation systems, and normal operation, maintenance, and repair of existing serviceable agricultural structures, facilities, or improved areas.
 - 4. “Alteration” means a human-induced action that changes the existing conditions of a critical area or its buffer and results in the modification of the existing topography, stability, vegetation, hydrology, wildlife or wildlife habitat.
 - 4. “Alteration, structure” means a change, modification or adjustment.
 - 5. “Anadromous fish” means fish whose life cycle includes time spent in both salt and fresh water.
 - 6. “Applicant” means a person, corporation, or organization that files an application for a land use or development permit with the city and that is either the owner of the land on which that proposed activity would be located, or the authorized agent of such a person.
 - 7. “Arborist” means an individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or

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- supervise the management of trees and other woody plants. Must be concurrently an International Society of Arboriculture (ISA) Certified Arborist to perform any role required of a Certified Arborist.
8. “Arborist, ISA Certified” means an arborist holding a current International Society of Arboriculture (ISA) Certified Arborist credential.
 9. “Arborist, Tree Risk Assessment Qualified (TRAQ)” means an arborist who has successfully completed the International Society of Arboriculture (ISA) TRAQ training course and assessment and holds a valid ISA TRAQ credential.
 10. “Bank stabilization” means modification used for the purpose of preventing erosion, protecting channels, and retaining uplands.
 11. “Biodiversity areas and corridors” means areas of habitat that are relatively important to various species of native fish and wildlife.
 - a. Biodiversity areas.
 - i. The area has been identified as biologically diverse through a scientifically based assessment conducted over a landscape scale (e.g., ecoregion, county- or city-wide, watershed, etc.). Examples include but are not limited to WDFW Local Habitat Assessments, Pierce County Biodiversity Network, and Spokane County’s Wildlife Corridors and Landscape Linkages; or
 - ii. The area is within a city or an urban growth area (UGA) and contains valuable fish or wildlife habitat and is mostly comprised of native vegetation. Relative to other vegetated areas in the same city or UGA, the mapped area is vertically diverse (e.g., multiple canopy layers, snags, or downed wood), horizontally diverse (e.g., contains a mosaic of native habitats), or supports a diverse community of species as identified by a qualified professional who has a degree in biology or closely related field and professional experience related to the habitats or species occurring in the biodiversity area. These areas may have more limited wildlife functions than other priority habitat areas due to the general nature and constraints of these sites in that they are often isolated or surrounded by highly urbanized lands.
 - b. Corridors. Corridors are areas of relatively undisturbed and unbroken tracts of vegetation that connect fish and wildlife habitat conservation areas, priority habitats, areas identified as biologically diverse, or valuable habitats within the city.
 12. “Best available science” (BAS) means scientifically valid information derived in accordance with WAC 365-195-9050 through 925, or as amended, that is used to develop and implement critical areas policies or regulations.
 13. “Best management practices” (BMPs) means conservation practices or systems of practices and management measures that:
 - a. Control soil loss and protect water quality from degradation caused by nutrients, animal waste, toxins, and sediment;
 - b. Minimize adverse impacts to surface water and groundwater flow, and to the chemical, physical, and biological characteristics of critical areas;
 - c. Protect trees, vegetation and soils designated to be retained during and following site construction and use native plant species appropriate to the site for re-vegetation of disturbed areas; and

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- d. Provide standards for proper use of chemical herbicides within critical areas.
 - e. BMPs are defined by the United States Department of Agriculture, the State of Washington Department of Agriculture, the Washington State Department of Ecology, Washington State Department of Health, Kitsap Conservation District, and other professional organizations.
14. “Bog” means a low-nutrient, acidic wetland with organic soils and characteristic bog plants, as described in Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication #14-06-29, October 2014).
 15. “Buffer” means a designated area contiguous to a wetland or stream intended to protect the wetland or stream and be an integral part of the wetland or stream ecosystem.
 16. “Coppicing” means managing of strongly-regenerative species of trees and shrubs by an initial heading cut (leaving a stump) and allowing new shoots to grow to maintain live roots. Shoots may be reduced to their point of origin at appropriate intervals of time without disturbing the resulting coppice head (stump).
 17. cutting trees close to ground level with the intention of encouraging regrowth of multiple shoots primarily for invasive or weedy species management.
 18. “Critical aquifer recharge area” means areas with a critical recharging affect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.
 19. “Critical areas” means aquifer recharge areas, fish and wildlife habitat-conservation areas, frequently flooded areas, geologically hazardous areas, and wetlands.
 20. “Critical facilities” means facilities that are essential to the health and welfare of the community, including services that protect life and property. Such facilities include, but are not limited to, hospitals, emergency clinics, police and fire stations, emergency vehicle and equipment storage facilities, emergency operations centers, aviation control centers, and utility facilities such as sewage treatment plants and electric transmission substations.
 21. “Critical habitat” means a habitat identified by US Fish and Wildlife Service or the National Marine Fisheries Service as habitat necessary for survival of endangered or threatened species.
 22. “Cutting, vegetation” means the removal of the main trunk or stem of a small tree for the purposes of controlling aggressive or weedy species.
 23. “Designated Centers” means those areas of the Island referred to as Winslow, Lynwood Center, Island Center, Rolling Bay, Day Road and Sportsman Triangle and shown on Figure LU-3 in the City’s 2017 Comprehensive Plan.
 24. “Development” means any action that would require review land use review or other approval from the city or other local, state or federal jurisdiction. Development includes, but is not limited to: land division; construction, reconstruction, structural alteration, relocation, or enlargement of any structure; clearing or grading; and changes to surface or ground waters.
 25. “Development area” means the area of land disturbing activity on a site.
 26. “Director” means the director of the city’s Planning and Community Development Department or his/her designee.

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27. "Educational or scientific activities" means controlled and/or supervised scientific activities or educational activities that are associated with an educational or scientific program that result in no adverse impacts to critical areas or their buffers.
28. "Engineering geologist" means a practicing engineering geologist who has at least four years of professional employment as an engineering geologist with experience in landslide evaluation, and a Washington State specialty license in engineering geology as specified in Chapter 18.220 RCW.
29. "Erosion hazard area" means those areas containing soils which, according to the United States Department of Agriculture Natural Resource Conservation Service Soil Survey Program, may experience significant erosion. Erosion hazard areas also include coastal erosion-prone areas and channel migration areas.
30. "Estuarine, wetland" means a vegetated wetland that is predominantly tidal, as described in Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication #14-06-29, October 2014).
31. "Existing development" means a development that was lawfully constructed, approved or established prior to the effective date of the ordinance codified in this chapter.
32. "Fish" means species of the vertebrate taxonomic groups *Cephalospidomorphi* and *Osteichthyes*.
33. "Fish and wildlife habitat conservation areas" means areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term. These areas may include, but are not limited to, rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors; and areas with high relative population density or species richness.
34. "Fish and wildlife habitat conservation areas" does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of, and are maintained by, a port district or an irrigation district or company.
35. "Fish habitat" means habitat which is used by any fish at any life stage at any time of the year, including potential habitat likely to be used by fish which could be recovered by restoration or management and includes off-channel habitat.
36. "Fisheries biologist" means a person with experience and training in fisheries who is able to submit substantially correct reports on fish population surveys, stream surveys and other related data analyses of fisheries resources. "Substantially correct" means that technical or scientific errors, if any, are minor and do not delay or affect the site plan review process. Qualifications of a fisheries biologist include:
 1. Either:
 - a. Certification by the American Fisheries Society, or;
 - b. Bachelor of Science degree in fisheries or the biological sciences from an accredited institution and five years of professional fisheries experience; and
 2. The prior successful completion of at least three habitat management plans.
31. "Frequently flooded areas" means lands subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high ground

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- water. These areas include, but are not limited to, streams, lakes, coastal areas, wetlands and areas where high ground water forms ponds on the ground surface. (See Chapter 15.16 BIMC, Flood Damage Prevention.)
32. “Functions and values” means the natural processes and beneficial roles performed or provided by critical areas including, but not limited to, water quality and quantity protection and enhancement, providing fish and wildlife habitat, supporting terrestrial and aquatic food chains, providing flood storage, conveyance and attenuation, groundwater recharge and discharge, erosion control, wave attenuation, protecting aesthetic value, and providing recreational and educational opportunities. These roles are not listed in order of priority.
33. “Geologically hazardous areas” means areas susceptible to significant erosion, sliding, or other geological events. They pose a threat to the health and safety of citizens when used as sites for incompatible commercial, residential or industrial development. Geologically hazardous areas include erosion hazard areas, landslide hazard areas, and seismic hazard areas.
34. “Geotechnical engineer” means a practicing geotechnical/civil engineer who has a valid Washington engineering license and a valid certificate of registration in civil engineering, at least four years of professional employment as a geotechnical engineer with experience in landslide evaluation, and appropriate training and experience as specified in Chapter 18.43 RCW.
35. “Habitat Management Plan” (HMP) means a report prepared by a professional wildlife biologist or fisheries biologist which discusses and evaluates critical fish and wildlife habitat functions and identifies and evaluates measures necessary to maintain, enhance and improve terrestrial and/or aquatic habitat on a proposed development site.
36. “Habitat of local importance” means an area representing either high quality habitat for native terrestrial or aquatic species or habitat which is of limited availability, highly vulnerable to alteration, or provides landscape connectivity which contributes to the integrity of the surrounding landscape and which is not adequately protected by other city, state or federal policies, laws, regulations, or non-regulatory tools that prevent degradation of the habitat or its associated species. These may include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors such as breeding areas or human-made ponds.
37. “Hazard tree” means a tree that has significant structural defects that are likely to lead to failure and possibly cause injury or damage as identified in a report from an International Society of Arboriculture (ISA) Tree Risk Assessment Qualified (TRAQ) arborist. In the case of steep slopes, a hazard tree can also be a tree that is a hazard to stability of the slope, as determined by a geotechnical engineer.
38. “Hazardous substances” means any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste as specified in RCW 70.105.010. (Also see BIMC 18.06.450 through 18.06.510).
39. “Hedge” means a line of closely-spaced trees and/or shrubs intentionally planted and/or maintained along a property boundary or landscape border for privacy, screening,

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- safety, or similar function, which typically requires ongoing pruning or shearing to maintain its intended function and/or reasonable use of nearby developed areas.
40. “Hydric soil” means soil which is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.
41. “Hydrogeologist” means a practicing hydrogeologist who has at least four years of professional employment as a hydrogeologist with experience in the specific subject area in which they are providing a report, and a Washington specialty license in hydrogeology as specified in RCW Chapter 18.220.
42. “Hydrophyte or hydrophytic vegetation” means plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.
43. “Invasive/exotic species” means ~~opportunistic plant species (either native or nonnative) that colonize disturbed ecosystems and come to dominate the plant community in ways that are seen by us as reducing the values provided by the previous plant community.~~ **1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health, or as amended by the United States Department of Agriculture National Invasive Species Information Center (NISIC).**
44. “Land disturbing activity” means any activity that results in a change in the existing soil cover (both vegetative and nonvegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to, clearing, grading, filling and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity. Vegetation maintenance practices are not considered land disturbing activity. Stormwater facility maintenance is not considered land disturbing activity if conducted according to established standards and procedures.
45. “Land divisions” means any division of land subject to the city’s subdivision design standards (BIMC Chapter 17.12).
46. “Landslide hazard areas” means areas which are at risk of mass movement due to a combination of geologic, topographic, and hydrologic factors. Landslide hazard areas include the following:
- Areas characterized by slopes greater than 15 percent having springs or groundwater seepage and having impermeable soils (typically silt and clay) overlain or frequently interbedded with permeable granular soils (predominantly sand and gravel);
 - Any area potentially unstable due to rapid stream incision or stream bank erosion;
 - Any area located on an alluvial fan, debris flow deposit, or in a debris flowpath, presently or potentially subject to impacts or inundation by debris flows or deposition of stream-transported sediments;
 - Any area with a slope of 40 percent or greater and with a vertical relief of 10 or more feet except areas composed of competent consolidated rock;
 - Any area designated or mapped as class U, UOS, or URS by the Department of Ecology Coastal Zone Atlas and/or mapped as a landslide or scarp on the USGS Surface Geology Map of Bainbridge Island (Haugerud, 2001).

47. "Landslide hazard area setback" means an area contiguous to a landslide hazard area sufficient in depth to meet the development standards set forth in BIMC 16.20.140 as determined by a geological hazards assessment prepared in accordance with BIMC 16.20.180, Critical area reports.
48. "Liquefaction" means a process in which a water-saturated soil, upon shaking, suddenly loses strength and behaves as a fluid.
49. "Low impact development (LID)" means a stormwater and land use management strategy that strives to mimic predisturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.
50. "Low impact development best management practices (LID BMPs)" mean distributed stormwater management practices, integrated into a project design, that emphasize predisturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to: bioretention, rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water reuse.
51. "Native or equivalent vegetation" means species which are indigenous to the Puget Sound lowlands ecoregion; or a species that is equivalent in providing the same site-specific functional arrays as would the native species. Functional arrays may include forage, floodwater restraint, hiding habitat, or other physical or biologic roles in the ecosystem, that singly or in combinations correspond to those of the native species. As with natives, the role of an equivalent species may vary depending on the site and its surrounding ecosystem. Invasive/exotic species shall not be considered equivalent species.
52. "Native vegetation protection area (NVPA)" means a portion of a development site comprised of native vegetation in which existing vegetation, topography and supporting soils are free of development, uses or activities detrimental to the infiltration capacity and critical area functions and values of the total site area.
53. "Natural pruning system" means a pruning system intended to maintain a tree's characteristic growth pattern and adaptations that may allow for changes in appearance to achieve certain specified objectives per ANSI A300 (Part 1 – 2017).
54. "No net loss" means the maintenance of the aggregate total of the city's critical areas functions and values over time. The no net loss standard requires that the impacts of a proposed use and/or development, whether permitted or exempt from permit requirements, be identified and mitigated on a project-by project basis, so that as development occurs critical areas functions and values stay the same.
55. "Normal maintenance" means those usual acts to prevent a decline, lapse or cessation from a lawfully established condition. Normal maintenance does *not* include:
 - a. Use of fertilizer or pesticide application in wetlands, fish and wildlife habitat conservation areas, or their buffers;
 - b. Re-digging ditches in wetlands or their buffers to expand the depth or width beyond the original ditch dimensions;
 - c. Re-digging existing drainage ditches to drain wetlands on lands not classified as existing

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- and ongoing agriculture under BIMC 16.20.040 (Exemptions).
56. "Normal repair" means activities to restore a structure or use to a state comparable to original condition, including but not limited to size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction.
 57. "Ordinary high water mark" means the mark on the shores of all waters, which will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation; provided, that in any area where the ordinary high-water mark cannot be found, the ordinary high-water mark adjoining freshwater shall be the line of mean high-water.
 58. "Pollarding" means a pruning system that maintains crown size by initial heading of branches on young trees, followed by removal of shoots to their point of origin at appropriate intervals without disturbing the resulting pollarding head.
 59. "Pruning" means the selective removal of plant parts to achieve defined objectives.
 60. "Pruning amount" means the quantity of plant parts removed at one pruning, expressed in terms of a number of branches or other parts removed, and/or percentage of the crown or buds removed on an entire tree or specific branches.
 61. "Ravine" means a V-shaped landform generally having little to no floodplain and normally containing steep slopes, which is deeper than 10 vertical feet as measured from the centerline of the ravine to the top of the slope. Ravines are typically created by the wearing action of streams. The top of the slope is determined where there is a significant change in the slope to generally less than a 15 percent slope.
 62. "Reasonable alternative" means an activity that could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation.
 63. "Reasonable use exception (RUE)" is a means of relief that is available for a property that is encumbered to such an extent by critical areas and/or critical area buffers that application of this chapter would deny all reasonable use of the subject property, as further defined by the decision criteria of BIMC 16.20.080.
 64. "Redevelopment" means, on a site that is already substantially developed (i.e., has 35 percent or more of existing impervious surface coverage), the creation or addition of impervious surfaces; the expansion of a building footprint or addition or replacement of a structure; construction, installation or expansion of a building or other structure; replacement of impervious surface that is not part of a routine maintenance activity; and land disturbing activities.
 65. "Removal, vegetation" means to eliminate the presence or hazard of unwanted vegetation.
 66. "Seismic hazard areas" means areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction, debris flows, or tsunamis. The following areas are considered seismic hazard areas:
 - a. Seismic Landslide Hazard Areas - Slopes which are stable in non-earthquake periods, but fail and slide during ground shaking;

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- b. Liquefaction Hazard Areas - Areas of cohesionless, loose or soft, saturated soils of low density in association with a shallow groundwater table that are subject to settlement and/or liquefaction from ground shaking, or;
 - c. Fault Hazard Areas - Areas of known surface rupture or significant surface deformation as a result of an active fault movement, including 50 feet on either side.
67. “Shrub” means a woody perennial plant, usually with several stems that may be erect or close to the ground, generally smaller than a tree.
68. “Significant tree” means a deciduous tree greater than 12 inches in diameter at four feet high and an evergreen tree greater than 10 inches in diameter at four feet high.
69. “Site” means the entire lot, series of lots, or parcels on which a development is located or proposed to be located, including all contiguous undeveloped lots or parcels under common ownership.
70. “Species of local importance” means those species that are of local concern due to their population status or their sensitivity to habitat alteration.”
71. “Streams” means those areas in the City of Bainbridge Island where the surface water flows are sufficient to produce a defined channel or bed. A defined channel or bed is an area which demonstrates clear evidence of the passage of water and includes but is not limited to bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not meant to include irrigation ditches, canals, storm or surface water runoff devices, or other artificial watercourses unless they are used by fish or used to convey streams naturally occurring prior to construction.
72. “Stream Types” means a streams classification system based on fish usage and perennial or seasonal water regime as found in WAC 222-16-030 and meeting the standards listed below.
- a. “Type F Stream” means a stream that has fish habitat. ~~If fish usage has not been determined, w~~Water having the following characteristics are presumed to have fish use: Stream segments having a defined channel of 2 feet or greater within the bankfull and having a gradient greater than 16 percent and less than or equal to 20 percent, and having greater than 50 acres in contributing basin size based on hydrographic boundaries. Determination of fish usage shall use the methodology found in Washington Department of Natural Resource’s Forest Practice Board Manual, Section 13, including the use of the default physical criteria upstream of manmade barriers to fish passage.
 - b. “Type Np” means all segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are waters that do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
 - c. “Type Ns” means all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np Waters. These are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a

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Type Np Water. Ns Waters must be physically connected by an above-ground channel system to marine waters, Type F, or Np Waters.

73. “Tree” means a woody perennial plant with a single or multiple trunks, which typically develop a mature size of over several inches diameter, and ten (10) or more feet in height.
74. “Wetland” means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, but are not limited to, swamps, estuaries, marshes, bogs, ponds less than twenty acres, including their submerged aquatic beds and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, stormwater facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands include those legally established artificial wetlands intentionally created from non-wetland areas to mitigated the conversion of wetlands.
75. “Wetland boundary” means the boundary or outer edge of a wetland as delineated in accordance with the federal wetland delineation manual and applicable regional supplements (as updated), as required by WAC 173-22-035.
76. “Wetland category” means category as defined in Washington State Wetland Rating System for Western Washington – 2014 Update (Ecology Publication No. 14-06-029, October 2014), or as revised and adopted by the department.
77. “Wetlands specialist” means a person with experience and training in wetland issues who is able to submit substantially correct reports on wetland delineations, classifications, functional assessments and mitigation plans. “Substantially correct” means that errors, if any, are minor and do not delay or affect the site plan review process. Qualifications of a wetlands specialist include:
 - a. Either:
 - i. Certification as a Professional Wetland Scientist (PWS) or Wetland Professional in Training (WPIT) through the Society of Wetland Scientists, or;
 - ii. Bachelor of science degree in the biological sciences from an accredited institution and five years of professional field experience; and
 - b. The prior successful completion of at least three wetland reports.
78. “Wildlife biologist” means a person with experience and training in the principles of wildlife management and with practical knowledge in the habits, distribution and environmental management of wildlife. Qualifications include:
 - a. Either:
 - ii. Certification as a professional wildlife biologist through The Wildlife Society, or;
 - iii. Bachelor of science or bachelor of arts degree in wildlife management, wildlife biology, ecology, zoology, or a related field, from an accredited institution and five years of professional field experience; and
 - b. The prior successful completion of at least three habitat managements plans.
71. “Wildlife habitat” means a seasonal range or habitat element with which a given species has a primary association, and which, if altered, may reduce the likelihood that the

species will maintain and reproduce over the long-term. These include areas of relative density or species richness, breeding habitat, winter range, and movement corridors. These also include habitats of limited availability or high vulnerability to alteration, such as cliffs, streams and wetlands.

72. “Zone of Influence” means an area, usually upslope from a geologically hazardous area, where changes in land use and hydrology can affect the stability of the geologically hazardous area. The zone of influence is defined as 300 feet upslope from slopes greater than 40 percent, and 200 feet upslope from slopes greater than 15 percent but less than 40 percent that are determined to be geologically hazardous areas.

