Burien Comprehensive Plan Update

CRITICAL AREAS ORDINANCE GAP ANALYSIS

Prepared for:

City of Burien
400 SW 152nd St., Ste. 300
Burien, WA 98166

June 2012
TWC Reference #110316

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FINAL

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CRITICAL AREAS ORDINANCE GAP ANALYSIS

CITY OF BURIEN CRITICAL AREAS ORDINANCE UPDATE

1 INTRODUCTION

In accordance with the Washington State Growth Management Act (GMA), local jurisdictions are required to periodically review adopted critical areas policies and regulations for concurrence with best available science (BAS). As stated in the Washington State Administrative Code, BAS must be included in the development of critical areas policies and regulations. Any deviations from science-based recommendations should be identified, assessed and explained (WAC 365-195-915).

The City of Burien (City) is currently in the process of reviewing and updating its comprehensive plan, *The Burien Plan* (Comprehensive Plan), including critical areas policies. Phase 1 of the Comprehensive Plan update, completed in 2011, included a BAS review in anticipation of the update of critical areas provisions. Phase 2 is scheduled for completion by the end of 2012.

Once the Comprehensive Plan update is complete, the next step for the City will be to update the regulations contained in its critical areas ordinance (CAO), as codified in Chapter 19.40 of the Burien Municipal Code (BMC or Code). The CAO was last revised in 2003. Since that time, new findings and scientific methodologies regarding critical areas classifications and buffers have been adopted as BAS.

This Gap Analysis report provides a review of both the existing environment-related Comprehensive Plan policies and the existing CAO, noting "gaps" where existing policies or regulations are not consistent with the City's BAS. The gap analysis is intended to guide the updates of these documents. Existing Comprehensive Plan policies related to the environment were reviewed to determine whether they adequately establish the planning framework for the critical areas regulations. Additionally, existing Comprehensive Plan policies related to the environment were reviewed to determine whether any existing policies are not, but could appropriately be, implemented as regulations in the CAO. The existing CAO was reviewed for known deficiencies in meeting the current GMA requirements as per RCW 30.70A, WAC 365.195 and WAC 365-196.

A few areas where environmental policy language could be strengthened to better support CAO regulations, were identified. Recommendations for revising Comprehensive Plan policies are provided in the next section (Section 2).

The remainder of this document addresses one or more related sections of the existing CAO. For example, Part 7 of this document addresses Code sections 19.40.300 through 19.40.330, which are all related to wetlands. Where a potential gap was identified, sub-parts of this document provide further discussion. To highlight findings of the gap analysis, a Code review summary table is provided at the beginning of Sections 3 through 11 below.

2 ENVIRONMENTAL POLICIES

A few environmental policies in the current Comprehensive Plan could be modified to better support the BAS-based CAO updates recommended in the sections below. Specific recommendations are as follows.

Pol. EV 1.2 Development should be directed toward areas where their adverse impacts on critical areas can be minimized.

Policy EV 1.2 stood out because it does not include impact avoidance, which should be the first step for any site improvement that has the potential to impact a critical area. To support the goal of maintaining the integrity of the natural environment, direct impact avoidance should be emphasized. Mitigation sequencing, which is required for wetlands, states impacts should be avoided to the extent feasible, minimized when unavoidable, and lastly mitigated. It is recommended that this policy be revised to specifically identify that development should first attempt to avoid critical area impacts, where feasible, prior to impact minimization and mitigation.

Pol. EV 1.3 The City shall maintain a system of development regulations and a permitting system to prevent the destruction of critical areas. Development regulations should at a minimum address wetland protection, aquifer recharge areas important for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.

Policy EV 1.3 could be revised to list all critical areas for consistency with the CAO regulations; streams are not listed in this policy but are documented in the CAO.

Pol. EV 1.9 Encourage minimizing the amount of impervious surfaces in new development through the use of appropriate low-impact development techniques and removing paved areas or using retrofit options in existing developments, where applicable, to minimize runoff.