Question/Answer		BIMC reference (if applicable)
Native Vegetation Protection Area (NVPA)		
1	<i>What is the purpose of the NVPA?</i> The purpose of the NVPA is to protect the island’s finite groundwater resources by protecting and maintaining aquifer recharge.	16.20.010 16.20.100.E
2	<i>Where and when does the NVPA apply?</i> The NVPA requirement applies to properties in the R-0.4, R-1 and R-2 zoning designations. The requirement to designate a NVPA is triggered only when development or redevelopment results in greater than 800 square feet of hard surfaces or greater than 7,000 square feet of land disturbing activity. NVPAs are also required for subdivisions, non-residential development, and forest practice conversions. These thresholds are tied to the City’s stormwater regulations, which require a site assessment review (SAR) at these same levels.	16.20.100.A.1.b 16.20.100.E.1
3	<i>What would be the process for designating a NVPA on my property?</i> The thresholds -- or “triggers” – for when a NVPA is required are tied to the City’s stormwater regulations, which require a site assessment review (SAR) at these same levels (see Question 2, above). If a NVPA is required, its location and configuration is simply shown on the existing conditions site plan required as part of the SAR application.	16.20.100.E.1.c
4	<i>Will I be required to replant a portion of my property with native vegetation?</i> Designation of an NVPA does not require you to replant any portion of your property. The NVPA includes <u>only existing native vegetation</u> on a property.	16.20.100.E.1.d
5	<i>Is the NVPA a “no-touch” zone?</i> The NVPA is not a “no-touch” zone. Several uses and activities are allowed within the NVPA.	16.20.100.E.2.e
6	<i>What exactly can I do in my NVPA without needing to go and get a permit?</i> A number of uses and activities are allowed in the NVPA without a permit, including vegetation management, passive recreation, on-site sewage drainfield reserve facilities, storm drainage facilities, accessory structures such as solar panels, small wind energy generators, composting bins, rainwater harvesting barrels and cisterns, driveways, and other structures (such as sheds) or hard surfaces with a total footprint of no greater than 200 square feet.	16.20.100.E.2.e
7	<i>What can I do in my NVPA if I get a study done that proves that my actions won’t harm our groundwater supply?</i> Any structure or activity may be allowed in the NVPA through review and approval of a NVPA stewardship plan that demonstrates the proposal won’t harm groundwater resources.	16.20.100.E.2.e.xii
8	<i>Does the NVPA create new permit requirements, new studies required, or more consultant costs?</i> If a project meets the thresholds -- or “triggers” – for when a NVPA is required, a site assessment review (SAR) is also required because the thresholds are the same. As noted above, the NVPA does not create a new permit requirement because the NVPA is simply shown on the existing conditions site plan required as part of the SAR application. While the NVPA is a new requirement, it does not require additional studies or consultant costs unless the proposed NVPA area is less than 65 percent of the total site area or the proposed NVPA does not meet the specified design standards.	16.20.100.E.1.c 16.20.100.E.1.f

	Question/Answer	BIMC reference (if applicable)
9	<i>Does the NVPA apply to land that is being managed as a working forest?</i> No. Class I, II and III forest practices (working forests) regulated under the Forest Practices Act (Chapter 76.09 RCW) are exempt from the requirements of the critical areas ordinance.	16.20.040.A.7
10	<i>Will the NVPA make it harder for trails to be built?</i> No. The current draft of the critical areas ordinance (January 30, 2018) includes a provision that designation of a NVPA is not required for construction and use of public trails. This provision was included in the January 9, 2018 public hearing draft for Council consideration.	16.20.100.E.1.b
11	<i>Is the NVPA set in stone so that once it is designated it can't be changed?</i> No. The total NVPA area (size, or percentage of property) required must be retained once established, but the location and configuration can change over time.	16.20.100.E.1.g
12	<i>Did the City consider other alternatives for protecting critical aquifer recharge areas?</i> Yes. The City considered requiring use of the Washington State Department of Ecology's (Ecology) 2014 stormwater manual best management practices for low impact development (LID) to achieve no net loss of aquifer recharge. Based on input from Ecology and the City's LID technical consultant, the City cannot require use of LID best management practices. Since the LID technical manual for Puget Sound and other best available science provides that a minimum 65 percent on-site native vegetation and soil retention is the best means to maintain or more closely mimic the natural hydrologic function of the site and watershed, the City developed the NVPA requirement. In addition, the City recently reviewed the potential for using the 2012 Western Washington Hydrologic Model's (WWHM) recharge module as an option for applicants to demonstrate no net loss of aquifer recharge; however, the results are, to date, inconclusive.	
13	<i>How does the NVPA apply to subdivisions?</i> An application for a subdivision would require that the site plan show a NVPA that includes all existing native vegetation on the site, up to a maximum of 65 percent. The NVPA may include other designated open space areas (e.g., landscaping requirements such as roadside buffers, other critical areas and their buffers) required by other sections of the municipal code. The NVPA can be located in a separate tract or within one or more of the resultant lots.	16.20.100.E.2.d
14	<i>Does the NVPA requirement apply to properties owned by organizations or agencies (e.g., park district, Bloedel Reserve, Islandwood) who include land stewardship in their mission?</i> Yes. The NVPA requirement applies to all properties within the R-0.4, R-1 and R-2 zoning designations. The maximum area of the required NVPA may be reduced to 50 percent for public schools and public parks.	16.20.100.E.1.e
Invasive species removal		
15	<i>Will the new CAO prohibit invasive species removal in critical areas? Is this a change from the existing CAO?</i> Removal of invasive species within critical areas is allowed in both the existing and proposed new CAO.	16.20.090.B.3
16	<i>Will the new CAO create additional "red tape" (new permit requirements, new studies required, more consultant costs) for the removal of invasive species?</i> No. The new CAO allows for removal of up to 2,500 square feet of invasive species without City review or pre-approval – this is a new provision. Over 2,500 square feet, a critical area permit and replanting plan is required. This is a new requirement in name only. Currently, a clearing permit is required for invasive species removal within critical areas.	16.20.090.B.3
17	<i>Can invasive species be managed in the NVPA?</i> Yes. Invasive species may be managed in the NVPA if one is required and invasive species removal itself does not trigger the NVPA requirement.	16.20.100.E.1.b 16.20.100.E.2.e.iii

	Question/Answer	BIMC reference (if applicable)
Fire protection		
18	<i>Does the new CAO prohibit vegetation management for the purposes of fire protection or risk reduction?</i> No. The new CAO includes a number of tree and vegetation activities that can be done within critical areas without City review or pre-approval. Other vegetation management activities may be allowed through approval of a critical area permit. Any of these vegetation management activities may be done for fire protection or risk reduction if no net loss of critical area function and value is demonstrated.	16.20.090.B 16.20.090.C.1
19	<i>Can I manage the NVPA to minimize fire risk on my property?</i> Yes. Maintenance pruning of trees in the NVPA is allowed without restrictions, provided the structural integrity and long-term health of trees is preserved. In addition to the allowances in BIMC 16.20.090, additional vegetation activities to manage fire risk may be allowed through review and approval of a NVPA stewardship plan.	16.20.090.B.2.b 16.20.100.E.2.e.i 16.20.100.E.2.e.xii
Trails		
20	<i>Will the new CAO prohibit trail development in critical areas?</i> No. As in the existing CAO, trails are allowed if specific design standards are met.	16.20.100.E.1.b 16.20.110.G.6 16.20.130.E.2.c 16.20.140.H.5
21	<i>Will the new CAO create additional “red tape” (new permit requirements, new studies required, more consultant costs) for trail development?</i> No. The existing CAO includes specific design standards similar to those proposed in the draft CAO update. With the existing CAO, any trail development is required to demonstrate compliance with these standards through a clearing permit and is required to submit supporting technical documentation or studies (e.g., geotechnical report, wetland report). The draft CAO requires a critical area permit instead of a clearing permit but does not require any new or different technical documentations, so more consultant costs are not anticipated.	
Other		
22	<i>Can I expand the footprint of my house if it is in a critical area or its buffer?</i> Yes. The draft CAO includes provisions that allow for the expansion of a footprint within a critical area buffer, but not the critical area itself. Expansion is limited to a maximum of 500 square feet of living space and only one expansion is allowed during the life of the structure. While these limitations may seem overly restrictive, many existing houses were built prior to the passage of the Growth Management Act and the City’s requirements for designating and protecting critical areas. Large expansions of these structures would result in adverse impacts and overall loss of critical area functions and values. If an existing structure is located within the R-0.4, R-1 or R-2 zoning designations, expansion is not subject to these limitations. However, if the expansion meets the site development thresholds (800 square feet of hard surfaces or 7,000 square feet of land disturbing activity), a NVPA would be required.	16.20.050
23	<i>Why was the buffer requirement for Type F streams increased from 150 to 200 feet?</i> Washington Department of Fish and Wildlife’s 1997 recommendations for riparian habitat provide a range of recommended riparian habitat area (buffer) widths for a range of ecosystem functions. Management recommendations for riparian habitat were developed to meet the goal of maintaining or enhancing the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels. Riparian habitat areas (buffers) are critical to both aquatic and terrestrial species, not just anadromous fish. WDFW is currently updating its PHS recommendations for riparian habitat which will include emphasis on the importance of ecosystem functions provided within the site potential tree height (SPTH) area of a 200 year old tree, regardless of the size of the stream. The recommendations include a methodology for determining the SPTH₂₀₀ based largely on soil type. Averages of the SPTH₂₀₀ have been calculated for Kitsap County. The lowest range is 91-100, the highest range is 231-240 and the area weighted mean is 194. The intent of the 200-foot buffer for Type F streams is to protect and maintain the suite of ecological functions within the SPTH₂₀₀ area.	16.20.110.E

2017-18 Critical Areas Ordinance Update

January 30, 2018 Revised Public Hearing Draft

Summary of Changes to November 14, 2017 Draft

The following table summarizes proposed changes to the November 14, 2017 Revised Public Hearing Draft. These changes are provided for Council consideration prior to adoption of Ordinance 2018-01 and are also highlighted in the January 30, 2018 Revised Public Hearing Draft full text.

A summary of all public comments received during City Council review is provided in a separate document. The comment on which the proposed change is based is listed in the “Comment Number” column. Only those comments listed in the table below resulted in staff recommendations for changes to the draft. Council is welcome to propose additional changes based on review of all public comments received.

Yellow highlighted changes are based on public comments received through November 20, 2017.

Green highlighted changes are based on public comments received between November 21, 2017 – January 14, 2018.

Blue highlighted changes are based on staff input.

Items for **clarification only** are highlighted in gray in the Discussion column.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
1	45	16.20.040.A.2	Exemptions -- Existing agriculture	Existing and ongoing agricultural activities. For the purpose of this chapter, “existing and ongoing” means the activity has been conducted and/or maintained within the past five years under a farm management plan or other best management practices not resulting in a net loss of critical area functions and values. New or expanded agricultural uses, activities, and accessory structures are not considered “existing and ongoing.” Existing, ongoing agricultural activities shall comply with applicable water quality regulations set forth in BIMC 15.20 and utilize best management practices to protect and enhance water quality.	See Number 20 and 25, below. Existing and ongoing agriculture is an activity that is allowed to continue; however, it cannot result in a degradation of water quality. Requiring either a farm management plan or fencing for all existing and ongoing agriculture would be challenging to implement and is an after-the-fact regulation on an exempt activity. Proposed new language is intended to prohibit degradation of water quality and require use of best management practices, while not requiring fencing or a farm plan.
2	--	16.20.040.A.5	Exemptions	Normal and routine repair, maintenance and operation of existing retention/detention facilities, biofilters and other stormwater management facilities, irrigation and drainage ditches, and fish ponds; provided, that such activities shall not involve conversion of any wetland not currently being used for such activity. Any maintenance of ponds located in stream habitat fish and wildlife habitat conservation	Clarification only to include all FWHCAs, not just streams.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				areas shall require approval from the Washington Department of Fish and Wildlife.	
3	--	16.20.040.A.10	Exemptions	The <u>construction installation</u> of low impact fencing within critical area buffers provided the location does not result in restricting wildlife movement, the location and installation is the least impactful to the critical area and buffer as possible, and there is no alternative to fencing to achieve the purpose of the fence.	Clarification only.
4	--	16.20.040.B.3	Exemptions – NVPA	<u>Development, uses or activities within critical aquifer recharge areas that do not meet the applicability criteria of BIMC 16.20.110.A.</u>	New language proposed to clarify that global critical areas regulations (e.g., standards for existing development, trees and vegetation) do not apply within the R-0.4, R-1 and R-2 zoning designations unless the applicability criteria are met (the hard surfaces and land disturbing activity thresholds) and designation of a NVPA is required.
5	--	16.20.050.C.1	Standards for Existing Development	<u>There is no change in the location of the improvement Any alteration is in substantially the same location as the original property improvement;</u>	Revised language to clarify that an alteration may not be in the exact location as the existing structure (e.g., an allowed addition). Clarification intended not to allow for strict reading of the language, which may preclude any alteration not in the same footprint.
6	64	16.20.090.B.1.a and b	Trees and vegetation – general pruning	a. Pruning operations of trees <u>that</u> do not remove more than 10 percent of living material (branches, stems and leaves) of an individual tree within any three-year period; b. <u>Pruning operations conducted with an ISA-certified arborist on site that remove from 10 percent to 25 percent of living material within any three-year period;</u>	Clarification only.
7	--	16.20.090.B.2.b	Trees and vegetation – specific pruning	Within Native Vegetation Protection Areas delineated pursuant to BIMC 16.20.100.E, maintenance pruning of trees is allowed without the restrictions in B.1.a through c. above, provided the structural integrity and long-term health of the trees is preserved <u>and the trees are not located within another type of critical area;</u>	Language added to avoid loophole of allowing pruning within a critical area (e.g., wetland) that would otherwise not be allowed. Thresholds not intended to apply within the NVPA.
8	58	16.20.090.B.3	Trees and vegetation – invasive species removal	<u>a. Plants on the Kitsap County or Washington State Noxious Weed Control Board list of noxious weeds;</u> b. English ivy (<i>Hedera helix</i>) from tree trunks or ground surface; c. Himalayan blackberry (<i>Rubus discolor</i> , <i>R. procerus</i>); d. Evergreen blackberry (<i>Rubus laciniatus</i>); e. English/Portuguese laurel (<i>Prunus laurocerasus/lusitanica</i>) f. English holly (<i>Ilex aquifolium</i>); g. Scotch broom (<i>Cytisus scoparius</i>);	Revised language intended to highlight certain species of concern while recognizing they are already on the noxious weed lists.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				h. English hawthorne (<i>Crataegus laevigata</i>); and i. Poison oak (<i>Toxicodendron diversilobum</i>); and j. Any plant on the Kitsap County or Washington State Noxious Weed Control Board list of noxious weeds, as amended, whether or not listed above.	
9	43	16.20.090.B.4	Trees and vegetation – hazard tree removal	Hazard tree removal within Native Vegetation Protection Areas delineated pursuant to BIMC 16.20.100.E in accordance with tree removal provisions set forth in BIMC 16.18 provided the tree(s) is not located within another type of critical area.	New language proposed to clarify that hazardous tree removal is allowed without City review and approval within NVPAs.
10	43	16.20.100.A.1.a	CARA – Applicability	Any development, use or activity not associated with permitted principal and accessory residential uses pursuant to BIMC 18.09.020 with the potential to generate a pollutant identified by the U.S. EPA as a potential source of drinking water contamination (either in Appendix A of the Washington State Critical Aquifer Recharge Area Guidance Document or on the North American Industry Classification System as used by the city's Department of Public Works) or known to be deleterious to the environment or human health; and	Revised to exclude uses on EPA list that are commonly associated with single-family residential use and include the NAICS list currently used by the City's Public Works Department.
11	--	16.20.100.A.2	CARA -- Applicability	This Section does not apply to areas located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).	Language deleted per guidance from Ecology staff. Not needed since shoreline jurisdiction cannot be regulated by CAO.
12	43	16.20.100.B.3.b.i	CARA – Permit and review procedures	For proposals as described in BIMC 16.20.100.A.1.a: Hydrogeological Site Assessment meeting the requirements of BIMC 16.20.180.A, Critical area reports. If the applicant has completed a Site Assessment Review (SAR) in accordance with BIMC 15.19 that includes those sufficient information to address the elements listed in 16.20.180.A, the SAR will suffice to fulfill this requirement. Additional in-depth site assessment elements as detailed in 16.20.180.A may be required upon review of the SAR.	Clarification only.
13	39, 67, 68, 69, 70, 72	16.20.100.E.1.b	CARA – NVPA	Designation of a NVPA is not required for the following development, use or activity: Removal of invasive species; and Construction and use of public trails provided the standards set forth in BIMC 16.20.110.G.6.a through e. are met.	Exemption provided for specific minor development/activities that would not have an adverse impact on aquifer recharge.
14	43	16.20.100.E.1.c	CARA -- NVPA	The location and configuration of the NVPA shall be determined through completion of a Site Assessment Review (SAR) in accordance with BIMC 15.19. The city may require a professional forester, ISA-certified arborist or landscape	New language provided to better define when a professional would be required.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				architect to determine the location and configuration of the NVPA if needed to ensure the NVPA design standards set forth in BIMC 16.20.100.E.2.a. through c. are met.	
15	43	16.20.100.E.1.d	CARA – NVPA	The NVPA shall include all existing native vegetation on a site, up to a maximum of 65 percent of the total site area. A lower percentage may be is allowed if needed necessary to achieve a development area of at least 12,500 square feet on a parcel.	Clarification only.
16	--	16.20.100.E.1.g	CARA – NVPA	The total area required pursuant to c., above, shall be retained once established, although the location and configuration of the NVPA may change over time. Any alteration to the location or configuration of the NVPA shall be approved by the director and documented on a site plan included with a notice to title in accordance with BIMC 16.20.070.G. The city may require a NVPA stewardship plan prior to approving a change to the location and configuration of the NVPA.	Correction only.
17	39	16.20.100.E.2.e.iii	CARA – NVPA	Removal of invasive plant species.	Removal of invasive plant species added as an allowed activity in NVPA.
18	--	16.20.110.E.1 16.20.140.I.1	FWHCA – streams – buffers Wetlands – buffers	All designated streams require a buffer pursuant to Table X. Buffers shall remain as undisturbed native or enhanced vegetation areas for the purpose of protecting the integrity, function, and value of stream resources. Any buffer modification proposed shall be through an approved Buffer Enhancement Plan. No uses or activities shall be allowed within the buffer unless allowed by this Section. If the buffer has previously been disturbed, the director may require the disturbed buffer area be enhanced, including revegetated with native plant species, revegetated pursuant to an approved Buffer Enhancement Plan meeting the requirements of BIMC 16.20.160.180. No refuse, including but not limited to household trash, yard waste and commercial/industrial refuse, shall be placed in the buffer.	Revised language to clarify that existing buffer may not be comprised of native vegetation. Same revisions proposed for wetland buffers.
19	--	16.20.110.E.7 16.20.140.I.7	FWHCA – streams/structure setback Wetlands – buffers	Structure or hard surface setback. A structure or hard surface setback line of fifteen feet is required from the edge of any stream buffer. Minor structural or impervious surface intrusions into the areas of the setback, such as but not limited to fire escapes, open/uncovered porches, landing places, outside walkways, outside stairways, retaining walls, fences and patios, may be permitted if the department determines upon review of an analysis of buffer functions submitted by the applicant, that construction and/or maintenance of such intrusions will not encroach into the stream buffer or adversely impact the stream. The functional analysis shall include a functional methodology	Revised language to clarify that construction of allowed intrusions shall not encroach into buffer itself. Same revisions proposed for wetland structure setback.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				supported by best available science. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by Section 16.20.070 (Notice on Title).	
20	45	16.20.110.G.5	FWHCA – Agriculture	Agricultural Restrictions. New agricultural activities and new structures accessory to agriculture use are prohibited in fish and wildlife habitat conservation areas and their buffers. Existing, ongoing agricultural activities shall utilize best management practices so as not to result in a net loss of the functions and values of wetlands. Existing, ongoing agriculture shall avoid impacts to streams by either: Implementation of a farm resource conservation and management plan agreed upon by the Kitsap Conservation District and agriculture operator to protect and enhance water quality; or Installation of fencing no closer to the stream than the outer edge of its required buffer.	See Number 1, above. Standards to do not need to be repeated.
21	58	16.20.110.G.8	FWHCA – Bank stabilization	Where bank stabilization is determined to be necessary, bioengineering or other non-structural methods should be the first option for protection. Structural methods, or hard stabilization, may only be utilized where it can be demonstrated <u>by a professional engineer licensed in the State of Washington</u> that an existing primary residential structure <u>or essential public facility</u> cannot be safely maintained without such measures, and that the resulting hard stabilization is the minimum length necessary to provide a stable building area for the structure. The director may require that bank stabilization be designed by a professional engineer licensed in the State of Washington with demonstrated expertise in hydraulic actions of shorelines. Bank stabilization projects may also require a City of Bainbridge Island clearing or grading permit and Hydraulic Project Approval from the Washington Department of Fish and Wildlife.	Language revised to required demonstration of need be completed by professional engineer and to allow bank stabilization for essential public utilities (e.g., roads).
22	--	16.20.120.B	FFA – Applicability	Development in frequently flooded areas shall be subject to the provisions in Chapter 15.16, Flood Damage Prevention. <u>Areas within the city's shoreline jurisdiction are regulated by the city's shoreline master program (Chapter 16.12).</u>	Language deleted per guidance from Ecology staff. Not needed since shoreline jurisdiction cannot be regulated by CAO.
23	--	16.20.130.A.2	Geologically hazardous areas – applicability	<u>This section does not apply to geologically hazardous areas located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).</u>	See Number 22, above.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
24	--	16.20.140.A.2	Wetlands – applicability	This Section does not apply to wetlands located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (BIMC 16.12).	See Number 22, above.
25	45	16.20.140.H.1	Wetlands – agriculture	Agricultural restrictions. New agricultural activities and new structures accessory to agriculture use are prohibited in wetlands and their buffers. Existing, ongoing agricultural activities shall utilize best management practices so as not to result in a net loss of the functions or values of wetlands. Existing, ongoing agriculture uses other than those occurring in grazed wet meadows shall avoid impacts to wetlands by either: Implementation of a farm resource conservation and management plan agreed upon by the Kitsap Conservation District and agriculture operator to protect and enhance water quality; or Installation of fencing no closer to the wetland than the outer edge of its required buffer.	See Number 1 and 20, above.
26	58	16.20.140.J	Wetlands – mitigation ratios	See revisions to Table 7.	Revisions to clarify/simplify and be more consistent with ratios provided in Ecology's guidance document for CAO updates.
27	68	16.20.150.B	Winslow Ravine – Option B mitigated standards	No development, uses or activities are allowed within the buffer <u>other than public access meeting the standards of BIMC 16.20.110.G.6.a through e.</u>	Revised language proposed to allow for public access.
28	--	16.20.180.E.1.e	Geologically hazardous areas – report requirements	<u>A review of, and recommendations relating to, the low impact development (LID) infeasibility criteria in the 2014 Stormwater Management Manual for Western Washington, as amended, demonstrating reasonable consideration of all applicable LID practices.</u>	New language added to require review and consideration of LID practices.
29	57,58	16.20.190.A.72.a	Definitions – Type F stream	“Type F Stream” means a stream that has fish habitat. If fish usage has not been determined, w Water having the following characteristics are presumed to have fish use:	Revised language based on WDFW and Tribe input.
30	99	16.20.110.G	Standards for specific development – trails	Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches, interpretive centers, and viewing platforms, may be are allowed in fish and wildlife conservation area or their buffers if there are no reasonable alternatives for meeting trail planning objectives and it is demonstrated through a Habitat Management Plan that the proposal will not result in a net loss of critical area functions and when the following standards are met. a. Trails and related facilities shall be placed on existing road grades, utility corridors, or any other previously disturbed	Revised language based on input from Bainbridge Parks Foundation. Major concern is that language stating trails “may be” allowed can be interpreted differently by different staff over time. The CAO anticipates that the specific development, uses and activities in BIMC 16.20.110.G and BIMC 16.20.140.H will occur within FHWCA's and wetlands. If they are allowed if they meet the applicable standards, then the language should state they “are” allowed instead of they “may be” allowed.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				areas if present at the site and consistent with applicant's trail planning objectives. b. Trails and related facilities shall be planned to minimize removal of trees, shrubs, snags and important wildlife habitat and disturbance to soil and existing hydrological characteristics; c. Viewing platforms, interpretive centers, benches and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected conservation area. Viewing platforms shall be limited to one hundred (100) square feet in size, unless demonstrated that a larger structure will not result in a net loss of fish and wildlife habitat functions; d. Trail planning shall utilize mitigation sequencing in BIMC 16.20.030 to first avoid siting trail and trail-related facilities within fish and wildlife habitat conservation areas and their required buffers. Trails and trail-related facilities are allowed in fish and wildlife conservation area or their buffers if there are no reasonable alternatives for meeting the applicant's trail planning objectives and it is demonstrated through a Habitat Management Plan that the proposal will not result in a net loss of critical area functions. e. Trails shall be limited to non-motorized use. Trail width shall not exceed six five feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.	The word "applicant's" is added to clarify whose trail planning objectives will be considered. A six-foot wide trail width is thought to be needed to provide a safe clearing distance on either side of the trail bed itself. Regardless of the width, trail development is required to demonstrate no net loss of critical area functions and values.
31	99	16.20.140.H.5	Standards for specific development – trails	Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches and viewing platforms, are may be allowed in wetlands or wetland buffers only when the following standards are met: a. Trails and related facilities shall be placed on existing road grades, utility corridors, or any other previously disturbed areas if present at the site and consistent with trail planning objectives. b. Trails and related facilities shall be planned to minimize removal of trees, soil disturbance, and maintain existing hydrological characteristics, shrubs, snags, and important wildlife habitat. c. Viewing platforms and benches, and access to them, shall be designed and located to minimize disturbance of	See Number 30, above.

Number	Comment Number	Citation	Topic	Existing and Proposed Language	Discussion
				wildlife habitat and/or critical characteristics of the affected wetland. Viewing platforms shall be limited to one hundred (100) square feet in size, unless demonstrated through a wetland critical areas report and mitigation plan that a larger structure will not result in a net loss of wetland functions. d. Trail planning shall utilize mitigation sequencing in BIMC 16.20.030 to first avoid siting trail and trail-related facilities within wetlands and their required buffers. Trails and trail-related facilities are may be allowed within wetlands or wetland buffers if there are no reasonable alternatives for meeting applicant's trail planning objectives and it is demonstrated through a wetland critical areas report and mitigation plan that the proposal will not result in a net loss of wetland functions. e. Trails shall be limited to non-motorized use. Trail width shall not exceed six five feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.	
32	101	16.20.090.C.3	Trees and vegetation	Coppicing, pollarding and other or vegetation activities. a. The coppicing, pollarding or removal of any species listed in BIMC 16.20.090.B(2) and (3) in an area greater than 2,500 square feet shall: i. Include submittal of a replanting plan for city review and approval for any areas of bare ground; and ii. Demonstrate compliance with development standards in BIMC 16.20.130.D(1) as documented by a geotechnical engineer licensed in the State of Washington if located within erosion and landslide hazard areas and their buffers at the top of the slope.	Pollarding should be included in the requirements for over 2,500 square feet since it is included in the under 2,500 square feet and a replanting plan would be needed.
33	102	Definitions	Invasive Species	"Invasive/exotic species" means opportunistic plant species (either native or nonnative) that colonize disturbed ecosystems and come to dominate the plant community in ways that are seen by us as reducing the values provided by the previous plant community. 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health, or as amended by the United States Department of Agriculture National Invasive Species Information Center (NISIC).	A standard definition used by state and federal agencies is appropriate.

2017/18 CRITICAL AREAS ORDINANCE UPDATE

Summary of Public Comments Received by Topic/Potential Council Action **

** Comments received during City Council review between August 2, 2017 – present.

The following table provides a summary of public comments/concerns received during City Council review organized by topic and three categories of potential City Council action:

- No Action. These comments/concerns are based on misinformation, are unrelated to the Critical Areas Ordinance, simply express support or opposition to the draft Critical Areas Ordinance, or provide a general comment.
- Action 1 – Consider specific revisions recommended by staff (see separate document).
- Action 2 – Consider topic and recommend/request revisions for Council discussion.

	Topic and Action	Subtopic(s)
1 Trees and vegetation		
	No Action	• Regulations do not recognize specialty niches in arboriculture. • Review by City for invasive species removal may be a disincentive for volunteers. • Need for permit to manage trees for forest health/safety within a critical area is ridiculous and absurd.
	Action 1	• Should be able to manage trees in NVPA without City approval/permit. • Invasive species removal should not trigger NVPA requirement. Invasive species removal should be allowed within NVPA, once established. • Pollarding should have the same limitations/thresholds as coppicing. • A more standard definition for invasive species should be used. • Specific revisions recommended by arborist and citizens. • List of invasive species confusing, repetitive.
	Action 2	• Required indemnity agreement for tree professionals overly burdensome. • The pruning and tree removal restrictions are excessive and expensive due to need for professional.
2 Critical Areas Ordinance (CAO) – general		
	No Action	• Requests the City consider balancing protection of critical areas with the ability for public entities to build essential buildings (e.g., schools, pools, parks, etc.). • CAO is dense and difficult to understand. • Professional services required will add significant financial cost to local development (vs. off-site developers). • Recommends not rushing process.
	Action 1	• Ongoing agriculture exemption confusing and difficult to implement.
	Action 2	• CAO should acknowledge fire risk. Urges Council to consider BIFD Community Wildfire Protection Plan.
3 CARA/NVPA (Native Vegetation Protection Area) -- support		
	No Action	• Encourages Council to support the CAO and the new NVPA requirement. • A good first step to forest/native vegetation protection • Native soils are as important as native vegetation; 65% rule is good • Applauds more stringent regulations for trees/water protection • NVPA provision is imperative to adequately protect and preserve our aquifers. • Urge Council to be both innovative and courageous in supporting the long-term welfare of island residents

	Topic and Action	Subtopic(s)
		• Finds the proposed levels of protection of native plants and trees to be an acceptable and necessary step toward protecting our aquifer(s) and the sustainability of our water resources
	Action 1	• None
	Action 2	• Suggests Council might consider allowing a case-by-case variance for individual property owners who wish to build a home or ADU for family occupation with appropriate justification congruent with the intent of the NVPA • Requests greater flexibility in requirement for NVPA, including a way to reduce the 65% NVPA requirement if a site can demonstrate no net loss of aquifer recharge.
4 CARA/NVPA – opposition		
	No Action	• NVPA is a tremendous over-reach by the City. • NVPA will require more consultants at an added cost to landowners. • NVPA will undermine planned short plats, subdivisions. • USGS/Aspect studies on rainfall and water consumption suggests that the City should not be concerned with aquifer recharge rates. • Ordinance does nothing but limit personal freedom to develop and utilize private property. • Not supported by BAS.
	Action 1	• None.
	Action 2	• Limits potential for affordable housing, specifically ADUs. • Disproportionately affects property owners in R-0.4, R-1 and R-2 zoning designations • Other methods to ensure that recharge occurs (vs. 65% NVPA) are available. • NVPA has impacts for future farms and gardeners.
5 Parks/trails		
	No Action	• CAO requirements will stop trail development and/or make trails too expensive to build. • Requested that trails be exempt from permit process, but that built features (e.g., bridges and boardwalks) require permitting. • Park District should be exempt from CAO. • Trails should be exempt from CAO.
	Action 1	• NVPA should not be required for public trail development. • Trail development should be allowed in The Winslow Ravine. • Trail development standards in FHWCA and wetlands should be clarified.
	Action 2	• SAR requirement for linear features, i.e., trails, doesn't make sense. • NVPA requirement redundant as parks are already dedicated passive and/or wildlife preserves in natural parks.
6 Streams		
	No Action	• Requirement for bridges or bottomless culverts over fish-bearing streams is a very expensive regulation. • Should differentiate between streams that have anadromous fish and other fish. • Strongly opposes increase in buffer widths.
	Action 1	• None.
	Action 2	• None.

	Date	Name	Topic(s)	Comment	Staff Response
1	10/12/17	Ian Bentryn	Trees and vegetation	Limits on tree maintenance without permit or pre-approval do not recognize a specialty niche in arboriculture for Japanese ornamental specimens.	Pruning of noninvasive ornamental vegetation is included as normal yard and garden activities in BIMC 16.20.040, Exemptions.
2	10/3/17	Peter Bang-Knudsen, Ed.D. Superintendent Bainbridge Island School District	Critical Areas Ordinance (CAO) – general	Requests the City consider balancing protection of critical areas with the ability for public entities to build essential buildings (e.g., schools, pools, parks, etc.).	The current draft of the CAO includes two provisions for public projects: • BIMC 16.20.100.E, Native Vegetation Protection Area, a reduction in the NVPA area is provided for public projects; and • BIMC 16.20.140, Wetlands, buffers for high intensity land uses (e.g., schools) can be reduced to the buffer required for moderate intensity land uses.
3	10/4/17	Jeff Kanter	Critical Area Recharge Area (CARA) Heating oil tanks	There are many older heating oil tanks at risk of leaking/failure. One or more leaks could make the drinking water source (groundwater) unusable. Periodic testing or monitoring of underground tanks is not being discussed.	Comment noted.
4	10/3/17	Charlotte Rovelstad	CARA/NVPA (Native Vegetation Protection Area)	Encourages Council to support the CAO and the new NVPA requirement.	Comment noted.
5	10/3/17	Helen Pitts	CARA/NVPA	Offers support for the NVPA requirements. States there is no “work around” or engineered, human-created solution that substitutes for the protection of native vegetation.	Comment noted.
6	10/3/17	J.D. Stahl	CARA/NVPA	Thinks deeming 65% of everyone’s property undevelopable on “aquifer recharge” grounds is a tremendous over-reach by the City. States the science on this is very complicated and also very site specific. Thinks it will defeat any pretext of the City being supportive of affordable housing due to dramatically more expensive permitting costs.	The area of NVPA will be determined on a site-specific basis through completion of the site assessment review (SAR) process. The NVPA is not “undevelopable,” as it is included in the area used to determine allowable density and may include development, uses and activities either as listed in BIMC 16.20.100.E.2 or through a NVPA stewardship plan. The NVPA does not require dramatically more expensive permitting costs. Projects requiring a NVPA are project already required to go through the SAR process.

7	10/3/17	Mike Juneau	Trees and vegetation	• Modify coppicing language to allow pruning <6-inch diameter sprouts from a larger than 6-inch stump. • Extend work season to allow late-winter-dormant season pruning of trees, including coppicing. • Raise limit for invasive species control outside geologically hazardous areas to 5,000 sf. • Modify list of coppicing to include only strongly-regenerative species. • Differentiate minor and major offenses in enforcement of tree and vegetation section.	• Coppicing is allowed on any size truck, sprout size limited to 6-inch diameter. • Extended work season not recommended due to slope stability and erosion/sedimentation concerns. • Higher limited for invasive species control not recommended due to erosion/sedimentation concerns, misidentification of plants, need to review replanting plan. • Coppicing species revised. • Major and minor violations included in BIMC 16.20.170.F.
8	10/3/17	Robert Dashiell	Mitigation requirements	Council should perhaps include a consideration of public benefit vs. proposed buffer infringement mitigation costs when other public taxing districts projects are being considered.	See response to comment 2, above.
9	10/2/17	Gloria Sayler	General	The CAO as written is very dense and difficult to understand. Suggests making a 1-3 page charge summarizing the impact of the ordinance.	Staff anticipates developing public education and outreach materials to summarize and explain major topics prior to the effective date of the ordinance (anticipated March 1, 2018).
10	10/3/17	David Graf	CARA	States the proposed restrictions have a disproportionate impact to individual (residential) property owners, and seem extreme.	The low-density residential zones (R-0.4, R-1 and R-2) are areas of existing high recharge rates and low land use intensity (impervious surface area). These areas have the greatest potential for aquifer recharge protection.
11	9/28/17	Phedra Elliot Housing Resources Board	CARA	Updating ordinance as proposed would make the difficulty of creating more housing that is affordable even harder.	Staff does not anticipate the update will limit affordable housing opportunities. Underlying densities are not changing; however, home site area or home size may be reduced, which may actually lead to more affordable housing. See also response to comment 6, above.
12	9/27/17	Charlie Wenzlau	CARA	• Expresses concern the implementation of the proposed update will have adverse impacts to our island diversity. • Proposed analysis will require more consultants at an added cost to landowners.	See response to comment 6, 10 and 11, above. Applicants wishing to build an ADU would need to designate a NVPA and could locate the ADU within the 12,500 sf allowed development area or establish the NVPA through a NVPA stewardship plan.

				• The 800 sf limit on impervious surfaces would likely forestall the construction of ADUs, recommends exempting ADUs. • Recommends the CAO is limited to the non-sewered areas for the island where it has the greatest benefit. • Asks why the need for environmental protections always seem to trump affordability?	
13	10/3/17	Ernie and Ellen Williams	CAO – general CARA	Expresses full support for the rules that restrict development in critical areas including greater restrictions on land that's considered critical aquifer recharge areas.	Comment noted.
14	10/2/17	Robert Dashiell	Salmon streams	States that information provided by water quality program staff, taken from the City's WQFMP's Sampling and Analysis Plan, is inaccurate with regard to the number of salmon-bearing streams (28). States the island has five, maybe two salmon streams.	The number of fish-bearing streams is not specified in the CAO.
15	10/2/17	Robert Dashiell	Wetland buffers	Asks for clarification that the City is using Ecology guidance to establish buffer widths and confirmation that buffer widths are not changing.	The City is using Ecology's 2014 guidance. Buffer widths are not changing.
16	9/30/17	J.D. Stahl	CARA/NVPA	Expresses concern that proposed NVPA requirements will largely undermine planned short plat.	Parcels will maintain their allowable density and be allowed a 12,500 sf development area.
17	9/30/17	Robert Dashiell	CARA	Asks if the entire island will be a critical area. States that USGS/Aspect studies on rainfall and water consumption suggests that the City should not be concerned with aquifer recharge rates.	Critical aquifer recharge areas are limited to the R-0.4, R-1 and R-2 zoning designations. The City's Comprehensive Plan guiding principles, goals and policies provide that the City's plans and regulations shall employ the precautionary principal, recognize the island's natural resources are finite, and reflect the uncertainty of climate change impacts.
18	9/29/17	Adam Wheeler, PE Browne Wheeler Engineers, Inc.	CARA	• Points out difference between shallow wells and aquifers vulnerable to contamination and water resources in deeper aquifers. • Asks about costs and availability of professionals to complete hydrogeological site assessment.	• Ecology's guidance provides that jurisdictions should protect both deep and shallow groundwater resources for both water quality and quantity. • The City does not maintain information about the costs and availability of professionals to complete hydrogeological site assessments.

				• Suggests other methods to ensure that recharge occurs (vs. 65% NVPA) are available and NVPA may affect ability to fully mitigate stormwater on site. • Refers to Aspect's groundwater assessment that did not indicate any trends over the last 10 years that would trigger EWL for safe yield and asks why increased regulation is needed when there does not appear to be a significant drop in water levels.	• Research and LID technical guidance provides that native vegetation retention should be the highest priority in site design to mimic natural hydrology. Other, structural methods to achieve recharge are regulated through the City's stormwater code which offers a LID performance standard option. The NVPA may include stormwater facilities and other uses and activities to achieve better site design through use of non-structural low impact design practices. • See response to comment 17, above.
19	9/4/17	Douglas Schoemaker	Tree coppicing	Suggests that coppicing of trees should be allowed; otherwise, management of trees is limited to 6-inch caliper trees which is incredibly small.	Coppicing is allowed in BIMC 16.20.090.
20	9/5/17	Jeff Kanter	Geologically hazardous areas	• Appreciates effort to exempt from permitting nominal pruning, but exceptions are overly restrictive. • Suggests big leaf maple and alders (deciduous trees) should be treated differently than conifers. • Suggests big leaf maples are cut 1/3 per year over a 3-year period. • Required indemnity agreement for tree professionals not found in other trades (e.g.; excavators and other construction professionals) and is overreaching.	• Comment noted. • Big leaf maples are allowed to be coppiced, conifers are not. • Canopy removal is currently limited to 2,500 square feet without review. • Comment noted.
21	9/21/17	Ken DeWitt, Chair Terry Lande, Executive Director BI Metro Park and Recreation District	CAO – general	• Invasive species removal: Introducing an additional review by City may be a disincentive for volunteers. Should be an exempt activity similar to yard and garden maintenance. • Hazard trees: Removal/pruning should be allowed on park property without City review or approval. Responsibility should be delegated to Park District due to staff and mission statement. • Trails: Boardwalks should be allowed. • General: CAO requires numerous studies prior to decisions. Suggest a decision-making tree.	• Volunteers are allowed to remove invasive species without review up to 2,500 square feet. See response to comment 7, above. • The City's critical areas ordinance applies to all parcels and property owners. • Boardwalks may be allowed through review and approval of a critical areas permit. • See response to comment 9, above.

The following comments were provided in person at the October 3, 2017 public hearing. Additional detail and exact comments are available in the official minutes.					
22		J.D. Stahl	CARA	Stated that residential homeowners will exclusively bear burden of CARA regulations; asked what the science is behind it and suggested the Council consider less severe alternatives.	See response to comment 10, above. Staff is finalizing a review of best available science to support revisions to the CAO. (?)
23		Charlie Wenzlau	CARA	Shared a primary concern that the NPVA will affect affordability strategies including ADUs, conservation villages and tiny homes; CAO regulations should not preclude affordable housing.	See response to comment 12, above.
24		Lisa Neal	CARA	Stated lower income people need clean water and air, current regulations do not require analysis of water impact of development, water studies are uncertain and do not show that current drawdown is okay.	Comment noted.
25		Robert Dashiell	Trees and vegetation	Need for permit to manage trees for forest health/safety within a critical area is ridiculous and absurd.	BIMC 16.20.090.B allows for a number of tree and vegetation activities without City review or approval.
26		Jonathan Davis	NVPA	Stated there are alternatives to preservation of 65% native vegetation that can achieve desired results for aquifer protection (recharge/dispersion).	See response to comment 18, above.
27		Piper Thornberg	CAO – general	Encouraged Council to extend public comment, stated professional services required will add significant financial cost to local development (vs. off-site developers), hazard tree management regulations need to reflect effects of storm events.	Public hearing extended to November 14, 2017 and the written comment period to November 20, 2017; two additional Council meetings held (October 17 and 24, 2017). Hazard tree regulations allow for work to be done if immediate threat is present (e.g., after a storm). See also response to comment 12, above.
28		Julie Smith	NVPA CAO – general	Supports NVPA and CAO as good first step to forest/native vegetation protection	Comment noted.
29		Michael Pollack	NPVA Mitigation requirements	Stated native soils are as important as native vegetation; 65% rule is good, there is good science to support it but applies on watershed scale.	Comments noted.

				Difficult to require mitigation for recharge or carbon; provide protection in perpetuity of native vegetation if you remove trees.	
30		Patty Dusbabek	CAO – general	Sees consequences of overdevelopment, current development is irresponsible	Comment noted.
31		Erica Shriner	CARA	Applauds more stringent regulations for trees/water protection.	Comment noted.
32		Mike Juneau	Trees and vegetation	- Clarify 10/25% pruning applies to an individual tree - Extend work season for pruning-only activities January – March - Increase invasive species removal threshold with no review to 5,000 sf - Revise species allowed to be coppiced to strongly regenerative species; remove alder - Differentiate minor vs. major offense since \$2500 fine is significant	- Clarified. - See response to comment 7, above.
33		Robert Long	CAO – general	Recommends that solutions/regulations should address more than one system (e.g., wildlife and water)	Comment noted.
Additional written comments received after the October 3, 2017 public hearing					
34	10/18/17	Olaf Ribeiro	Trees and vegetation	- Thinks the tree committee has come up with a workable tree ordinance. - Would like to see better guidance on pruning in critical areas. Poor pruning will eventually result in the loss of the tree – defeating the purpose of tree retention in a critical area. - The Tree committee needs to consult with an independent arborist rather than a tree removal arborist on tree structure and mechanics. - Would like to see better enforcement of landscaping and mitigation requirements so fewer newly planted trees die.	- Comment noted. - The City may develop pruning guidelines for home owners and tree service providers outside of the municipal code. See response to comment 9, above. - Tree Committee meetings are open to the public. Citizens, arborists and tree professionals are invited and encouraged to provide input. - Comment noted.
35	10/20/17	Mike Juneau	Trees and vegetation	Please see attached comments.	Staff has not reviewed these comments but can address at October 24, 2017 Council meeting, as needed.

36	10/20/17	Kellie Eickmeyer	CAO – CARA	Disagrees with NVPA requirement and states that this ordinance does nothing but limit personal freedom to develop and utilize private property.	The commenter's property currently has less than 65% native vegetation; therefore, the NVPA requirement on this property would be less than 65% (the area of existing native vegetation). The property is not subdividable. Any additional development/expansion of existing structures would likely not be limited by the NVPA, if required, since a large portion of the property is currently non-native vegetation (lawn and hard surfaces) that is not required to be retained.
37	10/20/17	Robert Dashiell	CAO – stream crossings	States that the requirement for bridges or bottomless culverts over fish-bearing streams is a very expensive regulation.	BIMC 16.20.110.F.1.a allows alternatives: Bridges or bottomless culverts shall be required for all Type F streams. <u>Other alternatives may be allowed upon</u> (i) submittal of a Habitat Management Plan which demonstrates that other alternatives would not result in significant impacts to the fish and wildlife conservation area and (ii) as determined through the Hydraulic Project Approval (HPA) process administered by the Washington Department of Fish and Wildlife. The plan must demonstrate that fish habitat will not be reduced in area or function.
The following comments were provided in person at the November 14, 2017 public hearing. Additional detail and exact comments are available in the official minutes.					
38		Lee Cross Bainbridge Island Park District Commissioner	Park and trail development	• Supports natural resource protection and stewardship • Park District has a responsibility to allow for public access and use • Expressed concern for expense and complexity of development as a result of additional report requirements and development standards proposed in update • Requested that Park District properties be treated differently	• The draft CAO does not require additional studies and reports for park and trail development in wetlands, fish and wildlife habitat conservation areas or geologically hazardous areas. If the proposed park or trail development triggers the NVPA requirement, a Site Assessment Review (SAR) is required. The SAR is a requirement under current stormwater regulations. The NVPA is simply designated as part of the SAR process already required by current stormwater regulations, it is not an additional report. • The City has a statutory responsibility (RCW 36.70A) to designate and protect critical areas. The current draft CAO treats public parks differently in BIMC 16.20.100.E by providing a

					lower NVPA requirement for public parks (50% vs. 65% for private development). To date, the Planning Commission and City Council have not directed staff to include other differentiations in the regulations for Park District properties.
39		Mike Juneau	Trees and vegetation	Requested that invasive species removal not trigger NVPA designation requirement	Commenter made this same request to the Tree Committee. The Committee agreed that just the removal of invasive species should not trigger the NVPA designation requirement. Staff can provide revised regulatory language to address this.
40		Dave Shorett	Trail development	- Noted that trails are very popular with island residents and there is a need/request from residents for more trails - Supports intent of CAO and most trail development standards (e.g., width, surface requirements) - Expressed concern that CAO requirements will stop trail development and/or make trails too expensive to build - SAR requirement for linear features, i.e., trails, doesn't make sense	- See comment 38, above. - Council may want to consider whether or not trail development should trigger the NVPA requirement. The SAR is a requirement under current stormwater regulations. Any exemption of trails from current stormwater regulations would require revisions to BIMC 15.19 and/or BIMC 15.20.
41		Jonathon Davis	CAO – CARA	- Requests greater flexibility in requirement for NVPA, including a way to reduce the 65% NVPA requirement if a site can demonstrate no net loss of aquifer recharge - Stated that if all lots on undeveloped properties were cleared, the island would still have 65% tree cover as rationale for flexibility - Acknowledged the flexibility provided for small lots through 12,500 sf development area allowance	- The 65% NVPA requirement has flexibility, including reductions for public parks and schools, ability to achieve a 12,500 sf development area, specific allowed uses within the NVPA and opportunity to submit a NVPA stewardship plan to consider additional uses. - Other alternatives to the 65% NVPA may not maintain natural contours, soil profile and vegetation of a site and may not maintain its natural hydrologic function, including groundwater recharge.
41		Frank Stowell Bainbridge Parks Foundation	Park and trail development	- Requests the Council consider a balance between regulatory requirements and trail development - Expressed concern over permit process and cost of report requirements	See comments 18, 38 and 40, above.

				Requested that trails be exempt from permit process, but that built features (e.g., bridges and boardwalks) require permitting	
42		Patty Dusbabek	Open space	Stated City Council should leave alone open spaces, including Farmers' Market space and M&E tree farm	Comment noted.
43		Corey Christopherson	CAO – CARA	- Noted that the 65% figure for native vegetation retention is watershed-based - Suggested the City assess how much land is already set aside through other means, e.g., other critical areas, parks, opens space, and then determine how much more land is needed to set aside for aquifer recharge protection - Expressed concern that the CAO represents crushing costs for small builders - Pointed out that EWs of concern are from wells supplying municipal water where the NVPA would not apply - Overly restrictive rules towards existing development, particularly if applied to NVPA - Activity requiring a Hydrogeological Site Assessment is too broad (e.g., housing developments, septic systems, sewer lines, abandoned wells, roads, irrigated and non-irrigated crops, and grassland); report requirements too onerous - Prohibited uses are too vague, activities that would significantly reduce the recharge to aquifer are not defined - Variation of the NVPA is too vague; e.g., the city may require a professional forester, ISA-certified arborist or landscape architect to determine the location and configuration of the NVPA and a lower threshold (than 65%) may be allowed	- The 65% figure is stated as an on-site native vegetation coverage objective in the LID Technical Guidance Manual for Puget Sound (see page 74). - Comment noted. - See comment 38, above. - The NVPA would apply to the area under which aquifers with EWs recommended for monitoring are located. - Redevelopment may trigger the requirement for designation of an NVPA; however, existing structures should not be included in the NVPA at the time of designation unless such structures are permitted in the NVPA. Staff can clarify applicability of existing development section to NVPA if necessary. - Staff recommends clarifying when hydrogeologic site assessment is required and simplifying report requirements, including tying to already-required permits for pollutant-generating activities (e.g.; NPDES industrial permit). - Staff recommends development of policy guidance and outreach materials to define/provide examples of achieving no net loss of infiltration/recharge. See response to comment 9, above. - Staff can clarify when a professional would be required for NVPA designation and when reduction of 65% would be allowed.
Additional written comments received up until the close of public comment period on November 20, 2017.					