Policy EV 1.9 doesn't seem to be supported in the Code (BMC 19.40). The City may consider adding new Code language to better implement this policy. For example, City of Sammamish allows some buffer modifications when impervious surface area is reduced or stormwater management is improved (See SMC 21A.50.290(8) Wetland buffer reduction options for sample language). Alternatively, the City may grant other allowances, such as exceeding height limits, in attempting to minimize impervious surfaces.

Pol. EV 2.9 The City shall consider the impacts of new development on the quality of land, wildlife and vegetative resources as a part of its environmental review process and require any appropriate mitigating measures. Such mitigation may involve the retention of significant habitats.

Policy EV 2.9 could be revised to include mention of wildlife corridors and habitat connectivity. This point is made in policy EV 4.2, but it may also be appropriate to reiterate the importance of maintaining habitat corridors as it relates to quality of life in the City (goal EV.2).

Pol. EV 2.15 Educate the public on water quality issues and impacts of stormwater flow; and EV 2.16 Educate individuals and households about different ways to reduce pollution.

The education policies under Goal EV.2 could be expanded to include education for individuals and households regarding how to provide and improve the functions and values of backyard/urban habitats.

Goal EQ.1 Recognize the significant role that the natural environment plays in creating a healthy and attractive community.

Consider interjecting statements about sustainability and the economic benefits of maintaining natural environments. The link between economic, environmental, and human health could be recognized in a policy statement to support any future work on a sustainability strategy for the City.

3 PURPOSES & GENERAL PROVISIONS (BMC 19.40.010 - 19.40.080)

This introductory Code section is clear, concise, and substantially in agreement with GMA and Washington Administrative Code (WAC) requirements to

manage critical areas using BAS guidance. However, the adjacency criteria for critical areas are not aligned with current State and Federal species-specific recommendations. Additionally, some information in this Code section could be presented differently, such as exemptions and exceptions, to make it more user-friendly.

Table 1. BMC 19.40.010 through 19.40.080: Code Review Summary, General Provisions.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations *
19.40.010	User guide	Yes	Yes	
19.40.020	Purposes and goals	Yes	Yes	
19.40.030	Relationship to other regulations	Yes	Yes	
19.40.040	Applicability	No	Yes	• Recommend refining adjacency criteria to ensure consistency with State and Federal recommendations for species of local importance
19.40.050	Protection of critical areas	Yes	Yes	
19.40.060	Best available science	Yes	Yes	
19.40.070	Exemptions and exceptions	Yes	Yes	• Exemptions could be listed separately from exceptions, possibly in a table format
19.40.080	Reserved	N/A	N/A	

* See discussion of comments/recommendations in the subsections below this table.

3.1 Applicability (BMC 19.40.040)

The definition of adjacency under Applicability (BMC 19.40.040.3) should be updated to ensure consistency with State and Federal habitat management guidelines, which are BAS-based. Current Code sets adjacency for bald eagle nest sites at 800 feet, which is more restrictive than distances recommended in the *National Bald Eagle Management Guidelines* (Guidelines)(USFWS 2007). This distance from a bald or golden eagle nest could be reduced to 660 feet for activity visible from the nest and 330 feet for activity not visible from a nest. Additionally, if a species of local importance list is adopted in the Code update, then this section should be cross referenced with species-specific habitat management recommendations (BMC 19.40.380 through 19.40.430) for consistency.

3.2 Exemptions and Exceptions (BMC 19.40.070)

Some local jurisdictions present exemptions or allowed activities and exceptions separately in their Code. Making that distinction clear in the Code can help the applicant understand their options and associated permitting path. It may also direct applicants toward lower impact site plans with lesser permit/review requirements. An example of this approach can be viewed in the King County Code, KCC 21A.24.045 (Allowed Alterations) and KCC 21A.045.070 (Alteration Exception).

4 Critical Area Review, Study, and Determination (BMC 19.40.090 - 19.40.150)

The City's critical area review and critical area study requirements comply with BAS as written. The Code appropriately defines qualified professionals eligible to prepare Critical Areas Studies by discipline. To further support enforcement, the City should continue to maintain rosters of qualified professionals, as defined in BMC 19.40.120.A, B and C.