44	11/6/17	Katy Bigelow Arborist	Trees and vegetation	• Commenter suggests clarifications are needed: • Are replanting plans required? • How enforcement be handled? • Wet season (Oct. – April) work restrictions • Very clear and accessible information re: critical areas information on City website	• BIMC 16.20.090 includes several sections that state replanting plans are required or may be required. • Enforcement is addressed in BIMC 16.20.170. • Wet season restrictions are intended to avoid adverse risks to slope stability and adverse impacts due to erosion and sedimentation. • Staff anticipates developing public education and outreach materials to summarize and explain major topics prior to the effective date of the ordinance and hosting one or more workshops for tree and vegetation service providers. Additionally, the City's website is undergoing an update and refresh, which should improve access to information. See response to comment 9, above.
45	11/6/17	Brian Stahl Kitsap Conservation District	Agriculture	• Exemption for ongoing agriculture requires fencing or farm plan – District does not want to write farm plans for every farm and fencing may not prevent pollution • Suggests revising exemption for ongoing agriculture to reference BIMC 15.20.010.B, "Minimize water quality degradation and sedimentation in streams, ponds, lakes, wetlands and other water bodies."	• Staff acknowledges that the exemption as written may create a burden for conservation district staff and would be difficult to enforce for City staff; i.e., there is no system in place to check that ongoing agriculture has either a farm plan or fencing, if needed. Additionally, "other best management practices" may be difficult to interpret. • While suggested language is policy (not regulation) from the stormwater code, staff could revise general exemption language to state that ongoing agriculture is only exempt if it meets the stormwater regulations (i.e., cannot pollute surface waters) and delete specific development standards from wetland and FWHCA sections to reduce redundancy and slight inconsistency. • Draft CAO, general exemptions (for reference): Existing and ongoing agricultural activities. For the purpose of this chapter, "existing and ongoing" means the activity has been conducted and/or maintained within the past

					five years under a farm management plan or other best management practices not resulting in a net loss of critical area functions and values. • Draft CAO, wetland and FWHCA development standards (for reference): 1. Agricultural restrictions. New agricultural activities and new structures accessory to agriculture use are prohibited in wetlands and their buffers. Existing, ongoing agricultural activities shall utilize best management practices so as not to result in a net loss of the functions or values of wetlands. Existing, ongoing agriculture uses other than those occurring in grazed wet meadows shall avoid impacts to wetlands by either: a. Implementation of a farm resource conservation and management plan agreed upon by the Kitsap Conservation District and agriculture operator to protect and enhance water quality; or b. Installation of fencing no closer to the wetland than the outer edge of its required buffer.
46	11/12/17	Sally Adams	Trees and vegetation	• States support of the draft ordinance • Suggests clarification for the period and area of removal for coppicing and pollarding and invasive species removal (area should depend on site-specific conditions) • Correct internal numbering BIMC 16.20.180 • Suggests revising CARA definition to include NVPA	• Comment noted. • Staff requests Council direction as to whether clarification is needed for coppicing and pollarding • Internal numbering will be corrected in final ordinance. • Commenter's suggested language for CARA definition is: "Critical aquifer recharge area" means areas with a critical recharging affect on aquifers used for potable water, including ["NVPA areas and"] areas where an aquifer that

					is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge. • CARA definition is taken from WAC 365-190-030. The NVPA is a development regulation for CARAs, not a CARA itself.
47	11/13/17	Sally Adams	Trees and vegetation	• Limiting invasive species removal in NVPA overly restrictive • Recommends including integrated pest management procedures • Recommends specific provisions for forest understory • Suggests adding a whereas statement to the ordinance stating that island residents are good stewards of their land • Recommends not rushing process	• Removal of invasive species could be added to BIMC 16.20.090.E.2.e as an allowed use within the NVPA. • Pesticides, fertilizers and herbicides may be used in FWHCAs, wetlands, and their buffers only if approved by the U.S. Environmental Protection Agency (EPA) and approved under a Washington Department of Ecology Water Quality Modification Permit for use in fish and wildlife conservation area environments and applied by a licensed applicator in accordance with the safe application practices on the label. • Council may consider adding a whereas statement. • The draft CAO has been under consideration by Council since August 2017, and was reviewed by Planning Commission for three months.
48	11/13/17	Sue Braff	CAO – general	• States support for ordinance to protect aquifer recharge and trees	Comment noted.
49	11/13/17	Deb Rudnick	NVPA	• The ordinance is pigeonholing the purpose of maintaining native vegetation for aquifer recharge, which does not make sense • It is misleading to imply that we will somehow magically maximize aquifer recharge with 65% native vegetation • Trees, particularly mature conifers, are not necessarily the ideal vegetation for maximizing aquifer recharge because of evapotranspiration • The City would be better served to base its objectives for retaining native vegetation on a broader suite of functions	• Retention of native vegetation and natural contours is a primary objective for maintaining natural hydrology of a site. • The ordinance does not state that aquifer recharge will be maximized by a 65% NVPA. The development regulation is intended to maintain the natural hydrology of a site to the greatest extent. The 65% number is from the state stormwater manual and LID technical manual as well as a number of studies (see BAS review). • The City recognizes the broad suite of benefits of the NVPA. • Comment noted.

				• The City should consider additional flexibility or clarity on what is allowed in NVPA • The NVPA requirement would optimize development, and clearing, of lots comprised of invasive species • The City should consider protections in the designated centers • Schematics explaining the NVPA would be helpful • See embedded comments	• Designated centers are regulated by the existing stormwater code, which requires use of low impact development practices, and landscaping regulations (which are currently under revision). • Comment noted. See response to comment 9, above. • Clarifications suggested in embedded comments can be made by staff.
50	11/14/17	Julie Michael Smith	NVPA	• Supports NVPA as proposed, particularly for single family lots	Comment noted.
51	11/14/17	Jenny Kowalski	NVPA	• Commenter voices enthusiastic support for ordinance	Comment noted.
52	11/14/17	Rolf Hogger	CAO – general	• Commenter objects to the reclassification of our island's privately-owned land and the onerous restrictions being imposed on owners' property rights	• The draft CAO does not include any reclassification of privately-owned land.
53	11/14/17	Robert Dashiell	Type F stream crossings	• Objects to requirement for bridges or bottomless culverts for Type F stream crossings due to excessive financial cost • Requirement should be limited to only known anadromous fish streams	• See comment 37, above. • Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) management recommendations for riparian habitat are developed to meet the goal of maintaining or enhancing the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels. Riparian buffer width recommendations range from 150-250 feet. Input from a WDFW area habitat biologist provides that WDFW assumes resident cutthroat trout (an anadromous species) presence in most perennial streams and some seasonal streams, although the agency doesn't necessarily have survey data supporting the assumption. WDFW's PHS Section Manager and Land Use Policy Lead provided input that the larger buffer provides a lower risk approach to ensuring no net loss of

					riparian ecosystem function and recommends providing no net loss of all ecosystem functions within the riparian area out to SPTH ₂₀₀ (site potential tree height = 200 feet). WDFW indicated that the SPTH ₂₀₀ will be part of its forthcoming PHS riparian recommendations. The Wild Fish Conservancy also supported the proposed 200-foot buffer width.
54	11/14/17	Andrew Lister	CAO – general	• CAO is extreme overreach and risks bankrupting the City • Urges Council to proceed in the basis of sound science and rigorous logic	Comment noted.
55	11/14/17	Robert Dashiell	CARA	• The CARA is not based on best available science	A best available science summary is provided in the 12/12 City Council agenda packet.
56	11/19/17	Russell Berg	NVPA	• Does not want more regulation or the City to tell him how to landscape his property • States there is no difference between ornamental plants, turf, or garden areas and native plants	• Comment noted. • Science related to wetlands and FWHCA suggests that native vegetation serves a broader suite of ecological functions than non-native vegetation and recharge rates vary depending on soil type and landcover (e.g., plant type).
57	11/17/17	Brittany Gordon Washington Department of Fish and Wildlife	Type F Stream	• Recommends deleting “If fish usage has not been determined” language from Type F Stream definition since it refers to electrofishing protocol that WDFW and Tribes have consistently expressed concerns with using, especially outside of forest practices	• Staff can make this change if agreeable to Council. WDFW is the state regulatory agency for streams. The Suquamish Tribe had a similar comment. • Type F stream definition (for reference) -- “Type F Stream” means a stream that has fish habitat. <u>If fish usage has not been determined</u>, water having the following characteristics are presumed to have fish use: Stream segments having a defined channel of 2 feet or greater within the bankfull and having a gradient greater than 16 percent and less than or equal to 20 percent, and having greater than 50 acres in contributing basin size based on hydrographic boundaries. Determination of fish usage shall use the methodology found in Washington Department of Natural Resource’s Forest Practice Board Manual, Section 13,

					including the use of the default physical criteria upstream of manmade barriers to fish passage.
58	11/20/17	Alison O'Sullivan The Suquamish Tribe	CAO – general	• Ordinance should emphasize native vegetation, not just vegetation, for its function and value • Tribe does not believe allowing expansion of existing structures within buffers can in every circumstance be supported by best available science • No tree or vegetation activities should be allowed without City review and approval • Suggests adding a number of plants to the invasive species list in BIMC 16.20.090 • Suggests minimum size requirements for tree replacement (2.5 dbh deciduous, 6 feet evergreen) • Requests that criteria is added requiring stream crossing designs to be coordinated with the Tribe and WDFW • Suggests clarification that stream buffers are increased to include streamside wetlands (BIMC 16.20.110.E.4) • Suggests new language for bridges or bottomless culverts requirement, "that pass all fish at all life stages" • Provides recommendations for trail siting and construction • Suggests clarification is needed for when bank stabilization is allowed • Recommends 50 foot minimum buffers for Category III and IV buffers • Recommends correction/clarification for replacement ratios for wetlands • Recommends revisions to definitions including, invasive/exotic species, native or equivalent vegetation, Type F stream	• Sections for both wetland and stream buffers state, "Buffers shall remain as undisturbed native vegetation areas for the purpose of protecting the integrity, function, and value of wetland resources." Tree and vegetation section has some differentiation between native, non-native and invasive species. • Expansion of existing structures will need to demonstrate no net loss of critical area functions and values since BIMC 16.20.050 states any expansion must comply with all other applicable sections of this Chapter. This requirement could be clarified/specified. • Some level of tree and vegetation can be allowed without a net loss of critical area functions and values. The thresholds set are for amounts of tree and vegetation removal under which no impact is anticipated. • The county and state noxious weed lists are already referenced; listing additional plants is redundant. Any plant on the noxious weed list could be removed from this list in BIMC 16.20.100.B.3 to simplify. • Industry professionals provided public comment that larger tree species are difficult to find and do not have the same success/survival rate as smaller stock. • Coordination with other agencies and the Tribe are included as permit conditions. Other agency and Tribal review is required prior to building permit issuance. • This language is included in the definition of "fish habitat." Type F streams are defined as streams with fish habitat. Bridges or bottomless culverts may be required for

					stream crossings over Type F streams. Proposed language is redundant. - Trail siting and construction requires a critical area permit and must achieve no net loss of critical area functions and values. - Staff can provide clarification for bank stabilization allowances. - Proposed wetland buffers have not changed and follow Ecology's guidance for CAO updates. - Staff can provide clarification for wetland replacement ratios per agency guidelines. - Type F stream definition can be revised per comment 57. Other definitions are adequate.
59	11/20/17	Brittany Gordon Washington Department of Fish and Wildlife	CAO – fish and wildlife conservation areas (FWHCA)	See embedded comments	Comments noted. Clarifications suggested in embedded comments can be made by staff.
60	11/20/17	Robert Dashiell	NVPA	- NVPA has no substantial nexus to critical aquifer recharge - NVPA has impacts for future farms and gardeners	- See best available science review. - Comment noted.
61	11/20/17	Robert Dashiell	Trees and vegetation	Remove 6-inch threshold for pruning without City review and approval	It is well established that vegetation plays an important role in the functions and values of critical areas (see references below). The scientific literature recommends avoiding disturbance to vegetation that would reduce the functions and values of critical areas and does not support a blanket exemption for vegetation removal. The intent of the "6 inch rule" (in addition to the percent canopy thresholds) is to allow landowners to perform limited vegetation management within critical areas without City review and approval. The Planning Commission recommended these thresholds after input from a certified arborist and geotechnical engineer. It was determined that pruning over these thresholds has the potential to result in adverse impacts to tree health and, subsequently, a net loss of critical areas functions

					and values. Requiring review of pruning activities over these thresholds will allow the City the opportunity to ensure the use of mitigation sequencing (avoid, minimize, etc.) as well as assess the potential adverse impacts to tree health and potential for cumulative impacts over time.
62	11/20/17	Robert Dashiell	Type F streams	- Strongly opposes increase in buffer widths - Should differentiate between streams that have anadromous fish and other fish	- Comment noted. - See comment 53, above.
63	11/20/17	Frank Stone	CAO – general	- States opposition to ordinance - States blanket approach adding all low density property is arbitrary, unneeded and an unreasonable and significant burden on those property owners - The pruning and tree removal restrictions are excessive and expensive due to need for professional	Comments noted.
64	11/19/17	Richard Lasser	Trees and vegetation	Suggests revised language to BIMC 16.20.090.A.1.d: “Pruning operations do not remove greater than 25 percent of live canopy, within any three-year period, and require a certified arborist on site” to remove ambiguity	Suggested revised language: “A. <u>The following tree and vegetation activities do not require review or approval:</u> - Pruning of trees and shrubs provided: - No live branch or stem or portion of live branch or stem greater than 6 inches in diameter is removed; - Pruning activities conform to applicable practices of ANSI A300 (Part 1 – 2017) Tree, Shrub and Other Woody Plant Management – Standard Practices (Pruning), as amended. - Trees and shrubs are not located in or overhanging a Type F stream; - Pruning operations <u>that</u> do not remove greater than 10 percent of live canopy within any three-year period; <u>Pruning operations conducted with a certified arborist on site that remove from 10% to 25% of the live canopy within a three-year period;</u> and Existing language (for reference):

					B. The following tree and vegetation activities do not require city review or pre-approval: 1. General pruning of trees and shrubs provided: - Pruning operations of trees do not remove more than 10 percent of living material (branches, stems and leaves) of an individual tree within any three-year period; provided that up to 25 percent may be removed with an ISA-certified arborist on site; - No portion of a live branch or stem more than 6 inches in diameter is removed from any tree; - Pruning operations use the natural pruning system to maintain the characteristic growth pattern of trees and shrubs. - Pruning activities conform to applicable practices of ANSI A300 (Part 1 – 2017) Tree, Shrub and Other Woody Plant Management – Standard Practices (Pruning), as amended, or City of Bainbridge Island pruning standards (hyperlink);
65	11/20/17	Terry Samilson	Trees and vegetation	- Requiring a permit to remove over 2500 square feet of invasive species discourages landowners from removing noxious weeds on their property - Naturalized ornamental plants, privet and black locust, should be added to the list that would allow for their removal - The Type F stream buffer should remain at its current width of 150 feet - Critical area buffers will place severe limitations on the type of garden that may be designed for new projects - Limitation of tree coppicing to three year intervals is not a best management practice	- Clearing over 2500 square feet has the potential to result in adverse impacts to critical area functions and values. Both the Planning Commission and City Council agreed on these thresholds and discussed a number of reasons why the City would want review and approval. - Staff requests direction on the removal of these non-native species. - See comment 62, above. - Critical area buffers are not an appropriate location for new gardens. - The three year interval was recommended by certified arborists during the public comment period.

				- Proposed CAO will require landowners to contract with more professional consultants and apply for more permits - CAO should acknowledge fire risk	- No additional permits are required in the proposed CAO. - Fire risk was discussed during the Planning Commission review. Limited pruning and clearing allowances are intended to allow for fire safety vegetation activities, either with or without City review and approval.
66	11/20/17	Kris Rothert	NVPA	States he does not need a city native plant program to bolster his conservation efforts; asks Council to vote no on NVPA stewardship program	Comment noted.
67	11/20/17	Edward Moydell Executive Director Bloedel Reserve	Trees and vegetation Trails	- Expresses concern about Bloedel's ability to continue their work as it pertains to invasive species removal, tree pruning and removal and tree development - Supports special land designation for parks and public lands/cultural landscapes that exempts the organizations/agencies that manage these lands due to their mission and areas of expertise - Recommends exemption for Bloedel for invasive species removal over 2500 square feet and hazard tree removal - States boardwalks should be allowed - Recommends public lands/cultural landscapes should be included in the NVPA reduction allowed for public schools and public parks - Wants to exempt Bloedel's existing, man-made water features from the CAO - Wants to exempt Bloedel's trail building activities from the CAO with the exception of any bridges across streams and wetlands	See comment 38 and 40, above.
68	11/20/17	Barbara Trafton Executive Director Bainbridge Island Parks Foundation	Trails	- Urges City Council to assess how CAO will impact the process and outcome of implementing public trail vision plans - Object to heavy permitting processes that will be both expensive and time consuming	- See comment 9, 38, 40 and 44, above - Council may want to consider allowing public access within the Winslow Ravine.

				• All public trails should be exempt from the CAO. Only built elements should fall under the CAO. • Recommends providing a flow chart or decision tree for critical areas permitting • Prescriptive standards for Winslow Ravine would prohibit trail development in Waypoint Woods near the ferry terminal	
69	11/20/17	Kenneth DeWitt Chair, Board of Commissioners BIMPRD	CAO NVPA Trails	• NVPA requirement redundant as parks are already dedicated passive and/or wildlife preserves in natural parks • NVPA requirement would make it difficult, if not impossible to create additional active recreation facilities • Rules will make it costlier to build new accessible trails or upgrade existing trails to ADA standards • Commenter opines that the draft CAO violates the ADA • Public would receive no benefit from the NVPA at Sakai Park • New reporting requirements would significantly add to administrative overhead and reduce ability to provide programs and services • Difficult to meet NVPA requirements on easements granted by private land owners for public trails; could discourage granting of easements • The proposed CAO, if adopted, will prohibit the Park District from building new trails in areas where they are needed	• See comment 38 and 40, above. • Proposed rules do not violate the ADA. • The requirement to designated a NVPA does not apply to the Sakai Park property due to its zoning designation (R-8). • Staff recommends adding language addressing trail easements on private property in the NVPA section. • Nothing in the proposed CAO prohibits trail development.
70	11/20/17	Laurie Miller Managing Director Islandwood	CAO	• CAO will create unintended and undue burdens on organizations that are overwhelmingly supportive of and in compliance with the City's efforts to preserve the island's native vegetation and natural habitats • Recommend an exemption for these organizations	• See comment 38 and 40, above. • The variance process is intended to address special circumstances applicable to the subject property, including size, shape, or topography, when the strict application of regulations is found to <u>deprive the subject property of rights and privileges enjoyed by other properties in the vicinity</u>. Variances permit development

2017/18 CRITICAL AREAS ORDINANCE UPDATE

Public Comments Received**

** Comments received during City Council review between August 2, 2017 – present.

				• Recommend rewarding exemplary behavior and avoid creating obstacles to using “best practices” that meet or exceed CAO outcomes • Recommend lowering NVPA requirement to 50 percent for Islandwood • Questions the removal of the variance option	within critical areas that is <u>similar to nearby properties</u> . Greater protection of critical areas and their buffers is achieved through the reasonable use exception process which allows reasonable use of a property, not similar use of a property.
71	11/20/17	Dennis D. Reynolds Law Office on behalf of the Kitsap County Association of Realtors	CARA/NVPA	• Commenter states CARA designation analysis not completed by City • Commenter presents a legal analysis summarizing inconsistency with a number of statutes related to the GMA, substantive due process and takings	• The designation analysis was completed by staff and presented to the Planning Commission on May 25, 2017. See best available science review for summary. • The City Attorney’s office provided the City Council with a legal review of the proposed CAO based on the Office of the Attorney General’s guidance, <i>Advisory Memorandum and Recommended Process for Evaluating Proposed Regulatory or Administrative, Actions to Avoid Unconstitutional Takings of Private Property</i>.
72	11/20/17	Andrew Maron	Trees and vegetation/trails/NVPA	• Tree cutting (removal) should be allowed for sunshine/sun exposure. Number of trees allowed to be removed should be based on lot size. • Public trails should be exempt from the CAO except for bridges and boardwalks • Commenter provides several suggestions regarding the NVPA: ○ Delete entirely ○ Apply only to new development or exempt ADUs due to their potential to provide affordable housing ○ Allow tree cutting ○ Clarify that trails are allowed ○ Exempt park district, schools, Islandwood, Bloedel Reserve	• Tree removal for sunshine/sun exposure may be allowed through city review and pre-approval of a critical area permit. • See comment 38 and 40, above. • Use of ADUs for affordable housing is not well established. City permit data indicate there are approximately 200 legally established ADUs. Recent survey data indicate fewer than half of these are used for long-term rental (vs. short-term/vacation rental). Council may want to consider revisiting the NVPA requirement for ADUs based on future recommendations from the Affordable Housing Task Force. • Tree cutting and trails are allowed within the NVPA.
The following written comments were received in advance of the January 9, 2018 public hearing. In-person public comment received at the public hearing is not included.					
73	11/21/17	Terry Olson	CARA/NVPA	• Objects to “long arm of government,” more governmental regulation and intrusion	• Comments noted.

				• States NVPA intrudes on private property rights, increases costs and violates foundational principles of freedom • States no science to support regulation and no proof that status quo is not adequate	
74	1/3/18 1/9/18	Russel Berg	CARA/NVPA	• NVPA is devaluing, unconstitutional • States 50-65% of a property will have to be replanted with native plants • States Aspect's 2015 report found there is plenty of water • NVPA is a disturbing overreach of private property rights • States adamant opposition to CAO update • States BAS review is one-sided and does not provide data on non-native plant recharge rates • Questions cost for consultants as a result of CAO	• The NVPA requirement does not lower the development potential of a property. Properties will retain their existing allowable density as determined by the size of the property. • The Island's groundwater levels, recharge rates, and carrying capacity have been modeled through a variety of efforts. While not necessarily indicative of aquifer-wide trends, the results warrant consideration of approaches to maintain the overall sustainability of the system given the uncertainties inherent in modeling, future consumption, and/or conservation and climate change impacts. Aspect's work was reviewed and discussed during several community conversations during the Comprehensive Plan update, which resulted in a guiding principal (#2) and several goals and policies related to water resources, including creation of development regulations that ensure a sustainable water supply over time. • As provided in the BAS review, in residential areas, groundwater recharge may be altered by grading and subsequent importing of fine grained soil. A part of the permeable soils is removed, the remaining soils are graded and compacted, reducing the effective infiltration rate, and fine-grained top soil is applied. Together, these act to limit the potential recharge rates (Vaccaro 1998). Retaining mature native vegetation and soil protection areas is a primary objective of site planning to maintain the natural hydrological function of the site and watershed.

					• If a project meets the thresholds -- or “triggers” -- for when a NVPA is required, a site assessment review (SAR) is also required because the thresholds are the same. The NVPA does not create a new permit requirement because the NVPA is simply shown on the existing conditions site plan required as part of the SAR application. While the NVPA is a new requirement, it does not require additional studies or consultant costs unless the NVPA area is less than 65 percent of the total site area or the proposed NVPA does not meet the specified design standards.
75	1/5/18	Robert Fraik	CARA/NVPA	• Commenter uncertain about the real purpose of the CAO and associated NVPA • States the CAO unevenly devalues undeveloped land while giving existing development a pass • NVPA policies were created with zero input from professional foresters • States the City Council continues to overlook the serious impacts of poor forest management and wildfire risks • States the final draft of the CAO was not available to the public until 12/29/17 • Suggests the CAO/NVPA is a lopsided, unjustified land grab, a thinly veiled attempt to game zoning and the GMA	• Comment noted. • The NVPA requirement applies to new development and redevelopment/existing development if the thresholds are met (800 square feet of hard surfaces or 7,000 square feet of land disturbing activity). • The NVPA requirement is a requirement to retain existing native vegetation, not manage forests. There is ample BAS to support retention of native vegetation, including forests, without a need to manage it. The primary function for which the native vegetation is being retained – aquifer recharge – is not a topic on which a professional forester’s input is needed. A professional forester may be needed to determine which portion of a property is most suited to be designated the NVPA or to provide input on the ongoing maintenance or management of the NVPA. • Comment noted. The CAO does not prohibit forest management for wildfire protection or risk reduction. • The CAO update process started in April 2017 at the Planning Commission. A draft was presented to the City Council in August 2017. Subsequent drafts of the CAO were available to the public in

					City Council agenda packets and the CAO project page on the City's website. The NVPA requirement was added to the CAO in the draft presented at the September 19, 2017 City Council meeting. Seven additional City Council meetings were held on the draft CAO between October – December 2017, including two public hearings in October and November, 2017. The NVPA is not a land grab. The NVPA requirement does not lower the development potential of a property. Properties will retain their existing allowable density as determined by the size of the property. Implementation of the NVPA, or CAO as a whole, will not preclude the City from meeting its Growth Management Act (GMA) requirement to accommodate future population growth. The NVPA requirement, and the CAO as a whole, fulfills the GMA mandate to designated and protect critical areas.
76	1/5/18	Karen Dacek	CARA/NVPA	- Commenter is vehemently opposed to the proposed ordinance as written - States the proposed ordinance directly attacks private citizens who are good stewards of undeveloped land - Suggests proposed ordinance is not supported by Aspect Consulting's presentation re: current and future island water supply - States exempting existing development to address an island-wide problem is uneven and self-dealing - Asks if professional foresters or BIFD's recommendations were considered	- Comments noted. See 74 and 75, above. - BIFD provided a copy of the 2015 Wildland-Urban Interface Code to City staff in May, 2017 with no specific recommendations for incorporating into the draft CAO. City staff provided the draft CAO to directly to BIFD in early December, 2017. BIFD did not provide any formal input until January 9, 2018. City staff subsequently met with BIFD staff and anticipates additional input and recommendations to be provided by BIFD for Council consideration.
77	1/5/18	Brian and Barbara Wilkinson	CARA/NVPA	- Commenter states taking away use of 65% of private land while maintaining 100% taxation devalues land and does not seem just - States wildland fire behavior is being ignored and landowners are being prohibited from managing and maintaining their land	Comments noted. See 75 and 76, above.