Table 2. BMC 19.40.090 through 19.40.150: Code Review Summary, Critical Area Study.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations
19.40.090	Critical area review	Yes	Yes	
19.40.100	Review criteria	Yes	Yes	
19.40.110	Critical area study - waiver	Yes	Yes	
19.40.120	Critical area study - requirements	Yes	Yes	• The City should continue maintaining rosters of qualified professionals by discipline
19.40.130	Critical area study - modifications to requirements	Yes	Yes	
19.40.140	Determination	Yes	Yes	
19.40.150	Appeal of determination	Yes	Yes	

5 GENERAL DEVELOPMENT STANDARDS (BMC 19.40.160 - 19.40.230)

The general development standards as stated in the Code coincide with current BAS, with the exception of the "Critical area markers and signs" section (BMC 19.40.200) which does not expressly require permanent signage. Updates to that Code section and refinement of the bond Code language are recommended.

Table 3. BMC 19.40.160 through 19.40.230: Code Review Summary, General Development Standards.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations (see discussion of comments/recommendations in subsections below table)
19.40.160	Construction requirements	Yes	Yes	
19.40.170	Mitigation, maintenance and monitoring	Yes	Yes	
19.40.180	Bonds	Yes	Yes	• Describe or define how bond amounts should be calculated to standardize bond quantity review
19.40.190	Vegetation management plan	Yes	Yes	
19.40.200	Critical area markers and signs	No	Yes	• Permanent critical area signs should be required, sign spacing and language is recommended
19.40.210	Notice on title	Yes	Yes	
19.40.220	Permanent protection of critical areas and buffers	Yes	Yes	
19.40.230	General development standards	Yes	Yes	

5.1 Bonds (BMC 19.40.180)

While the Director is given authority to require bonds under BMC 19.40.180, no direction is given regarding calculation of bond quantities. One of the key factors in mitigation success or failure is the bond amount (NRC 2001). Bonds should be large enough to cover current market costs of mitigation installation, maintenance, monitoring, and any contingency actions plus markup or mobilization cost. It should also provide a financial incentive to the applicant. The City may choose to specify a bond quantity worksheet form or detailed criteria for generating bond quantities in this Code section.

5.2 Critical Area Markers and Signs (BMC 19.40.200)

While this Code section thoroughly addresses temporary construction fencing requirements, permanent fencing and signage requirements are not clearly defined. While permanent fencing may not be appropriate in all cases, at a minimum signs should be posted to reduce encroachment into protected critical areas. Most local jurisdictions require signs to be posted every 50 feet along a critical area buffer. If the City does not have critical area signs applicants can purchase, then providing standardized language for signs in the Code is recommended. The City may choose to exempt certain critical areas, such as geologically hazardous areas, from this requirement for practical reasons.

6 FLOOD HAZARD AREAS (BMC 19.40.240 - 19.40.280)

The Code as written restricts development within flood hazard areas and requires documentation from a qualified professional to ensure no net impact to floodplain storage or dynamics. Regulatory actions to prevent flood hazards include direct flood capacity compensation and no net increase in flood elevations. This flood hazard management approach is concurrent with BAS findings on this topic. No changes to this Code section are necessary.

Table 4. BMC 19.40.240 through 19.40.280: Code Review Summary, Flood Hazard Areas.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations
19.40.240	Flood hazard areas - Components	Yes	Yes	
19.40.250	Flood fringe - Development standards and permitted alterations	Yes	Yes	
19.40.260	Zero-rise floodway - Development standards and permitted alterations	Yes	Yes	
19.40.270	FEMA floodway - Development standards and permitted alterations	Yes	Yes	
19.40.280	Flood hazard areas - Certification by engineer or surveyor	Yes	Yes	

7 GEOLOGICALLY HAZARDOUS AREAS (BMC 19.40.290)

Careful planning and engineering are key to preventing and reducing the potential magnitude of geologic hazards, such as landslides (The Watershed Company 2011). Referencing City of Burien critical area and soil maps can help identify erosion hazards. The Code as written reasonably safeguards against potential hazards by emphasizing avoidance and requiring buffers and rigorous professional design standards. This Code section is in agreement with BAS.