				• Urges Council to consider BIFD Community Wildfire Protection Plan • Commenter expresses concern that the actual intent of CAO is to stop development and impede growth • States the City is not qualified to manage forests • Expresses doubt allowed uses would function properly within NVPA • Expresses concern that the public is unaware of CAO • States the Council and City are punishing private landowners and rewarding large, off-island developers	
78	1/8/18 1/9/18	Herb Hethcote	CARA/NVPA	• Commenter expresses support for the CAO and references BAS document and the City's Comprehensive Plan Guiding Principal #2 re: managing water resources • Suggests Council might consider phasing in the revised CAO over several years (NVPA requirement)	• Comments noted.
79	1/8/18	Chris and Lisa Neal	CAO/CARA	• Commenter expresses support for the CAO • States that we are pulling more water from available sources than is being recharged and that previous reports state it is not clear whether we are not overusing water resources • Commenter expresses concern that the City Manager's Report frames the COA only in terms of who it will "impact" (in a negative way) and fails to note that the purpose of the COA is to maintain our water supply which will benefit all citizens on the island; suggests City Manager refrain from commentary regarding policy • Commenter finds it disturbing that the process on the CAO has been dragged out with large gaps between discussions	• Comments noted.

80	1/8/18	Joyce and Alan Rudolph	CAO	• Commenter expresses support for the CAO and states it is very important to the health of our island and our water supply	• Comment noted.
81	1/8/18	Pete and Aleta Saloutos	CAO/NVPA	• Commenters express enthusiastic support for the NVPA provision in the CAO stating it is imperative to adequately protect and preserve our aquifers • Urge Council to be both innovative and courageous in supporting the long-term welfare of island residents	• Comments noted.
82	1/8/18	Julie and Michael Smith	CAO/NVPA	• Commenters express support for the NVPA requirement as scientists, homeowners and island citizens • State the NVPA requirement is a sensible, balanced approach that permits reasonable development while protecting our groundwater and other natural resources	• Comments noted.
83	1/8/18	Scott Stickland and Carolyn Gangmark	CAO/NVPA	• Commenters express support for the CAO, especially the NVPA requirement, stating they are important rules and decisions that need to be implemented to fulfill the intention of the Comprehensive Plan and will of the citizens of the island	• Comment noted.
84	1/8/18	Marshall Tappen	CAO	• Commenter expresses continued support for the CAO • States no uses, outside of farming, would be prevented and it has potential to encourage better development practices, like clustering	• Comment noted. • Creation of new farms would be prevented only if they required clearing more than 35% of a fully wooded property. The NVPA is intended to encourage site development that retains the natural topography, vegetation and soil of a site, such as cluster subdivisions.
85	1/8/18	Joseph Tschida and Joanne Onorato	CAO/NVPA	• Commenters express enthusiastic support for the NVPA provision in the CAO stating it is imperative to adequately protect and preserve our aquifers • Urge Council to be both innovative and courageous in supporting the long-term welfare of island residents	• Comments noted.

86	1/8/18	Gerald Weeks	CAO/NVPA	• Commenter registers support of the CAO, in particular, the NVPA requirement given the uncertainty on the amount of water and recharge rates	• Comment noted.
87	1/9/18 1/16/18	Wendie and Barry Von Feldt	CAO/NVPA	• Commenter expresses doubt there is a water shortage, a serious concern about potential wildfire hazard created by the NVPA requirement and the perspective that the CAO process was rushed with little or no public outreach	• See 74, 75, and 76, above.
88	1/9/18	Paul and Kathy Cooper	CAO/NVPA	• Commenters express enthusiastic support for the NVPA provision in the CAO stating it is imperative to adequately protect and preserve our aquifers • Urge Council to be both innovative and courageous in supporting the long-term welfare of island residents	• Comments noted.
89	1/9/18	John Croxford	FWHCA/NVPA	• Expresses concern that the new ordinance (Type F stream buffer and NVPA) will overly limit ability to add any improvements to lot, or repair current home and garage in the event of damage • Asks Council to seek a better balance between preservation of the environment and facilitating reasonable use of land by returning to 100 foot stream buffers and limiting land defined as CARA	• Comment noted.
90	1/9/18	Rick Hatten	NVPA	• Commenter expresses support of the CAO, specifically the NVPA section, and finds the proposed levels of protection of native plants and trees to be an acceptable and necessary step toward protecting our aquifer(s) and the sustainability of our water resources	• Comment noted.
91	1/9/18	Mary Clare Kersten	NVPA	• Commenter urges Council to support the CAO, including the weighty decision to impose a NVPA requirement of 65%	• Comment noted.

92	1/9/18	Jane Lindley	CARA/NVPA	Agrees with the CARA classification and asks Council to please not reduce the area included as CARA or the NVPA requirement	Comment noted.
93	1/9/18	Leslie Marshall	NVPA	- Commenter supports approval of the NVPA requirement - Suggests Council might consider allowing a case-by-case variance for individual property owners who wish to build a home or ADU for family occupation with appropriate justification congruent with the intent of the NVPA	- Comment noted. - See 73, above. Recent discussions at the Affordable Housing Task Force meetings include the potential to increase the threshold for hard surfaces (e.g., rooftops) from 800 to 900 square feet to accommodate ADU construction. If this change is implemented, the threshold for the NVPA requirement would change as well, since it is the same.
94	1/9/18	Michele Molnaire	NVPA	Commenter does not agree with the requirement regarding native vegetation; states Bainbridge Island has no native plants	Comment noted.
95	1/9/18	Linda Novitski	NVPA	- Commenter expresses support for the NVPA requirement - States NVPA reflects what is known about the important ecosystem services of native vegetation to maintain water quality and quantity in aquifers and that it is important to protect the water supply now, not when it is gone	Comment noted.
96	1/9/18	Terry Samilson	FWHCA – stream buffers	Commenter states that BAS does not support 200-foot buffer width for Type F streams and asks that it remain at 150 feet; 200 foot number is intended for major streams	WDFW's 1997 PHS recommendations for riparian habitat provide a range of recommended riparian habitat area (buffer) widths for a range of ecosystem functions. Management recommendations for riparian habitat were developed to meet the goal of maintaining or enhancing the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels. WDFW PHS recommendations state approximately 85% of Washington's terrestrial vertebrate species use riparian habitat for essential life activities and the density of wildlife in riparian areas is comparatively high. As such,

					riparian habitat areas (buffers) are critical to both aquatic and terrestrial species, not just anadromous fish. WDFW is currently updating its PHS recommendations for riparian habitat which will include emphasis on the importance of ecosystem functions provided within the site potential tree height (SPTH) area of a 200 year old tree, regardless of the size of the stream. The recommendations include a methodology for determining the SPTH₂₀₀ based largely on soil type. Averages of the SPTH₂₀₀ have been calculated for Kitsap County. The lowest range is 91-100, the highest range is 231-240 and the area weighted mean is 194. (personal communication, Keith Folkerts, WDFW PHS Section Manager and Land Use Policy Lead, May 8, 2017 and January 25, 2018).
97	1/9/18	Hank Teran, Fire Chief	CAO	• Commenter states fire district was left out of the CAO update process • States the new regulations fail to mitigate potential risk to the public re: threat of wildfire • BIFD requests City Council to recognize wildfire as a potential threat that should be addressed in the CAO and direct staff to actively engage with BIFD staff to incorporate best practices in the Firewise program and International Wildland-Urban Interface Code	• See 76, above.
98	1/9/18	Jackie Wood	CAO/NVPA	• Commenter sends strong support for the draft CAO and NVPA requirement	• Comment noted.
99	1/9/18	Bainbridge Island Parks Foundation	CAO/Trail standards	• Suggest the following changes to language in standards for trail development: ○ state that trails “are allowed” instead of “may be allowed” if standards are met ○ add “applicant’s” in front of trail planning objectives ○ allow six-foot wide trails rather than five feet	• Staff recommends incorporating this revised language with the exception of softening the no net loss language.

				○ soften no net loss language to “not result in further” or “minimize” loss of functions	
100	1/9/18	Charles Schmid	NVPA/Trees and vegetation	• States there is a need for trees to provide aquifer recharge • States there is a need for trees to be covered better in the ordinance; at a minimum it should be made clear that “native vegetation” includes trees • Suggests parallel construction in BIMC 16.20.010 • Questions implementation of pollarding within NVPA	• Staff recommends adding 2500 square foot canopy removal threshold for pollarding. • Coppicing and pollarding restrictions intended to not set limits that would not affect health of tree, canopy or overall forest health.
101	1/13/18 1/14/18	Robert Dashiell	FWHCA – stream buffers	• Commenter states that BAS does not support 200-foot buffer width for Type F streams and asks that it remain at 150 feet; 200 foot number is intended for major salmon streams • Recommends Council set a 2018 goal to properly classify BI salmon (anadromous fish) streams	• See 14, 37 and 96, above. • Comment noted.
102	1/9/18	Deb Rudnick	Invasive species	• Commenter expresses concern about definition of invasive species used: first, that not all problematic invasive species are those that colonize disturbed systems are- many are, but some important ones are great invaders of intact forest communities (e.g., English ivy). Second, who “us” is, or why this is framed as species “seen by us as reducing values”. The term “previous plant community” is also very problematic because there is no framework or timeframe within which that term is being defined. • Commenter encourages City to consider using a more commonly accepted definition such as those outlined by USDA and other federal agencies, though it makes sense here to frame it more specifically in terms of plant species.	• Staff recommends using USDA’s National Invasive Species Information Center (NISIC) definition for invasive species: 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

The City of Bainbridge Island is in the process of updating its Critical Areas Ordinance (CAO) in accordance with the Growth Management Act (GMA). The GMA requires local jurisdictions to review and consider best available science (BAS) in the development of critical areas policies and regulations. Staff reviewed the City's current CAO for consistency with current scientific literature and applicable regulatory agency guidance.

I. AQUIFER RECHARGE AREAS

Introduction and local importance of aquifer recharge areas

Critical areas provide a variety of valuable and beneficial biological and physical functions that benefit the City and its residents. Groundwater recharge is of particular concern for the City because of the Island's sole source aquifer designation, meaning drinking water is supplied solely by groundwater (EPA 2013). Additionally, groundwater is inextricably linked with other designated critical areas as a source of water to streams and wetlands, serving a critical function for fish and wildlife habitat, and as a key factor in flooding and geologic hazards (Ecology 2005).

Critical aquifer recharge areas are defined as "areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge" (Washington Administrative Code 365-190-030(3)). The functions and values of critical aquifer recharge areas are to provide the public with clean, safe, and available drinking water and to maintain sufficient groundwater to support instream flows, especially in streams used by anadromous fish.

The City's recently adopted Comprehensive Plan specifically addresses the importance of groundwater resources by adopting the following Guiding Principal (Guiding Principal #2):

Manage the water resources of the Island to protect, restore and maintain their ecological and hydrological functions and to ensure clean and sufficient groundwater for future generations.

The Water Resources Element of the Comprehensive Plan includes goals and several policy directives aimed at instituting an added level of development and redevelopment permit review to prevent or mitigate potential pollutant-generating activities or activities that could affect stormwater runoff and aquifer recharge associated with a proposed land use (COBI 2017).

The City's Comprehensive Plan also acknowledges the finite nature of the Island's natural resources and the unpredictable cumulative impacts of climate change in our region by including integration of the precautionary principle and mitigation sequencing to protect and preserve natural resources as a high priority implementing action. WAC 365-195-920 supports the use of the precautionary principal:

Where there is an absence of valid scientific information or incomplete scientific information relating to a county's or city's critical areas, leading to uncertainty about which development and land uses could lead to harm of critical areas or uncertainty about the risk to critical area function of permitting development, counties and cities should use the following approach:

(1) A "precautionary or a no risk approach," in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved; ...

Designation of critical aquifer recharge areas

Growth Management Act (chapter 36.70A RCW)

The Growth Management Act (GMA) requires local jurisdictions to designate critical areas (RCW 36.70A.170(1)(d)). The GMA also requires cities to adopt development regulations to protect designated critical areas. The goal of designating critical aquifer recharge areas is to protect the functions and values of a community's drinking water by preventing pollution and maintaining supply (CTED 2007). The GMA allows for differences in regional or local conditions and does not require a "one size fits all approach."

The state produced a handbook, *Critical Areas Assistance Handbook: Protecting Critical Areas Within the Framework of the Washington Growth Management Act* (CTED 2007), to help local jurisdictions design locally appropriate programs for designating and protecting critical areas. While every local jurisdiction is required by the GMA to designate and protect critical areas, the Handbook provides the following broad direction:

Each critical area performs different functions and each community assesses the values of the critical areas in their environment differently. Therefore, the purpose of protecting critical areas is unique for each community.

and

Each city or county must decide which approaches to critical areas protection are appropriate to apply locally, consistent with the requirements of the GMA and the community's future vision.

Washington Administrative Code (WAC)

WAC 365-190-100(2) states that the "quality and quantity of groundwater in an aquifer is inextricably linked to its recharge area." The WAC provides definitions and classification criteria for critical areas, including aquifer recharge areas. Several substantive amendments to the WAC applicable to critical aquifer recharge areas were made in 2010. These amendments (shown in underline text, below) focus largely on classification requirements and strategies and are relevant to classification of critical aquifer recharge areas on Bainbridge Island. As stated in WAC 365-190-100:

(3) Counties and cities must classify recharge areas for aquifers according to the aquifer vulnerability. Vulnerability is the combined effect of hydrogeological susceptibility to contamination and the contamination loading potential. High vulnerability is indicated by land uses that contribute directly or indirectly to contamination that may degrade ground water, and hydrogeologic conditions that facilitate degradation. Low vulnerability is indicated by land uses that do not contribute contaminants that will degrade ground water, and by hydrogeologic conditions that do not facilitate degradation. Hydrological conditions may include those induced by limited recharge of

an aquifer. Reduced aquifer recharge from effective impervious surfaces may result in higher concentrations of contaminants than would otherwise occur.

... (b) The following may be considered to evaluate vulnerability based on the contaminant loading potential:

- (i) General land use;
- (ii) Waste disposal sites;
- (iii) Agriculture activities;
- (iv) Well logs and water quality test results;
- (v) Proximity to marine shorelines; and
- (vi) Other information about the potential for contamination.

(4) A classification strategy for aquifer recharge areas should be to maintain the quality, and if needed, the quantity of the ground water, with particular attention to recharge areas of high susceptibility.

(a) In recharge areas that are highly vulnerable, studies should be initiated to determine if ground water contamination has occurred. Classification of these areas should include consideration of the degree to which the aquifer is used as a potable water source, feasibility of protective measures to preclude further degradation, availability of treatment measures to maintain potability, and availability of alternative potable water sources.

(b) Examples of areas with a critical recharging effect on aquifers used for potable water may include:

- (i) Recharge areas for sole source aquifers designated pursuant to the Federal Safe Drinking Water Act;
- (ii) Areas established for special protection pursuant to a ground water management program, chapters 90.44, 90.48, and 90.54 RCW, and chapters 173-100 and 173-200 WAC;
- (iii) Areas designated for wellhead protection pursuant to the Federal Safe Drinking Water Act;
- (iv) Areas near marine waters where aquifers may be subject to saltwater intrusion; and
- (v) Other areas meeting the definition of "areas with a critical recharging effect on aquifers used for potable water" in these guidelines.

(c) Some aquifers may also have critical recharging effects on streams, lakes, and wetlands that provide critical fish and wildlife habitat. Protecting adequate recharge of these aquifers may provide additional benefits in maintaining fish and wildlife habitat conservation areas.

The WAC provisions above direct the City to classify aquifer recharge areas according to vulnerability to contamination; proximity to marine shorelines; and related to hydrogeologic conditions that facilitate degradation, including reduced aquifer recharge from effective impervious surface, in order to maintain

the quality, and, if needed, the quantity of groundwater. Examples of areas with a critical recharging effect on aquifers used for potable water relevant to Bainbridge Island include: recharge areas for sole source aquifers, areas near marine waters, and aquifers with the potential to maintain instream flows for streams and wetlands that provide critical fish and wildlife habitat.

Critical Aquifer Recharge Area Guidance Document

The Washington State Department of Ecology's *Critical Aquifer Recharge Areas Guidance Document* is considered current best available science for designating critical aquifer recharge areas and recommends strategies for their protection. This guidance document helps local jurisdictions and the public understand what is required for the protection of local groundwater resources under the GMA. It includes guidance for planning, ordinances, and for including BAS as it relates to critical aquifer recharge areas.

The 2005 guidance document recommends eight steps to characterize where groundwater resources are important to the community (Steps 1-5) and how to protect them (Steps 6-8):

- Step One: Identify where groundwater resources are located.
- Step Two: Analyze the susceptibility of the natural setting where groundwater occurs.
- Step Three: Inventory existing potential sources of groundwater contamination.
- Step Four: Classify the relative vulnerability of groundwater to contamination events.
- Step Five: Designate areas that are most at risk to contamination events.
- Step Six: Protect by minimizing activities and conditions that pose contamination risks.
- Step Seven: Ensure that contamination prevention plans and best management practices are followed.
- Step Eight: Manage groundwater withdrawals and recharge.

Each of these steps was used to identify where “areas with critical recharging effect on potable aquifers” are located, analyze their physical characteristics, and to assess the risk for contamination using the following BAS documents (Apfelbeck 2017, Attachment A):

- Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington
- Hydrogeological Assessment of Groundwater Quantity, Quality, and Production
- Bainbridge Island Groundwater Model: Review Findings and Recommendations and Critical Aquifer Recharge Area Assessment
- Well Information Database (Kitsap Public Utility District)
- Washington's Source Water Protection Program (SWAP)
- Hydrogeologic Framework, Groundwater Movement, and Water Budget of the Kitsap Peninsula, West-Central Washington
- Department of Ecology Toxics Cleanup Program's List of Confirmed and Suspected Contaminated Sites (website-based data)
- Critical Aquifer Recharge Areas Guidance Document – Appendix A: U.S. EPA Potential Sources of Drinking Water Contamination Index
- Ground Water Numerical Model Initial Scenario Selection Report
- Support Document for Sole Source Aquifer Designation of the Bainbridge Island Aquifer System

- Bainbridge Island Groundwater Model: Aquifer System Carrying Capacity Assessment

The *Bainbridge Island Groundwater Model: Review Findings and Recommendations and Critical Aquifer Recharge Area Assessment* document noted above specifically concludes that “areas across much of the Bainbridge Island area may have a critical recharging effect on aquifers that are sources of drinking water” (Aspect 2015a). Other specific criteria to consider when designating critical aquifer recharge areas include the public water supply system wellhead protections areas, Environmental Protection Agency sole source aquifer designation, and Island-wide extent of water table aquifer (perched or semi-perched aquifer) without an overlying protective, impermeable layer resulting in a high susceptibility rating according to the Washington Department of Health.

The 2005 guidance document notes that BAS can be used upfront, during the planning process (e.g., adopting development standards) or at the time of application (e.g., during permit review through a hydrogeologic report).

Regional groundwater and aquifer recharge

The hydrologic system of our region evolved from, and is dependent on, the characteristics of undisturbed Pacific Northwest watersheds – including mature forest canopy and uncompacted soils – that intercept, store, and slowly release and infiltrate precipitation through complex pathways (PSP and WSU, 2005 and 2012). Recharge is water that is added to groundwater through one or more phases of the hydrologic cycle. In a natural, undeveloped setting, deep percolation of precipitation is the major source of recharge to the region’s aquifers. Annual precipitation percolates vertically through the ground beneath the root zones of plants and recharges the groundwater system at the water table. The amount of recharge varies as a function of precipitation rate, vegetation type, land use, land slope, soil type, and near-surface geology (Bidlake and Payne 2001, Frans, et al. 2011 and Welch, et al. 2014). Groundwater levels fluctuate over time, both seasonally and over longer time periods, due to changing rates of groundwater recharge and discharge (e.g., well withdrawals, stream flows).

The processes of groundwater movement are influenced by the hydrogeologic characteristics of the aquifer system in which they occur and other factors, such as the spatial distribution of precipitation and land cover (Frans et al. 2011). The controls on recharge include physical characteristics (topography, soil characteristics, land use and cover, surficial geology) and water budget components at or near the land surface (actual evapotranspiration (AET), surface and subsurface runoff, and precipitation) (Vaccaro, et al. 1998). Factors such as the permeability of surficial soils, the hydrogeologic units they formed on, and the hydrogeologic units and landcover characteristics affect recharge. Therefore, the relation between precipitation and recharge depends on soils and landcover characteristics (Welch et al. 2014, Bidlake and Payne 2001).

Deep percolation and recharge are difficult, if not impossible, to measure directly, resulting in an accepted degree of uncertainty in any recharge estimate (Frans, et al. 2011). That said, regional recharge rates and water budgets have been modeled and described over the last two decades, as summarized below, and used as the basis for these same efforts completed for the Island.

Vaccaro et al. (1998) estimated average annual recharge for the entire Puget Sound Lowland. Their approach involved summarizing several previous recharge investigations. They developed separate

equations to predict recharge rates for natural conditions for areas underlain by glacial till or fine-grained sediments and for areas underlain by coarse-grained alluvial deposits. To account for land use and landcover, recharge for urban-type areas (more than 90 percent of the surface covered by impermeable materials) were set to zero, recharge for built-up areas (about 95 percent of area covered) was reduced by 75 percent, and recharge for residential areas with large population densities (about 50 percent of area covered) was reduced by 50 percent (Vaccaro et al. 1998).

Bidlake and Payne (2001) developed a technique for estimating recharge to groundwater from precipitation in Kitsap County. The recharge estimates were used to develop predictive equations for annual recharge based on annual precipitation for five groups of soil and landcover types: (1) nonforest vegetation on soils formed in glacial outwash and other alluvium, (2) forest vegetation on soils formed in glacial outwash and other alluvium, (3) forest and nonforest vegetation on soils formed on glacial till or fine-grained sediments, (4) developed or urban lands, and (5) water and wetlands. Group (1) was found to have the highest recharge rate, with Group (5) estimated at zero. An important component of this investigation was a study of interception loss from an approximately 80-year-old stand of Douglas fir to develop a better understanding of evaporative losses from conifer foliage. The investigation revealed that interception losses from the stand accounted for approximately 20 percent of the precipitation that was measured near the stand. However, the study also includes a critical review of sources of uncertainties in the recharge estimates, including a lack of published information with which to verify that evapotranspiration estimates were accurate, and uncertainties caused by lumping many soil and land-cover types into five groups. The findings of this study are relevant to Bainbridge Island because the recharge estimates are used in future predictive modeling studies for Bainbridge Island and Kitsap County (Frans, et al. 2011 and Welch, et al. 2014).

Local groundwater and aquifer recharge

Groundwater is the sole source of drinking water on Bainbridge Island. In 2013, the Bainbridge Island Aquifer System was designated as a sole source aquifer (SSA) by the EPA. EPA defines a SSA as an aquifer or aquifer system which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, and for which there is no reasonably economical or feasible alternative source. Primary groundwater-related concerns for the Island are pumping rates above the aquifer system's safe yield (amount of water that can be removed from the aquifer without causing adverse effects) and the risk of seawater intrusion (migration of saltwater into the freshwater drinking supply) (COBI 2017a). Outside of the City's drinking water utility, the City's control over water use is quite limited since the right to use water and permitting and certifying wells are the purvey of other agencies (Washington State Department of Ecology and Kitsap Public Health District).

The quality and quantity of the Island's groundwater and aquifer system is rooted in the hydrologic cycle typical of the Puget Sound lowland forests described above. Our understanding of the Island's groundwater and aquifer recharge system is informed through historical studies (Kato and Warren, Inc., and Robinson and Noble, Inc. 2000; Vaccaro et al. 1998), United States Geological Society (USGS) modeling efforts (Bidlake and Payne 2001, Frans, et al. 2011 and Welch, et al. 2014), local modeling efforts and assessments (Aspect, 2015, 2015a and 2016), the Environmental Protection Agency (EPA) sole source aquifer support document (EPA 2013), and monitoring and assessments completed over the last decade by the City's Groundwater Management Program. This work includes the development,

calibration and utilization of groundwater models, the development of a well monitoring network and the implementation of long-term monitoring.

Precipitation is the primary source of almost all groundwater on the Island. Secondary recharge also occurs from septic-system returns (approximately 3 inches per year or less), and lateral inflow to the Island from the Kitsap Peninsula in the deep Fletcher Bay Aquifer contributes about another 5% (Frans, et.al. 2011).). Approximately 34-38 inches of rain falls annually, with the majority occurring in the winter months (EPA 2013).

Groundwater quantity

Given that the Island's population depends solely on groundwater for drinking water, as the population grows, the demand for groundwater increases. The quantity of usable groundwater is limited, largely because the Island is bounded by seawater and the potential for the water level declining and seawater intrusion increases as groundwater usage increases (Frans, et al. 2011).

The Island's groundwater levels, recharge rates, and carrying capacity have been modeled through a variety of efforts. These include United States Geological Survey reports for Bainbridge Island (Frans et al. 2011) and Kitsap County (Welch et al. 2014) and City-commissioned work completed by Aspect Consulting, LLC (Aspect 2015, 2015a and 2016). These documents describe the hydrogeology of the Bainbridge Island aquifer system, recharge rates, groundwater elevation, water budget and groundwater flow direction, and provide predictive models to estimate projected aquifer system responses to potential growth and land use modifications. In general, the model results show water level decreases across most of the aquifer system. While not necessarily indicative of aquifer-wide trends, the results warrant consideration of approaches to maintain the overall sustainability of the system given the uncertainties inherent in modeling, future consumption, and/or conservation and climate change impacts.

In addition to these modeling projects, the City monitors public and domestic wells in all six aquifers and assesses water level data against an early warning level, or EWL, for safe yield. Over the last 10 years, most water level trends were relatively steady or increasing. However, one well in the deep Fletcher Bay Aquifer appeared to exceed the safe yield EWL. This well was identified in previous assessments (Aspect, 2009 and 2015). KPUD, the current well owner, increased monitoring in this well and is in the process of building water level and production data sets to better discern local cause and effect and to design appropriate actions. Though no other wells exceeded the EWL, some individual wells showed slight to moderate water level declines over the last ten years. To determine if these are representative of a developing problem rather than natural variations in water levels over time, the City will conduct continued monitoring and assessment (COBI, 2017a).

Water quality

The Island's groundwater is vulnerable to contamination from a variety of sources, including seawater intrusion, hazardous wastes, and failing septic systems. The City's Groundwater Monitoring Program monitors chloride concentrations in aquifers and wells vulnerable to seawater intrusion. These data are assessed for exceedance of an EWL (either exceeds 100 mg/L or exhibits an increasing trend). Over the last ten-year assessment period, chloride concentrations in all wells were very low (usually less than 21

mg/L). One well in the Semi-Perched Aquifer demonstrated an increasing trend that exceeded the EWL, but the chloride concentrations were extremely low (<7 mg/L). Further, the trend was only observed in the wet season, so it is likely that onsite processes such as septic system influence, or runoff from materials stockpiles (such as de-icing salt) may be responsible rather than seawater intrusion. The City is conducting further investigation into this well and onsite processes.

In 2006, elevated chloride concentrations in exceedance of the EWL were measured in a small public supply well in the Sea Level Aquifer. A localized, focused study in this aquifer is currently underway to determine if there is a regional issue developing.

Though not in exceedance of the EWL, chloride concentration increases above background levels were reported for three Fletcher Bay Aquifer wells in 2013 and 2014 (Aspect, 2015). However, as part of data validation for the 2016 assessment, the City determined that these samples were erroneously collected after chlorine treatment, and the chlorine generators increased the chloride concentrations. This was confirmed by 2015 and 2016 sampling results which show chloride concentrations within historic, background levels for all three wells (COBI, 2017a).

The City's groundwater model (Frans et al. 2011 and Aspect 2016) was also run to examine the potential for seawater intrusion under different production scenarios and the results indicated no seawater intrusion. In general, groundwater quality on the Island is very good (EPA 2013, Aspect 2015).

Impacts of land use development on critical aquifer recharge areas

Before development, most of the Puget Sound lowland was covered by forests with highly permeable soils and a well-developed forest litter with a large water-retention capacity. The hydrologic system of our region evolved from, and is dependent on, the characteristics of undisturbed Pacific Northwest watersheds – including mature forest canopy and uncompacted soils -- and cannot be expected to have the same hydrologic regime when significant portions of a site are disturbed (PSP and WSU, 2002 and 2012).

Development has a profound effect on the hydrology of an area. People can cause the water table to lower both by removing groundwater from wells and by reducing the quantity of recharge, as happens where there is too much paved or impervious surface and groundwater cannot infiltrate where it formerly did (CTED 2007). Drainage patterns are irrevocably altered by land use development that result in changes in the natural hydrology, including:

- Increased volumetric flow rates of runoff;
- Increased volume of runoff;
- Decreased time for runoff to reach a natural receiving water;
- Reduced groundwater recharge;
- Increased frequency and duration of high stream flows and wetlands inundation during and after wet weather;
- Reduced stream flows and wetlands water levels during the dry season;
- Greater stream velocities (Ecology 2014).

In 2015, the City contracted with King County to conduct a stream flow and benthic macroinvertebrate (stream bug) health evaluation of several island streams (King County, 2015). Flow data analysis showed that these stream flows increase more quickly following rain events and generally have higher peaks than would be expected under forested conditions. Further, stream bug populations showed diminished diversity normally associated with increased flow “flashiness” and higher peaks, and organic pollution and fine sediment. These results were generally consistent with increasing levels of development upstream of each gauge and consistent with data collected in other Puget Sound watersheds.

The altered hydrologic regimes in urbanizing watersheds result in changes in the structure and function of watershed ecosystems. The transition from a native landscape to a built environment increases impervious surface area, with correspondent and significant effects on the hydrologic cycle by disrupting or eliminating native vegetation, upper soil layers, shallow depressions, and native drainage patterns (WSU and PSP, 2005 and 2012, Bonneau, et al. 2017, Booth, D.B., 1991, Booth, et al., 2002, Brabec, 2009, Stone, 2004, Matteo, 2006 Berland, 2017). In residential areas, groundwater recharge may be altered by grading and subsequent importing of fine grained soil. A part of the permeable soils is removed, the remaining soils are graded and compacted, reducing the effective infiltration rate, and fine-grained top soil is applied. Together, these act to limit the potential recharge rates (Vaccaro 1998).

Impervious surfaces convert precipitation to stormwater runoff, which causes water quality and quantity problems. Urban impacts to water quality and quantity have been a major focus of resource and ecosystem protection efforts for several decades, with research focusing on the impact of impervious surface thresholds (Brabec, 2002, May, et al., 1997, Booth and Reinelt, 1993, Booth and Jackson, 1997, Booth, et al., 2002). In the Pacific Northwest, “the fundamental hydrologic effect of urban development is the loss of water storage in the soil column. This may occur because the soil is compacted or stripped during the course of development, or because impervious surfaces convert what was once subsurface runoff to surface flow” (Booth et al., 2002). The displacement of forested areas by the impervious surfaces of land use development greatly intensifies stormwater runoff, with accompanying nonpoint source pollution, and diminishes groundwater recharge and summer baseflows in streams (PSP and WSU 2005 and 2012, Ecology, 2014, Stone, 2004, Matteo, 2006, Booth et al., 2002).

The Washington State Department of Ecology’s 2012 Stormwater Management Manual for Western Washington, as amended in 2014 (2014 stormwater manual), is intended to provide guidance for design of stormwater systems that reduce the impacts of development to water quality and hydrology. However, the manual itself explicitly states that its recommended approach is insufficient:

The engineered stormwater conveyance, treatment, and detention systems advocated by this and other stormwater manuals can reduce the impacts of development to water quality and hydrology. But they cannot replicate the natural hydrologic functions of the natural watershed that existed before development, nor can they remove sufficient pollutants to replicate the water quality of pre-development conditions. Ecology understands that despite the application of appropriate practices and technologies identified in this manual, some degradation of urban and suburban receiving waters will continue, and some beneficial uses will continue to be impaired or lost due to new development. This is because land development, as practiced today, is incompatible with the achievement of sustainable ecosystems. Unless development methods are

adopted that cause significantly less disruption of the hydrologic cycle, the cycle of new development followed by beneficial use impairments will continue.

Approaches to mitigate impacts of land use development on critical aquifer recharge areas

Low impact development stormwater management

In 2015, the City adopted by reference (see BMC 15.20.050.A & C) the 2014 stormwater manual and the 2012 Low Impact Development (LID) Technical Guidance Manual for Puget Sound (LID manual). Most site development is required to meet the City's stormwater regulations, which require the use of LID.

The primary purpose of on-site LID stormwater management techniques and practices is to reduce the disruption of the natural site hydrology. The LID manual states that a minimum 65 percent on-site native vegetation retention is the best means to maintain or more closely mimic the natural hydrologic function of the site and watershed. The 65 percent number is based on a series of studies done throughout the late 1990s to mid-2000s coupling empirical data with hydrological monitoring aimed at determining thresholds of impervious surface area (as a proxy for urban development) for maintaining watershed and stream health. Most of these studies were completed in the Puget Sound area, and this work became the foundation of both the 2002 and 2012 LID manuals. Subsequent research has shown this figure to be a "defensible target" to retain sufficient hydrologic conditions to prevent stream channel degradation, maintain base flows, and contribute to achieving properly functioning conditions for salmonids, as well as, reduce water quality problems of sediment, temperature, toxicants, and bacteria.

The highest priority LID practice is "BMP T5.30 – Full Dispersion." This BMP allows for "fully dispersing" runoff from impervious surfaces and cleared areas of development sites that protect at least 65 percent of the site in a forest or native condition. However, the BMP has a number of design criteria that are challenging to meet on many of the Island's developing parcels, and, regardless of site conditions, the City's stormwater regulations allow for use of an "LID performance standard" that can result in a structural, engineered stormwater design and little or no native vegetation and soil preservation.

There is little dispute that limited development and preservation of natural vegetation and soil maintains the natural hydrologic cycle better than development with LID practices. As such, little research has been devoted to assessing the difference. While LID practices are an improvement over past conventional tools to manage stormwater, they are still mitigation-based and flood-control focused. Questions remain as to how effective they are in maintaining or mimicking pre-development hydrology. Limited field studies have been completed to monitor the effectiveness of LID practices.

During the early 1990s in King County, Washington, empirical studies found that low-density residential development (e.g., one dwelling unit per five acres), while not creating much impervious surface area, resulted in forest clearing up to 60 percent of the landscape, with significant effects on watershed flow regime (Booth, et al., 2002). The analysis found that in rural areas, forest clearing and conversion to suburban vegetation (mainly lawns) was far more significant in determining peak discharge increases than the small increases in impervious area typical of low-density development. As a result, forest retention was adopted at the time as an alternative to structural stormwater detention.

Similar research from the late 1990s (May et al., 1997) found that typical suburban development is estimated to have 90 percent less stormwater storage than the native forested condition, with an LID approach estimated to recover only 25 percent of that storage. Monitoring in the Puget Sound region suggests that LID strategies can be effective for maintaining pre-development hydrologic conditions for light to moderate storm events typical of a maritime climate (Horner, Lim and Burgess, 2002). Effectiveness in mimicking pre-development hydrology for large storms and during extended wet periods is not well documented, although initial monitoring of projects on soils with low permeability suggests that pre-development hydrology can be approximated (Hinman, 2009).

In general, the practice of LID is still a work in progress and little is known about changes to groundwater resulting from urbanization due to a lack of data from field-based studies. Recent findings reported by Ecology in their informal draft framework for new Phase I and Phase II municipal stormwater permits suggest that LID is not adequately achieving intended outcomes of reducing impacts of development to water quality and hydrology:

While stormwater management has made great strides since the first permits were issued in 1995, the science is clear that a site and subdivision approach to controlling stormwater runoff from developed and developing areas still falls short of protecting receiving water quality conditions. Early studies indicate that natural land cover and soils need to be preserved in a watershed to prevent channel degradation, and to maintain base flows and functional habitat conditions for salmonids ... all of our conventional flow control, runoff treatment, and low impact development best management practices will not be enough to fully attain standards protective of designated beneficial uses or to counteract the challenges posed by urbanization.

More specifically, it is largely unknown how infiltrated water from LID practices travels along the subsurface pathways within a built environment (Bonneau et al., 2017). The most recent and relevant research related to the impact of LID practices on groundwater has largely occurred outside the United States (Bonneau et al., 2017, Locatelli, et al., 2016, Han, et al., 2017) with limited research on the implications of LID practices, specifically infiltration, in the United States (Endreny and Collins, 2009, Berland et al., 2017, Booth, et al. 2002, PSP 2005 and 2012). These studies provide a review of several shortcomings and uncertainties of LID related to groundwater and aquifer recharge:

- Land use development and its associated surface and subsurface infrastructure results in complex water balance changes that redistribute groundwater recharge locations, modify recharge mechanisms, and impact recharge rates (e.g., net decrease, increase or minimal changes) and quality.
- LID practices are largely focused on infiltration (e.g., rain gardens, bioswales, and permeable pavements). Infiltrated water can raise water tables and cause groundwater mounding, which may subsequently cause flooding, sewer backups, and unwanted return flow into collection systems.
- The focus on infiltration alone overlooks other pathways for stormwater in the hydrologic cycle that native vegetation provides.
- LID practices do not necessarily mimic like-for-like hydrologic processes (e.g., shallow infiltration vs. deep infiltration, interflow vs. infiltration).

- LID practices may not adequately mimic predevelopment hydrology for large storms and during extended wet periods.
- No analysis is currently available on the larger hydrologic impacts of converting spatially distributed subsurface flows to more limited or point discharges and few analytic tools to assess those consequences have been developed.
- LID techniques do not compensate for the cumulative and adverse impacts from road networks and off-site development.
- LID requirements based on new and redevelopment have little impact on runoff from existing development.
- Any analysis of flow durations will not address changes to groundwater recharge or discharge, because no constructed detention ponds, even the largest, can delay wintertime rainfall sufficiently for it to become summertime runoff; however, this level of delay does occur under predevelopment conditions since far more of the precipitation is stored as groundwater.

Further study is needed to understand the flowpath of infiltrated water to ensure LID practices deliver optimum outcomes. Additionally, there are large areas with near-surface glacial till deposits across the island where infiltration is infeasible or less than optimal. These identified shortcomings and uncertainties of LID related to groundwater and aquifer recharge warrant consideration.

Native vegetation and soil protection

Retaining mature native vegetation and soil protection areas is a primary objective of site planning to maintain the natural hydrological function of the site and watershed and is the most efficient and cost-effective tool for managing stormwater quantity and quality (PSP and WSU, 2002 and 2012). The LID guidebook for local governments prepared for the Puget Sound Partnership for integrating LID into local codes recommends local jurisdictions add a native vegetation retention section of code that allows for the setting aside of an undeveloped portion of the site and set native vegetation retention standards for sites based on land use and density (PSP, 2012).

Since relying on use of LID BMPs in accordance with the 2014 stormwater manual may be insufficient to preserve the natural hydrologic cycle, it is reasonable to look toward an alternative. While the relationship between land use development and aquifer recharge is complex, with many ecosystem- and development-related variables, we know that alternative land use patterns generate differential ecological effects (Alberti et al. 2007). A higher proportion of built components in a watershed has a significant effect on hydrologic and ecosystem functions (Matteo, 2006, Alberti et al., 2007, Brabec, 2002 and 2009). A higher percentage of native vegetation and soil cover can mitigate nonpoint source pollution and peak flow impacts to groundwater recharge and stream base flow (PSP, 2012, PSP and WSU 2002 and 2012). Decentralized “green infrastructure” leverages the capabilities of soil and vegetation to infiltrate, redistribute, and otherwise store stormwater volume, with the potential to realize synergistic ecological benefits (Berland et al., 2017) such as wildlife habitat, open space, recreation, and wetland and stream function.

The principal of site planning to maintain the natural hydrologic function of a site through retaining natural contours and vegetation to the maximum extent possible is not new (Arnold and Gibbons 1996, Booth and Jackson 1992, Booth et al. 2002, CWP 1998). Recent research has shown that trees and soils can be extremely effective means to maintain or mimic natural hydrology (Berland et al. 2017, Cappiella

et al. 2016, CWP 2016, Herrera, 2008, Arbor Day Foundation, 2010). Through combined processes of tree leaves and roots, trees contribute to stormwater control and recharge of groundwater. While canopy interception loss and transpiration may be the primary means by which trees provide direct stormwater control, trees may improve infiltration by modulating the soil ecosystem via root growth and senescence, higher organic matter inputs, higher microbial activity, and stabilization or formation of soil structure. Tree roots, combined with organic material that typically builds on the soil at the base of trees, promote the infiltration of runoff through shallow subsurface zones, helping to reduce both the rate and volume of stormwater runoff (Herrera, 2008). Living and decaying roots create channels in the soil through which groundwater can flow, and the expansion of roots is especially important for generating channels in the soil to facilitate infiltration.

More specifically, Herrera Environmental Consultants (2008) reviewed a series of field studies showing that in natural settings trees can provide increased infiltration capacity in underlying soils. This may not hold true with the removal of leaves and organic buildup that degenerates the organic layer and compacts soils, providing support for maintaining native soils. Herrera's study found that the combined processes of infiltration, transpiration, and interception associated with trees can be expected to significantly reduce annual runoff and concluded that it is reasonable to expect at least a 30 percent reduction in annual runoff due to conifers in the Pacific Northwest. This number was subsequently used as a basis for establishing a maximum net benefit of individual coniferous trees or forested areas (based on canopy cover) to develop "tree credits" for minimizing stormwater flow requirements in Seattle, Washington.

II. FISH AND WILDLIFE HABITAT CONSERVATION AREAS (FWHCA)

Most documents related to FWHCAs have been prepared by Washington Department of Fish and Wildlife (WDFW). Other sources, largely Bainbridge-based, as well as legislative changes were also reviewed.

WDFW Documents and Programs

Priority Habitats and Species Program (PHS). WDFW updated its PHS list in 2008. The new list should be referenced where appropriate and used to clarify Class I and Class II FWHCA. In addition, designating

biodiversity areas and corridors may be considered. Note: The Bald Eagle was removed from the federal Endangered Species List in 2007; but the species remains classified as a State Sensitive species by WDFW.

Landscape Planning for Washington's Wildlife: Managing for Biodiversity in Developing Areas (Washington Department of Fish and Wildlife, Habitat Program, Olympia, WA, December 2009). This document gives examples of stressors linked to residential land uses that influence wildlife, considerations for developing Habitat Management Plans (HMP) at the site-scale and planning at the watershed-scale. This document may be a required reference for HMPs and/or development standards for PHS biodiversity areas and corridors.

Management Recommendations for Washington's Priority Habitats. This is a series of documents that provides recommendations for protection and management of habitat of priority species. HMPs are

currently required to use these management recommendations. Updated management recommendations for the Great Blue Heron were published in 2012.

Fish Passage Program. WDFW maintains a centralized database of fish passage, diversion screening, fish use, and habitat information from inventory efforts conducted throughout Washington State. WDFW's Fish Passage and Diversion Screening Inventory (FPDSI) database is a main data source for planning fish passage projects. The map application shows human-made barriers where a fish passage barrier inventory has been conducted.

Aquatic Habitat Guidelines
Stream Habitat Restoration Guidelines
Water Crossing Design Guidelines

These documents provide support for the existing CAO and could be used to update development standards.

Other Sources and Legislative Changes

Wild Fish Conservancy Water Type Assessment Project Summary – West Sound Watersheds Phase III Report (Wild Fish Conservancy, Duvall, WA, September, 2016). Wild Fish Conservancy (WFC) conducted water type surveys using state-sanctioned protocols to accurately map previously unmapped and incorrectly mapped water courses and generate species-specific distribution data to assist with restoration project identification and prioritization efforts. This stream data was added to the City's GIS for use and support of planning and permitting activities.

State of the Island's Waters (Prepared by Cami Apfelbeck, Department of Public Works, City of Bainbridge Island, July 2012). Describes the surface water resources of Bainbridge Island, summarizes observed pollutants and common sources and reviews general water quality concerns.

Stream Benthos and Hydrologic Data Evaluation for the City of Bainbridge Island (Prepared by Curtis DeGasperi and Chris Gregersen, Water and Land Resources Division, Seattle, WA, 2015). This document is an in-depth assessment of the City's continuous flow and stream benthic macroinvertebrate monitoring data using metrics researched and developed over the last 15 years by King County's Department of Natural Resources and Parks – Water and Land Resources Division.

WAC 365-190-130 was added in 2010 to address and amend prior regulations on fish and wildlife habitat conservation areas. Applicable changes will be included in the CAO update.

III. FREQUENTLY FLOODED AREAS

Local governments must address flood-prone areas under two separate statutes: The GMA and the Floodplain Management Statute. A Floodplain Management ordinance under chapter 86.16 RCW is necessary for a city to qualify for FEMA's National Flood Insurance Program (NFIP). If all of a local government's floodplain management issues are adequately addressed in its floodplain management regulations, then the frequently flooded areas chapter may incorporate the floodplain management regulations by reference. The City's floodplain management regulations are contained in BIMC 16.15,

Flood Damage Prevention. The City updated its FEMA floodplain maps and corresponding regulations in January, 2017 (Ordinance 2017-04). This update was reviewed by FEMA and Ecology. Both agencies found the revisions bring the City into compliance with federal and state floodplain regulations.

The CAO update will adopt by reference BIMC 16.15 to meet the requirements regarding designation and mapping as well as standards for habitat protection included in the FEMA Puget Sound Biological Opinion on the NFIP.

IV. GEOLOGICALLY HAZARDOUS AREAS

The most noteworthy new science applicable to geologically hazardous areas in the City is the availability of 2015 LiDAR (light detection and ranging) imagery. The City's GIS technician used this imagery to update the GIS data layer for landslide hazard areas.

The United States Geologic Society (USGS) and Washington Department of Natural Resources (DNR) have updated mapping applications and web tools. These are useful resources but do not require revisions to current critical areas regulations.

In general, the City currently regulates geologically hazardous areas consistent with BAS and WAC guidance; however, the City's technical consultant has recommended several changes to landslide hazard regulations to improve clarity and ease of administration. The changes are consistent with the technical consultant's review of BAS and regulations in other Western Washington jurisdictions (see Attachment B). Additionally, WAC guidance provides that critical facilities should be restricted in hazard zones.

V. WETLANDS

The most recent documents pertaining to wetlands have been prepared by state and federal agencies describing general guidance for CAO updates, new methodologies for identifying and characterizing wetlands, buffer effectiveness and new approaches to mitigation.

General Guidance Documents

Wetland Guidance for CAO Updates, Western Washington Version (Washington State Department of Ecology Publication #16-06-001, Olympia, WA, June 2016). This document replaces *Wetlands & CAO Updates: Guidance for Small Cities*, originally published in 2010 and revised in 2012. This new Ecology

guidance document will be used to update regulations related to the updated 2014 rating system, updated definitions, buffer tables, small wetlands and agricultural activities.

Wetlands in Washington State, Volume 1: A Synthesis of the Science (Washington State Department of Ecology Publication #05-06-006, Olympia, WA, March 2005). This volume is the result of an extensive search of over 17,000 scientific articles and synthesizes over 1,000 peer-reviewed works relevant to the management of Washington's wetlands. This document was the primary source of best available science used in the 2005 CAO update. Proposed revisions should be consistent with the science in this document unless specifically updated in other, more recent documents.

Wetlands in Washington State, Volume 2: Managing and Protecting Wetlands (Washington State Department of Ecology Publication #05-06-008, Olympia, WA, April 2005). This volume contains guidance on protecting and managing wetlands and their functions based on the synthesis of the science provided in Volume 1, including recommended buffer strategies. Appendix 8-C, providing options for buffer strategies, was revised in October 2014.

Delineation and Categorization

Washington State Wetland Rating System for Western Washington: 2014 Update (Washington State Department of Ecology Publication #14-06-29, Olympia, WA, October 2014). The current CAO uses the 2004 State Rating System, or as amended, to categorize wetlands for the purposes of establishing wetland buffer widths, wetland uses and replacement ratios for wetlands. The City formally adopted the 2014 updated in June 2016. The update of the rating systems incorporates “lessons learned” from using the rating system for 10 years and provides a more accurate rating of the functions and values of a

wetland. While Ecology updated the rating system, it is not proposing any changes to recommended buffer widths; however, the City’s CAO will be updated to reflect the changes made to the wetland scoring system.

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coasts (Corps, 2010). The regional supplement updates portions of the 1987 Corps’ Wetland Delineation Manual and provides additional technical guidance and updated procedures for identifying and delineating wetlands. State law requiring the Washington State Wetlands Identification and Delineation Manual (Ecology, 1997) was repealed in 2011. The Regional Supplement is now required by state law (WAC 173-22-035).

Mitigation

Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1) (Washington State Department of Ecology Publication #06-06-011a, Olympia, WA, March 2006). Part 1 provides a brief background on wetlands, an overview of the factors that go into the agencies’ permitting decisions, and detailed guidance on the agencies’ policies of wetland mitigation, particularly compensatory mitigation. It outlines the information the agencies use to determine whether specific mitigation plans are appropriate and adequate.

Wetland Mitigation in Washington State—Part 2: Developing Mitigation Plans (Version 1) (Washington State Department of Ecology Publication #06-06-011b, Olympia, WA, March 2006). Part 2 provides

technical information on preparing plans for compensatory mitigation. Some of this information has been superseded by more recent guidance discussed below however, wetland mitigation ratios listed in this document were the basis for the City’s wetland mitigation ratios.

Selecting Wetland Mitigation Sites Using a Watershed Approach (Washington State Department of Ecology Publication #09-06-032, Olympia, WA, December 2009). Provides guidance on selecting off-site mitigation sites.

Interagency Regulatory Guide: Advance Permittee-Responsible Mitigation (Washington State Department of Ecology Publication #12-06-015, Olympia, WA, December 2012). Use of this document can be referenced and encouraged; however, advance mitigation is uncommon within the city.

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington (Washington State Department of Ecology Publication #12-06-015, Olympia, WA, December 2012).

This document describes Ecology's newest methodology for estimating whether a project's compensatory mitigation plan adequately replaces lost wetland functions and values using a functions and values-based approach to score functions lost at the project site (i.e., "debits") compared to functions gained at a mitigation site (i.e., "credits"). Use of the method can be encouraged.

Buffer Effectiveness

Update on Wetland Buffers: The State of the Science (Washington State Department of Ecology Publication #13-06-011, Olympia, WA, October 2013). This document provides new information on

buffers and revisits the conclusions and key points in the 2005 synthesis (see Wetlands in Washington State, Volume 1: A Synthesis of the Science, above).

References – critical aquifer recharge areas

Guidance pertaining to the delineation of critical aquifer recharge areas has been prepared by the state. The most recent scientific studies pertaining to the hydrogeology of the Island's aquifer system to include extents, recharge areas, and system susceptibility have been prepared by licensed consultants and the U.S. Geological Survey.

Other sources of information include the Kitsap Public Health District's Group A & B water system inventories, Ecology's contaminated sites inventories, City of Bainbridge Island land use and zoning maps, and City of Bainbridge Island Groundwater Management Program aquifer system safe yield and seawater intrusion early warning level assessments.

Critical Aquifer Recharge Areas Guidance Document (Washington State Department of Ecology Publication #05-10-028, Olympia, WA, January 2005). This guidance document helps local jurisdictions and the public understand what is required for the protection of local groundwater resources under the Growth Management Act. It includes guidance for planning, ordinances, and for including the Best Available Science as these relate to Critical Aquifer Recharge Areas.

Critical Areas Assistance Handbook – Protecting Critical Areas within the Framework of the Washington Growth Management Act (Washington State Department of Community, Trade and Economic Development, Olympia, WA, January 2007). The purpose of this handbook is to help local jurisdictions design locally appropriate programs for designating and protecting critical areas.

Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington (U.S. Geological Survey Science Investigations Report 2011-5021, Reston, VA, 2011) (Frans et al., 2011). This document describes the hydrogeology of the Bainbridge Island aquifer system to include aquifer extents, recharge rates, groundwater elevation, and groundwater flow direction. This

document also describes the development and use of the Island's numerical groundwater model and projected aquifer system responses to potential growth and land use modifications.

Hydrogeologic Framework, Groundwater Movement, and Water Budget of the Kitsap Peninsula, West-Central Washington (U.S. Geological Survey Science Investigations Report 2014-5106, Reston, VA, 2011) (Welch et al., 2014). This document presents information used to characterize the groundwater-flow system on the Kitsap Peninsula including Bainbridge Island, and includes descriptions of the geology and hydrogeologic framework, groundwater recharge and discharge, groundwater level and flow directions, seasonal groundwater-level fluctuations, and interaction between aquifer and the surface-water system and a water budget. This study provided updated aquifer recharge rates for Bainbridge Island.

Ground Water Numerical Model Initial Scenario Selection Report (Prepared by City of Bainbridge Island Department of Public Works-Water Resources and Department of Planning & Community Development, Bainbridge Island, WA, September 2009)(City of Bainbridge Island, 2009). Describes the methodology and supporting population and land use data behind the development of the initial scenarios run by the U.S. Geological Survey as part of the development and initial use of Bainbridge Island's numerical groundwater model. Specifically, this report defines land use intensity categorization (by % impervious cover).

Hydrogeological Assessment of Groundwater Quantity, Quality and Production (Task 1) (Aspect Consulting, LLC, Bainbridge Island, WA, December 2015)(Aspect, 2015). This technical memorandum describes the current quality and quantity conditions of Island's groundwater resources

Bainbridge Island Groundwater Model: Review Findings and Recommendations (Task 2) and Critical Aquifer Recharge Area Assessment (Task 3 Scenario) (Aspect Consulting, LLC, Bainbridge Island, WA, December 2015) (Aspect, 2015a). This technical memorandum describes a technical review and recalibration and validation of the Island's numerical groundwater model, provides both implemented and yet-to-be recommendations to update and improve the Island's groundwater model and describes the findings of the critical aquifer recharge area assessment. This study identified both shallow and deep aquifer recharge areas.

Bainbridge Island Groundwater Model: Aquifer System Carrying Capacity Assessment (Task 3 Scenario) (A, LLC, Bainbridge Island, WA, March 2016) (Aspect, 2016). This technical memorandum describes the findings from the aquifer system carrying capacity assessment using the updated Bainbridge Island numerical groundwater model to include projected growth and climate change impacts to recharge, groundwater levels, drainage to surface waters, and seawater intrusion.

Support Document for Sole Source Aquifer Designation of the Bainbridge Island Aquifer System (U.S. EPA - Region 10, Seattle, WA, March 2013) (EPA, 2013). This document summarizes readily available information and describes the technical and legal basis for the Bainbridge Island aquifer system Sole Source Aquifer designation.

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Critical Aquifer Recharge Areas

1

Designation and Protection

Cami Apfelbeck, M.S. Geological Sciences
COBI Water Resources Specialist

“

Areas with a critical recharging effect on aquifers used for potable water.

”

2

Growth Management Act (Chapter 36.70A Revised Code of Washington)

Critical Aquifer Recharge Areas

“Areas with a critical recharging effect on aquifers used for potable water are areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water.”

Minimum Guidelines to Classify Agriculture, Forest, Mineral Lands and Critical Areas (Chapter 365-190 Washington Administrative Code)

Critical Aquifer Recharge Areas



Critical Aquifer Recharge Areas

Guidance Document

January 2005
Publication Number 05-10-028

“

The functions and values of Critical Aquifer Recharge Areas are to provide the public with **clean, safe and available** drinking water.

”

5

Critical Aquifer Recharge Areas Guidance Document, Section 3, Page 9

Quality and Quantity

“

In order to accomplish this goal, information is needed about the location and extent of aquifers that supply public drinking water, the susceptibility of these supplies to contamination, and potential contamination risks. In addition, planning, programs, and ordinances are needed to prevent contamination from occurring.

”

6

Critical Aquifer Recharge Areas Guidance Document, Section 3, Page 9

Designate, then Protect!

Designation Step-by-Step

Identify where groundwater resources are located

Analyze the susceptibility of the natural setting where groundwater occurs

Inventory existing potential sources of groundwater contamination

Classify the relative vulnerability of groundwater to contamination events

Designate areas that are most at risk to contamination events.

Staff Work

Identify where groundwater resources are located

Mapped and considered:

- Aquifer extents, descriptions, and recharge areas
- Well Locations and Wellhead Protection Areas
- Surficial geology
- Topography
- Surface water bodies

Staff Work

Analyze the susceptibility of the natural setting where groundwater occurs

Susceptibility of the ground and aquifers considers:

- Depth to water
- Infiltration rate & recharge rate
- Permeability
- Presence or absence of an impermeable layer
- Hydraulic conductivity
- Vertical and horizontal gradients
- Groundwater flow direction and rate

Department of Health Source Water Protection Susceptibility Rating:
High – includes wells which draw water from an “unconfined aquifer (<150 feet deep)” (Perched, Semi-Perched and Sea Level)

BAS: *Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington* (USGS, 2011); *Washington's Source Water Protection Program (SWAP)* (DOH, 2005); *Hydrogeologic Framework, Groundwater Movement, and Water Budget of the Kitsap Peninsula, West-Central Washington* (USGS, 2014)

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Staff Work

Inventory existing potential sources of groundwater contamination

Mapped and considered:

- Confirmed contaminated sites
- Land use and land use intensity (% impervious)
- Zoning

BAS: Department of Ecology Toxics Cleanup Program's List of Confirmed and Suspected Contaminated Sites (web-based data, 2017); Critical Aquifer Recharge Areas Guidance Document – Appendix A: U.S. EPA Potential Sources of Drinking Water Contamination Index (Ecology, 2005); Ground Water Numerical Model Initial Scenario Selection Report (COBI, 2009)

Staff Work

11

Classify the relative vulnerability of groundwater to contamination events

Methods of classification:

- Categories based on susceptibility
 - Water table sand and gravel aquifers
 - Deeper less susceptible aquifers
 - Confined aquifers
- Categories based on set priorities and risk
 - Large and medium public water supply systems one-year time of travel protection zone
 - Densely populated areas that rely on groundwater
 - Rural areas with a high dependence on groundwater
 - Discontinuous local drinking water aquifers of limited extent
 - Sole Source Aquifers
- Categories based on areas that have the same policies, plans, ordinances, and programs that will be applied

Staff Work

Designate areas that are most at risk to contamination events.

Staff Recommendation: Designate entire Island is a Critical Aquifer Recharge Area

Basis:

- Sole source aquifer system designation
- Nearly all of the Island identified as recharge area with significant recharge rates; remaining areas are discharge areas such as along shorelines or where groundwater sustains wetlands, lakes, and stream base flow
- Island-wide extent of shallow aquifers (Perched, Semi-Perched, and Sea Level) without a sufficiently-protective, overlying impermeable layer (DOH susceptibility rating = High)
- Potential for seawater intrusion

BAS: Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington (USGS, 2011); Washington's Source Water Protection Program (SWAP) (DOH, 2005); Support Document for Sole Source Aquifer Designation of the Bainbridge Island Aquifer System (Draft) (EPA, 2012); Hydrogeologic Framework, Groundwater Movement, and Water Budget of the Kitsap Peninsula, West-Central Washington (USGS, 2014); Bainbridge Island Groundwater Model: Aquifer System Carrying Capacity Assessment (Task 3 Scenario) (Aspect, 2016)

5/25/2017

Discussion

Protection Step-by-Step

Protect by minimizing activities and conditions that pose contamination risks.

Ensure that contamination prevention plans and best management practices are followed.

Manage groundwater withdrawals and recharge impacts to:

- Maintain availability for drinking water sources.
- Maintain stream base flow.

Protect by minimizing activities and conditions that pose contamination risks.

Regulatory:

- Adopt State and Federal regulation
- Zoning
 - Overlay zoning
 - Large lot zoning
 - Cluster zoning
- Prohibition of High-Risk Activities
- Special Use Permits
 - Additional conditions/requirements
 - Hydrogeo assessment and site evaluation
 - Best Management Practices/Mitigation Plan
 - Pollution Prevent and Spill Response Plan
 - Low Impact Development
 - Monitoring
- Transfer of development rights

Protect by minimizing activities and conditions that pose contamination risks.

Non-regulatory:

- Land Acquisition
- Conservation Easements
- Water Conservation Planning
 - Aggressive rate structures
 - Incentives
- Household Hazardous Waste Collections
- Education and Outreach

Discussion

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5/25/2017

**City of Bainbridge Island - Geologically Hazardous Areas
Best Available Science Bibliography – Draft 12/8/2017**

Author	Date	Title & Publication	Information Category¹ Ge, Sl, Te, Li, Er, Se, Ts, To	Relevance H-M-L	New Information	Comments	Have Document
Adams, J.	1992	Paleoseismology: A search for ancient earthquakes in Puget Sound: <i>Science</i> , v. 258, p. 1592-1593.	Te, Se, Ts	H	No	Intro to other reports on studies of Seattle fault.	Yes
Applied Environmental Services, and Anchor Environmental, LLC	2001	Bainbridge Island Nearshore Assessment – Summary of Best Available Science: November 2001 Draft	Ge, Er	L	No	Little new information but some review of coastal bluff erosion processes.	Yes
ASCE Committee: Los Angeles Section Geotechnical Group	2002	Recommended Procedures for Implementation of DMG Special Publication 117: Guideline for Analyzing and Mitigating Landslide Hazards in California	Sl	M	Yes	Committee-generated BAS review of California Slope Stability	Yes
Barnett, E. A., Haugerud, R. A., Sherrod, B. L., Weaver, C. S., Pratt, T. L., and Blakely, R. J.	2010	Preliminary Atlas of Active Shallow Tectonic Deformation in the Puget Lowland, Washington: USGS Open-File Report 2010-1149.	Te, Se	M?	Yes	Compilation of geological and geophysical data including paleoseismic, seismic reflection/refraction, magnetic anomalies, and gravity anomalies.	Yes
Blakely, R. J., Wells, R. E., Weaver, C. S., Johnson, S. Y.	2002	Location, structure, and seismicity of the Seattle fault zone, Washington: Evidence from aeromagnetic anomalies, geologic mapping, and seismic-reflection data: <i>GSA Bulletin</i> , February 2002; v. 114; no. 2; p. 169-177.	Te, Se	H	No	Geometry and location of Seattle fault strands on Bainbridge, Toe Jam Hill fault motion and origin hypothesized with ≥ magnitude 6 earthquake.	Yes
Bray, Jonathan D.	2007	Simplified Seismic Slope Displacement Procedures; Chapter 14: Department Civil & Environmental Engineering, University of California, Berkley	Sl, Se	M	Yes	Methodologies related to sibling reference below.	Yes
Bray, Jonathan D. F. ASCE; Travasarou, Thaelia	2007	Simplified Procedure for Estimating Earthquake-Induced Deviatoric Slope Displacements: Journal of Geotechnical and Geoenvironmental Engineering: DOI: 10.1061/_ASCE_1090-0241_2007_133:4_381_	Sl, Se	M	Yes	Semiempirical relationship for slope deformation, helps inform seismic SSA.	Yes
Bucknam, R. C., Hemphill-Haley, E., Leopold, E. B.	1992	Abrupt uplift within the past 1700 years at Southern Puget Sound, Washington: <i>Science</i> , v. 258, p. 1611-1614.	Te, Se	H	No	Documents uplift of Restoration Point in association with ≥ magnitude 7 earthquake.	Yes
Canning, D. J., and Shipman, H.	1995	Coastal Erosion Management Studies in Puget Sound, Washington: Executive Summary: Washington Department of Ecology Shorelands and Water Resources Program, Report 94-74, 100 p.	Er, Sl	M	No	Summary of coastal erosion processes, and management strategies	Yes
City of Los Angeles Department of Building and Safety	2016	Slope Stability Evaluation and Acceptance Standards: Information Bulletin/Public-Building Code: Reference No.: LABC 7006.3, 7014.1 Effective: 1/1/2017: Document No.: P/B 2017-049 Revised: 12-21-2016: Previously Issued As: P/BC 2014-049	Sl, Se	M	Yes	Example of use of Static FS >1.5 and Seismic FS >1.0	Yes
Cornforth, Derek K	2007	Landslides and Society: Seven Deadly Sins of Landslide Investigation, Analysis, and Design: Proceeding of the First North American Conference on Landslides: ISBN 978-0-9754295-2-5	Sl	M	Yes	Limitations related to SSA, practical guidance related to development of factors of safety.	Yes
County of Los Angeles Department of	2014	Administrative Manual: Alternate Setback and Setbacks	Sl	L	Yes	Guidance of slope stability analyses for	Yes

Author	Date	Title & Publication	Information Category ¹ Ge, Sl, Te, Li, Er, Se, Ts, To	Relevance H-M-L	New Information	Comments	Have Document
Public Works Geotechnical and Materials Engineering Division		from Descending Slope				residential development.	
Cox, H., Macdonald, K, and Rigert, T.	1994	Engineering and Geotechnical techniques for shoreline erosion management in Puget Sound: Washington Department of Ecology Shorelands and Water Resources Program, Report 94-77, 48 p, appendices.	Er, Sl	M	No	Shoreline erosion mechanisms and stabilization techniques.	Yes
Czajkowski, J. L. and Bowman, J. D.	2014	Faults and Earthquakes in Washington State: Washington Division of Geology and Earth Resources Open File Report 2014-05.	Te, Se	M	Yes	Includes mapped faults and hypocenters of earthquakes of Mw >2.0 and shallower than 25 km.	Yes
Deeter, J. D.	1979	Quaternary geology and stratigraphy of Kitsap County, Washington: Western Washington University Master of Science Thesis; 175 p, 1 plate.	Ge	H	No	Geologic map of Bainbridge Island with description of units. Best geologic map of Bainbridge Island for engineering soil units.	Partial
Eungard, D. W.	2014	Models of Bedrock Elevation and Unconsolidated Sediment Thickness in the Puget Lowland, Washington: Washington Division of Geology and Earth Resources Open File Report 2014-04.	Ge, Te	M	Yes	Integrates bedrock elevations from geologic maps, cross sections, borehole data, and seismic profiles.	Yes
Frans, L. M., Bachmann, M. P., Sumioka, S. S., and Olsen, T. D.	2011	Geologic Map and Cross Sections Showing Hydrogeologic Units on Bainbridge Island, Kitsap County, Washington: USGS Scientific Investigations Report 2011-5021.	Ge	L?	Yes	Presents five cross sections through Bainbridge Island that show aquifers and confining units.	Yes
Fulmer, C. V.	1975	Stratigraphy and paleontology of the type Blakeley and Blakely Harbor Formations. p. 210-271.	Ge	L	No	Basic geologic information on Tertiary rock types.	Yes
Galster, R. W.; Laprade, W. T.	1991	Geology of Seattle, Washington, United States of America: <i>Association of Engineering Geologists Bulletin</i> , v. 28, no. 3, p. 235-302, 1 plate.	Ge	M	No	Basic geologic information on regional geologic units.	Yes
Galster, Richard W.	1987	A survey of coastal engineering geology in the Pacific Northwest: <i>Association of Engineering Geologists Bulletin</i> , v. 24, no. 2, p. 161-197.					
Garring, M. E.; Molenaar, Dee; and others	1965	Water Resources and geology of the Kitsap Peninsula and certain adjacent islands: Washington Division of Water Resources Water-Supply Bulletin 18, 309 p., 5 plates.	Ge	L	No	Geologic map and geologic descriptions.	Yes
Gerstel, W. J., Brunengo, M. J., Lingley, W. S., Jr., Logan, R. L., Shipman, Hugh and Walsh, T. J.	1997	Puget Sound Bluffs: The where, why and when of landslides following the holiday 1996/97 storms. <i>Washington Geology</i> , vol. 25, no. 1, p. 17-31.	Sl, Er	M	No	Description of slope failures and causes in Puget Sound.	Yes
Golder Associates	2004	Slope Stability Guidelines for Development Applications in the City of Ottawa; Original by Golder Associates, 2004 Updated by City of Ottawa, 2012	Sl	M	Yes	Example guidance on slope stability requirements for residential development.	Yes
Grant, W. P.; Perkins, W. J.; Youd, T. L.	1992	Evaluation of liquefaction potential, Seattle, Washington: U. S. Geological Survey Open-File Report 91-441-T, 44 p., 1 plate.	Li	M	No	Example of liquefaction potential evaluation of Seattle area.	Yes

Author	Date	Title & Publication	Information Category ¹ Ge, Sl, Te, Li, Er, Se, Ts, To	Relevance H-M-L	New Information	Comments	Have Document
Gray, D.H. and Sotir, R.B.	1996	Biotechnical Soil Bioengineering Slope Stabilization: A Practical Guide for Erosion Control	Er, Sl	H	No	Guide to using vegetation to reduce erosion and increase slope stability.	No
Hansen, A. J., Jr.; Bolke, E. L.	1980	Ground-water availability on the Kitsap Peninsula, Washington: U. S. Geological Survey Open-File Report 80-1186, 70 p.	Ge	L	No	Geologic map and geologic information.	Yes
Harp, E.L, Michael, J.A., and Laprade, W.T.	2006	Shallow-landslide Hazard Map of Seattle, Washington, U.S. Geological Survey Open-File Report 2006-1139.	Ge, Sl	M	Yes	Presents geologic setting and statistical data on slope hazards in setting similar to Bainbridge Island	Yes
Haugerud, R., Haeussler, P.	2000	Bedrock geology of Seattle: Spring Field Trip, Northwest Geological Society, p. 6-7.	Ge	L	No	General bedrock geologic information and outcrop locations on Bainbridge Island.	Yes
Haugerud, R.A.	2009	Preliminary geomorphic map of the Kitsap Peninsula, Washington: U.S. Geological Survey, Open-File Report 2009-1033, 2 sheets, scale 1:36,000.	Sl	H	Yes	Geomorphic interpretation of Bainbridge Island based on LiDAR topography analyses. Relevant for steep slope and erosion hazard delineation	Yes
Haugerud, R.A., and Troost, K.G.	2011	Geologic map of the Suquamish 7.5' quadrangle and part of the Seattle North 7.5' x 15' quadrangle, Kitsap County, Washington: U.S. Geological Survey Scientific Investigations Map 3181, scale 1:24,000, available at https://pubs.usgs.gov/sim/3181/ .	Sl, Te, Li, Er	M	Yes	Map surface geology is duplicate of Haugerud, 2005, but contains additional subsurface interpretations.	Yes
Haugerud, R.A.	2005	Preliminary Geologic Map of Bainbridge Island, Washington, U.S. Geological Survey Open-File Report 2005-1387.	Sl, Te, Li, Er	H	Yes	LiDAR-topography-based with geologic and geomorphic surfaces and process designations.	Yes
Haugerud, R.A., Ballantyne, D.B., Weaver, C.S., Meagher, K.L, and Barnett, E.A.	2016	Seismic hazard map for the Pacific Northwest – Peak ground acceleration with 2% probability of exceedance in 50 years: U. S. Geological Survey Pacific Northwest Geologic Mapping and Urban Hazards website: https://geomaps.wr.usgs.gov/pacnw/lifeline/eqhazards.html	Se	H	No	Presents peak ground acceleration of 0.66 to 0.75 g for south end of Bainbridge Island, diminishing to 0.46 to 0.55 for north end of island. Listed as preliminary for review purposes only at this time.	yes
Hyndman, R. O., Dragert, H., and Wang, R.	2001	Earthquake hazards in the Pacific Northwest: Rupture area of great earthquakes and origin of Puget Sound Seismicity: Annual Report USGS NEHRP External Grant 01-HQ-GR-0004.	Te, Li, Se	M	No	Presents frequency of occurrence for crustal earthquakes.	Yes
Hynes-Griffin, Mary. E.; Franklin, Arley G.	1984	Rationalizing the Seismic Coefficient Method; Miscellaneous Paper GL 84-13; Department of the Army Waterways Experiment Station, Corps of Engineers, Final Report	Sl, Se	M	No	Background data on seismic slope stability analysis and related guidance.	Yes
International Construction Congress	2017	International Building Code	Se	H	Yes	Presents revised seismic hazard basis for design.	No
Johnson, S. Y., Dadisman, S. V., Childs, J. R., Stanley, W. D.	1999	Active tectonics of the Seattle fault and central Puget Sound, Washington Implications for earthquake hazards: <i>GSA Bulletin</i> , v. 111, no. 7, p. 1042-1053.	Te, Se, Ts	H	No	Location and orientation of basin faults and earthquake hazards.	Yes
Johnson, S. Y., Potter, C. J., Armentrout,	1994	Origin and evolution of the Seattle fault and Seattle	Te, Se, Ts	H	No	Location and structure of Seattle fault	Yes

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J. M.		basin, Washington: <i>Geology</i> , v. 22, p. 71-74.				and others in Puget Sound area.	
Johnson, S. Y., Potter, C. J., Armentrout, J. M., Miller, J.J., Finn, C., and Weaver, C.	1996	The southern Whidbey Island fault: An active structure in the Puget Lowland, Washington: <i>GSA Bulletin</i> , v. 108, no. 3, p. 334-354.	Te, Se	H	No	Location and structure of the south Whidbey Island fault and associated seismic hazard	Yes
Kitsap County Department of Community Development	2007	Kitsap County, Washington, Hydrology and Drift Cells.	Er	L	Yes	Generalized map of dirft cells, waterbodies, and watercourses.	Yes
Koshimura, S., and Mofjeld, H.	2000	Puget Sound tsunamis – A new partnership to model and map the hazards: National Oceanographic and Atmospheric Administration poster/website presentation https://nctr.pmel.noaa.gov/pugetsound/pre2/ https://nctr.pmel.noaa.gov/Pdf/ps_tsunamis.pdf .	Ts	H	No	Modeled tsunami wave patterns around Bainbridge Island from an earthquake on the Seattle fault. This preliminary model is not considered by authors to be adequate for planning.	Yes
Laprade, W.T.	1989	Building codes for construction on steep slopes in Western Washington: in Galster, R.W., Chairman, Engineering Geology in Washington, Volume I, Washington Division of Geology and Earth Resources Bulletin 78, p. 151-155.	Sl	L	No	Review of municipal codes for steep slopes.	Yes
Makdisi, F. I.; Bolton Seed, H.	1977	A Simplified Procedure for Estimating Earth-Induce Deformation in Dams and Embankments: Report No. UCB/EERC-77/19	Sl, Se	L	No	Background info on slope deformations under seismic conditions.	Yes
Manson, C.J.	2000	Bibliography and Index of the Geology of Kitsap County, Washington, Washington State Department of Natural Resources, Division of Geology and Earth Resources, Circuit Rider Program, 31 p.	Re	N/A	N/A	Bibliographic list of publications on geology, geologic hazards, and mineral resources of Kitsap County. Sorted by subject.	Yes
McCrink, Tim	2006	Seismic Slope Stability	Sl, Se	M	Yes	BAS review by others (CGS).	Yes
McKenna, J.P., Lidke, D.J., and Coe, J.A.	2008	Landslides mapped from LIDAR Imagery, Kitsap County, Washington: U.S. Geological Survey Open-File Report 2007-1292, 81 p.	Sl, To	H	Yes	Maps and describes deep-seated landslides, with interpretation of geologic units and area of slide	Yes
McLean, H.	1968	Petrography and sedimentology of the Blakeley Formation, Kitsap County, Washington: University of Washington Master of Science Thesis. P. 37-41, Figure 2.	Ge	L	No	General bedrock geologic information.	Partial
McLean, H.	1977	Lithofacies of the Blakeley Formation, Kitsap County, Washington: A submarine fan complex: The Society of Economic Paleontologists and Mineralogists, v. 47, no. 1, p. 78-88.	Ge	L	No	General bedrock geologic information.	Yes
McMurphy, C. J.	1980	Soil survey of Kitsap County area, Washington: U. S. Soil Conservation Service, 127 p., 31 plates. Web Soil Survey: https://websoilsurvey.nrcs.usda.gov/app/	Ge, Sl, Er	M	No	Surface soils maps and slope and agricultural classification. Available on Web as interactive map.	Yes
Menashe, E.	1993	Vegetative management: A guide for Puget Sound bluff property owners: Washington Department of Ecology, Publication 93-31, 46 p.	Sl, Er	M	No	Presents factors contributing to slope instability. Non-technical.	Yes
Mintz, D. W.; Babcock, R. S.; Terich, T. A.	1976	Potential land use problems of Puget Sound shore bluffs. Engineering Geologic Studies: Washington	Sl, Er	H	No	Describes mass movement and erosion processes on shoreline bluffs and general	Yes

Author	Date	Title & Publication	Information Category ¹ Ge, Sl, Te, Li, Er, Se, Ts, To	Relevance H-M-L	New Information	Comments	Have Document
		Division of Geology and Earth Resources Information Circular 58, p. 21-33.				best practices for building on shoreline bluffs.	
Myers Biodynamics, Inc.	1993	Slope stabilization and erosion control using vegetation: A manual of practice for coastal property owners: Washington Department of Ecology Publication 93-30, 42 p.	Ge, Sl, Er	M	No	Non-technical description of slope and bluff erosion processes and mitigation techniques.	Yes
Myers Biodynamics, Inc. and Lorilla Engineering, Inc.	1995	Surface water and ground water on coastal bluffs: A guide for Puget Sound Property Owners: Washington Department of Ecology Publication 95-107, 64 p.	Ge, Sl, Er	M	No	Non-technical description of slope stability and drainage improvements.	Yes
Nelson, A. R., Johnson, S.Y., Wells, R.E., Pezzopane, S.K, Kelsey, H.M., Sherrod, B.L., Bradley, L.-A., Koehler III, R.D., Bucknam, R.C., Haugerud, R., and Laprade, W.T.	2002	Field and laboratory data from an earthquake history study of the Toe Jam Hill fault, Bainbridge Island, Washington: U.S. Geological Survey Open-File Report 02-60 (preliminary report) Introduction, Tables 1 and 2, Plates 1 and 2.	Ge, Te, Se	H	No	Data and cross-sections from fault study of the Toe Jam Hill strand of the Seattle fault. No conclusions presented in data report, but dates suggest multiple events of movement on this Seattle fault related structure since deglaciation.	Yes
Nelson, A. R.	2002	Personal communication to David H. McCormack, 5/24/02	Se, Te	H	No	Unpublished data suggest three or four episodes of significant movement on the Toe Jam strand of Seattle fault between 1,100 and 2,500 years ago. No evidence for movement on this strand from 2,500 to 12,000 years ago.	No
Nelson, A. R., Johnson, S. Y., Pezzopane, S. K., Wells, R. E., Kelsey, H. M., Sherrod, B. L., Koehler, R. D., Bradley, L. A., Bucknam, R. C., Laprade, W. T., Cox, J. W., and Narwold, C. F.	2000	Postglacial and late Holocene earthquakes on the Toe Jam strand of the Seattle fault, Bainbridge Island, Washington [Abstract]: <i>Geological Society of America Abstracts with Program</i> , Cordilleran Section Meeting, Vancouver, BC, 27-29 April 2000, v. 32, p. A-58.	Se, Te	H	No	Preliminary results from Toe Jam fault trenching suggesting movement between 1.1 ka and less than 3 ka. Suggests no evidence of surface-deforming earthquakes between period as long a that between 2ka and 16 ka.	Yes
Nelson, A. R., Pezzopane, S. K., Bucknam, R. C.,Koehler, R. D., Narwold, C. F., Kelsey, H. M., Laprade, W. T., Wells, R. E., And Johnson, S. Y.	2000	Holocene surface faulting in the Seattle fault zone, Bainbridge Island, Washington [Abstract]: Seismological Research Letters, v. 70., no. 2, p 233.	Se, Te	H	No	Preliminary results from trenching of Toe Jam fault. Results indicate folding older than 6,700 years ago with movement about 3,000 to 4,000 years ago and surficial rupture 1,100 years ago.	Yes
Nelson, A.R, Johnson, S.Y., Kelsey, H.M., Sherrod, B.L., Wells, R.E., Bradley, L.-A., Okumura, K., and Bogar, R.	2003	Late Holocene earthquakes on the Waterman Point reverse fault, another ALSM-discovered fault scarp in the Seattle fault zone, Puget Lowland, Washington: Geological Society of America Abstracts with Program	Te, Se	M	Yes	Abstract for a talk discussing a newly discovered fault scarp.	No
Nelson, A.R., Johnson, S.Y., Kelsey, H.M., Wells, R.E., Sherrod, B.L., Pezzopane, S.K., Bradley, L.-A., and Koehler, R.D., III	2003	Late Holocene earthquakes on the Toe Jam Hill fault, Seattle fault zone, Bainbridge Island, Washington: Geological Society of America Bulletin, v. 115, 1388-1403.	Te, Se	H	Yes	Discusses results of paleoseismic trenching at the Toe Jam Hill fault and radiocarbon chronology of past earthquakes on Bainbridge Island.	No?
Othberg, K. L.	1975	Geologic interpretive map showing areas of unstable slopes, Kitsap County, Washington: Washington	Ge, Sl, Er	M	No	Reported to be based on Deeter’s (1979) geologic maps.	No

Author	Date	Title & Publication	Information Category ¹ Ge, Sl, Te, Li, Er, Se, Ts, To	Relevance H-M-L	New Information	Comments	Have Document
		Division of Geology and Earth Resources Open-File Report 75-7, 11 sheets, scale 1:24,000.					
Palmer, S. P., Magsino, S. L., Bilderback, E. L., Poelstra, J. L., Folger, D. S., and Niggemann, R. A.	2004	Liquefaction Susceptibility Map of Kitsap County, Washington: Washington Division of Geology and Earth Resources Open File Report 2004-20, Liquefaction Susceptibility and Site Class Maps of Washington State, By County, Map 18A, Sheet 35 of 78, 1:100,000.	Li	H	Yes	Based on surficial geology published at a scale of 1:100,000 by Washington State DNR in 2001.	Yes
Pyke, Robert Ph.D., GE	2017	Pros and Cons of the Analysis of Slope Stability by Various Methods of Slices or Columns	Sl	L	Yes	Includes BAS review and guidance related to factor of safety selection within SSA.	Yes
Pyke, Robert Ph.D., GE	2017	Selection of Seismic Coefficients for Use in Pseudo-Static Slope Stability Analyses	Sl, Se	L	Yes	Guidance for seismic SSA related to pseudo-static coefficient selection.	Yes
Rogers, A. M., Walsh, T. J., Kockelman, W. J., and Priest, G. R., editors	1998	Assessing earthquake hazards and reducing risk in the Pacific Northwest. U. S. Geological Survey Professional Paper 1560, v. 2, p. 307-545.	Te, Li, Se, Ts	H	No	Volume containing multiple reports on earthquake hazards.	Yes
Salciarini, D., Conversini, P, Godt, J.W., Savage, W.Z., and Baum, R.L.	2008	Modeling Landslide Recurrence in Seattle, Washington, Engineering Geology, v. 102, no 3-4, p. 227-237.	Sl	H	Yes	Discusses results of a modeling method used to assess shallow landslide frequency in Seattle.	No
Sceva, J. E.	1957	Geology and ground-water resources of Kitsap County, Washington: U. S. Geological Survey Water Supply Paper 1413, 178 p., 3 plates.	Ge	L	No	General geologic information and geologic map.	Yes
Schuster, J. E.	2005	Geologic Map of Washington State: Washington Division of Geology and Earth Resources Geologic Map GM-53, 1:500,000.	Ge, Se	L	Yes	Generalized geology of Washington state.	Yes
Shipman, H.	2001	Coastal landsliding on Puget Sound: A review of landslides occurring between 1996 and 1999. Washington State Department of Ecology Report No. 01-06-019, 87 p.	Sl	M	No	Concludes that landslides in 1996-97 were mostly shallow or debris, due to intense storms; 1998-99 mostly deep seated, due to extended wet weather. Slides in both seasons occurred in repeated and predictable locations for those types.	Yes
Terich, T. A.	1987	<i>Living with the shore of Puget Sound and the Georgia Strait</i> : Duke University Press, 165 p.	Sl	M	No	Book about basic Puget Sound geology, coastal dynamics, and shoreline stabilization	No?
Thorsen, G.W.	1989	Landslide provinces in Washington. In Galster, R. W., Chairman. Engineering Geology in Washington. Division of Geology and Earth Resources, Washington Department of Natural Resources. Bulletin 78, v. 1, p. 71-89.	Sl	L	No	General presentation of landslide types in Washington and Puget Sound region.	Yes
Thorson, R. M.	1993	Postglacial offset along the Seattle fault: <i>Science</i> , v. 260, p. 825-826.	Te, Se	M	No	Uplift estimate from stratigraphic deposits.	Yes
Thorson, R. M.	1996	Earthquake recurrence and glacial loading in western	Se	M	No	Impact of glacial loading on earthquake	Yes

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		Washington: <i>Geological Society of America Bulletin</i> , v. 108, no. 9, p. 1182-1191.				recurrence.	
Tubbs, D.W.	1974	Landslides in Seattle. Division of Geology and Earth Resources, Washington Department of Natural Resources. Information Circular 52, 15p., 1 plate.	Sl	M	No	Geologic conditions in Seattle area leading to slope failures. Similar to some Bainbridge Island geologic conditions.	Yes
Waldron, H. H.	1967	Geologic map of the Duwamish Head quadrangle, King and Kitsap Counties, Washington: U. S. Geological Survey Geologic Quadrangle Map GQ-706, 1 sheet, scale 1:24,000.	Ge	L	No	Geologic map of eastern edge of southern end of island.	Yes
Washington State Department of Ecology	1979	Coastal zone atlas of Washington-, volume 10, Kitsap County: Washington Department of Ecology, 1 v., maps, scale 1:24,000: https://fortress.wa.gov/ecy/coastalatlas/tools/map.aspx?	Ge, Sl, Er	H	No	Coastal geology and slope stability map.	Web
Washington State Division of Geology and Earth Resources	2005	Kitsap County Washington Geologic Map Units: Washington State Department of Natural Resources, Division of Geology and Earth Resources Open File Report 2005-3, 1:100,000.	Ge	M	Yes	Generalized geology of Kitsap County.	Yes
Washington State Office of Community Development	2002	The Model Ordinance for Designating and Protecting Critical Areas – Draft April 2002	Ge, Sl, Te, Li, Er, Se, Ts, To	H	No	Draft model CA Ordinance. Substantial modification required for Bainbridge Island use.	Yes
Weaver, C. E.	1916	The Oligocene of Kitsap County, Washington: <i>Proceedings of the California Academy of Sciences, Fourth Series</i> , v. 6, no. 3, p. 41-52.	Ge	L	No	Bedrock geology	Yes
WSDOT	2013	Slope Stability Analysis: Chapter 7, WSDOT Geotechnical Design Manual M 46-03.08	Sl	H	Yes	Region-specific guidance and recommendations on minimum factors of safety for various types of structures and situations.	Yes
Yount, J. C., Gower, H. D.	1991	Bedrock geologic mapping of the Seattle 30’ by 60’ quadrangle, Washington.: U. S. Geological Survey Open-File Report 91-147. 28 p.	Ge	M	No	Map of bedrock outcrop and unit type.	Yes
Yount, J. C.; Minard, J. P.; Dembroff, G. R.	1993	Geologic map of surficial deposits in the Seattle 30’ x 60’ quadrangle, Washington: U. S. Geological Survey Open-File Report 93-233, 2 sheets, scale 1:100,000.	Ge	M	No	Geologic map of surficial deposits.	Yes

Notes:

¹ Ge = Geology

Sl = Slope Stability

Te = Tectonic

Li = Liquefaction

Er = Erosion

Se = Seismic

Ts = Tsunami

To = Topography

Re = Reference

The Growth Management Act of Washington (GMA) requires cities to periodically review and evaluate comprehensive plans and development regulations (RCW 36.70A.130). Following adoption of the Comprehensive Plan, the City's development regulations need to be updated to support the goals and policies articulated in the plan. The City's review of development regulations includes the Critical Areas Ordinance (CAO) update pursuant to state law that requires cities to designate and adopt regulations for the protection of critical areas. The City's CAO is codified in Bainbridge Island Municipal Code (BIMC) Chapter 16.20. **There are five types of critical areas:**

- **Aquifer recharge areas**
- **Fish and wildlife habitat conservation areas**
- **Frequently flooded areas**
- **Geologically hazardous areas**
- **Wetlands**

The City last completed a comprehensive update of its CAO in 2005 with updates in 2007 and 2008. The updates addressed only geologically hazardous areas. **The intent of the current update is to:**

- Revise code as necessary to comply with **state requirements**;
- **Review best available science (BAS)** and incorporate as needed;
- Update the CAO to reflect and **support the Comprehensive Plan**; and
- **Improve ease of administration and clarity** for land use applicants and the general public.

The following is a brief summary of proposed revisions currently under consideration in the draft critical areas ordinance update (Draft).

general updates

Sections applicable to all critical areas were reorganized to improve clarity, consistency and ease of administration.

- Applicability, Exemptions and Standards for existing development are divided into separate sections.
- The prescriptive buffer variations section was removed. The current CAO offers overlapping and inconsistent methods to reduce critical area buffers (variances, buffer averaging, habitat management plan, reasonable use exceptions). **The option to request a variance from the critical areas regulations was removed.**
- Standards for existing development are more restrictive.
- With few exceptions, any development, use or activity requires a critical area permit. This is a change from the current CAO, where there is no clear or required review and/or permitting process.
- The language for reasonable use exceptions (RUE) was revised to encourage consideration of alternatives early in the land use review process.
- The definitions section was moved to the end of the chapter to improve readability. Several definitions were added and many were revised for clarity or consistency.
- The Performance and maintenance surety and Compliance and enforcement sections are unchanged with the exception that **a minimum \$2,500 fine is added for major violations**, as determined by the Planning and Community Development Director.

new sections

The Draft includes three new sections.

16.20.030 Protection of critical areas – This section was added to codify the Comprehensive Plan policies requiring the use of mitigation sequencing and the precautionary principal.

16.20.090 Trees and vegetation – This section was added to consolidate all regulations related to tree and vegetation activities for all critical areas, clarify additional submittal requirements (e.g., arborist or geotechnical report). **New thresholds are proposed for tree and vegetation maintenance (e.g., pruning, invasive species removal) not requiring City review. Tree and vegetation activities requiring a critical area permit must be done by a professional that submits an acknowledgement form.**

16.20.180 Critical area reports – A new section was added to consolidate all report requirements in one place. Revisions to some report requirements are proposed; new buffer enhancement plan, aquifer recharge mitigation plan, and a native vegetation protection area stewardship plan are included.

critical aquifer recharge areas

A new requirement to designate a Native Vegetation Protection Area (NVPA) of up to 65% of a site is included.

- The Draft classifies **parcels within the R-0.4, R-1 and R-2 zoning districts as critical aquifer recharge areas.**
- **The requirement to designate a NVPA is triggered only when development or redevelopment results in greater than 800 square feet of hard surfaces or greater than 7,000 square feet of land disturbing activity.**
- A critical area permit and hydrogeological site assessment are required for any potential pollutant-generating development or use. Several prohibited uses were added based on state critical aquifer recharge guidance.

fish & wildlife habitat areas

Buffer widths are increased for most stream types.

- **Increased buffer widths for Type F (200 feet), Np (100 feet) and Ns connected to F or Np streams (75 feet) to be more in line with protection of anadromous fisheries and Washington Department of Fish and Wildlife Priority Habitat and Species management recommendations.**
- Classifications of fish and wildlife habitat conservation areas revised with specific habitats present or likely to occur on the island. Added biodiversity areas and corridors. No change to stream classifications.
- Clarified that buffer widths assume the buffer is well vegetated with native species and that enhancement may be required as part of site development. **New buffer modification thresholds and requirements.**

- **Removed separate water quality and habitat buffers.**
- Updated and clarified development standards for specific development, uses and activities allowed in FWHCAs and buffers. New requirement for critical area permit.

frequently flooded areas

The Draft adopts by reference BIMC 16.15, Flood Damage Prevention, instead of having a separate set of regulations in the critical areas ordinance.

The City's floodplain management regulations are contained in BIMC 16.15, Flood Damage Prevention. **The CAO update will adopt by reference BIMC 16.15** to meet the requirements regarding designation and mapping as well as standards for habitat protection included in the FEMA Puget Sound Biological Opinion.

geologically hazardous areas

Proposed standards are generally less restrictive.

- "Buffer" changed to "setback" and structure setback requirement removed.
- **Standard setback requirement changed from height of slope or 50 feet, whichever is greater, to height of slope only up to a maximum of 75 feet.**
- New **range of factors of safety proposed for non-habitable structures** and other uses/activities.
- "Exempt" activities changed to "allowed" activities for **minor development that may be allowed** in landslide hazard areas 40 percent or greater if development standards met.

wetlands

Wetland buffer widths are not changed.

- **Removed separate water quality and habitat buffers; no change to buffer widths.**
- Clarified that buffer widths assume the buffer is well vegetated with native species and that enhancement may be required as part of site development. **New buffer modification thresholds and requirements.**
- **Included R-2 zoning designation in "moderate" impact of land use.**
- Updated methods and categories based on state and federal agency guidance.
- **Provided specific requirements for delineations, including that they are valid for 5 years.**
- Updated and clarified development standards for specific development, uses and activities allowed in wetlands and buffers. New requirement for critical area permit.
- **No change in wetland mitigation ratios.**

critical aquifer recharge areas

A new requirement to designate a Native Vegetation Protection Area (NVPA) of up to 65% of a site is included.

**Where did
the idea
come from?**

The existing critical areas ordinance classifies the entirety of Bainbridge Island as critical aquifer recharge area. The draft CAO designates only the R-0.4, R-1 and R-2 zoning districts as critical aquifer recharge areas. This designation supports the Island-wide Land Use Concept developed for the 2016 Comprehensive Plan:

Outside of Winslow and the Designated Centers, the Island has a rural appearance with forested areas, meadows, farms and winding, narrow, heavily vegetated roadways. These characteristics represent an important part of the Island's special character that is so highly valued by its residents.

As important as preserving Island character is to its residents, of equal importance is the protection of the Island's environmentally sensitive areas. These outlying areas contain much of the Island's sensitive areas – **the major recharge areas for the Island's aquifers**, wetlands and streams that serve a variety of important functions. Much of the area serves as fish and wildlife habitat. There is strong public support to encourage a pattern of development that preserves and protects this portion of the Island. [See Comprehensive Plan Land Use Element, Policy LU 1.2.]

The City's development regulations, including the critical areas ordinance, are required to support and implement the Comprehensive Plan. The purpose and intent of the critical areas ordinance states, in part **(emphasis added)**, "The beneficial functions and values provided by critical areas include, but are not limited to, water quality protection and enhancement, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation of flood waters, groundwater recharge and discharge, erosion control, wave attenuation, and protection from hazards and the impacts of climate change. **Groundwater recharge is of particular concern for the city because the Island's drinking water is supplied solely by groundwater.**"

The NVPA requirement grew out of a review and assessment of the City's adoption of new state stormwater regulations that emphasize the use of Low Impact Development (LID) Best Management Practices (BMPs). A new requirement to designate a Native Vegetation Protection Area of up to 65 percent of a site is included in the critical areas ordinance because the City's stormwater regulations allow for "engineered solutions" which may not include any native vegetation retention.

The hydrologic system of our region, and Bainbridge Island, evolved from, and is dependent on, the characteristics of undisturbed Pacific Northwest watersheds – including mature forest canopy and uncompacted soils – and cannot be expected to have the same hydrologic regime when significant portions of a site are disturbed.

Retaining mature native vegetation and soil protection areas is a primary objective for LID in order to maintain the natural hydrological function of the site and watershed and is the most efficient and cost-effective tool for managing stormwater quantity and quality. The LID technical manual for Puget Sound, developed based on empirical data and hydrologic modeling analysis, provides that **a minimum 65 percent on-site native vegetation retention is the best means to maintain or more closely mimic the natural hydrologic function of the site and watershed.** Retaining existing native vegetation will increase the amount of precipitation available for groundwater recharge over the full range of rainfall intensities and durations by increasing stormwater storage, infiltration and dispersion.

What is it and where does it apply?

While parcels within the R-0.4, R-1 and R-2 zoning districts are classified as critical aquifer recharge areas, **the requirement to designate a NVPA is triggered only when development or redevelopment results in greater than 800 square feet of hard surfaces or greater than 7,000 square feet of land disturbing activity.** NVPAs are also required for subdivisions and forest practice conversions. These thresholds are tied to the City's stormwater regulations, which require a site assessment review (SAR) at these same levels.

Existing properties do not automatically have a NVPA with the adoption of the new critical areas ordinance. If you are not proposing something meeting the thresholds above, your property does not have a NVPA.

The NVPA includes all existing native vegetation on a site, up to a maximum of 65 percent of the total site area. **A lower percentage may be allowed if needed to achieve a development area of at least 12,500 square feet on a parcel.**

All properties will retain their existing allowable density as determined by the size of the property.

If a site has less than 65 percent native vegetation, then only the existing native vegetation is required to be designated in a NVPA.

The location and configuration of the NVPA is determined through completion of a Site Assessment Review (SAR) **already required by the City's stormwater regulations for projects meeting these thresholds.**

The maximum area of the required NVPA may be **reduced to 50 percent for public schools and public parks** allowed in the underlying zoning district.

The total area required must be retained once established, but **the location and configuration of the NVPA may change over time.**

Maintenance pruning of trees within the NVPA is allowed without the restrictions in the tree and vegetation section of the critical areas ordinance.

Submittal of a NVPA stewardship plan may allow for more extensive use of the NVPA than specified in the regulations.

The NVPA is not a "no-touch" area and is intended to allow for limited use including:

- Installation of native plants.
- Passive recreation, including pervious trails.
- Potable water wells and well houses.
- Low impact fencing or signs marking the NVPA boundary.
- On-site sewage drainfield reserve facilities.
- Storm drainage facilities.
- Accessory solar panels, small wind energy generators, composting bins, rainwater harvesting barrels, and cisterns.
- Other structures or hard surfaces with a total footprint of no greater than 200 square feet.
- Driveways if necessary to achieve better site design.
- Other structures or activities may be allowed through review and approval of a NVPA stewardship plan, which can be completed by the property owner.