Table 5. BMC 19.40.290: Code Review Summary, Geologic Hazards.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations
19.40.290	Geologically hazardous areas - Development standards and permitted alterations	Yes	Yes	

8 WETLANDS (BMC 19.40.300 - 19.40.330)

Basic tenets of wetland protection and management as required by the GMA are reflected in Code sections BMC 19.40.300 through 19.40.330. However, since the last CAO update, several wetland management guidelines have been issued by pertinent agencies to incorporate current BAS findings and methodologies. To manage the City's wetland resources in an efficient and effective manner, a complete review of this Code section is recommended. Specific gaps between current Code and BAS are presented in the following discussion and summarized in Table 6 below.

Table 6. BMC 19.40.300 through 19.40.330: Code Review Summary, Wetlands.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations *
19.40.300	Wetlands - Designation and Classification	No	Yes	• Designation: include Corps regional supplement • Classification: use Ecology rating system
19.40.310	Wetlands - Performance Standards	No	Yes	• Emphasize mitigation sequencing (avoid &

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations *
				minimize impacts first) • BAS-based buffer width recommendations
19.40.320	Wetlands - Permitted Alterations	No	Yes	• Amend storm water allowances for buffers
19.40.330	Wetlands - Mitigation Requirements	No	Yes	• Mitigation ratios too broad, should be amended along with the wetland classification system

* See discussion of comments/recommendations in the subsections below this table.

8.1 Designation and Classification of Wetlands (BMC 19.40.300)

New BAS tools and methodologies for wetland designation and classification have been developed and adopted by State and Federal agencies since the time of the last Code update.

8.1.1 Wetland Designation (BMC 19.40.300.3)

Currently, identification of jurisdictional wetlands in the City is based on the Washington State Department of Ecology *Wetlands Identification and Delineation Manual* (Ecology Manual)(Ecology publication #96-94). In May 2010 the U.S. Army Corps of Engineers (Corps) issued a new guidance document, titled *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*(Regional Supplement)(Corps Publication #ERDC/EL TR-10-3). The Regional Supplement is intended to be used along with the Ecology Manual to increase accuracy and efficiency of wetland delineation procedures. Updating the City's CAO to define wetlands based on the State Manual <u>and</u> the Regional Supplement to require use of this BAS wetland identification tool is recommended.

8.1.2 Wetland Rating and Classification (BMC 19.40.300.4)

The current Code classifies wetlands using a four-tiered system based on specific physical attributes, including wetland size, vegetation structure, presence of priority plant or animal species, and connectivity to other water bodies. That wetland categorization approach, which was a commonly used classification system prior to 2004, has been replaced by a more refined rapid-assessment tool. The current BAS tool for wetland classifications is the *Washington State Wetland Rating System for Western Washington* (Ecology Rating System) (WA State Department of Ecology Publication #04-06-025). The Ecology Rating System is also a four-tiered rating system, but those wetland categories (I-IV) are based on a functional score that evaluates the water quality functions, hydrologic functions, and habitat functions provided by a given wetland. This system also

recognizes how wetland functions and values are linked to a wetland's landscape position or hydrogeomorphic (HGM) class.

Additionally, this Code section as written has some text errors, resulting in undefined rating criteria. Specifically, BMC 19.40.300.4.A.ii.g and 19.40.300.4.A.iii.b refer to a "habitat score" on a "Wetlands Rating Form." However, there is no prior mention of a "Wetlands Rating Form" in this Code section; it is also not listed in the definitions section (BMC 19.10). This is likely a reference to a draft form of the current Ecology Rating System. This needs to be clarified in the revised Code.

8.2 Wetland Performance Standards (BMC 19.40.310)

The "General Requirements" (BMC 19.40.310.1.A) state that alterations to wetlands and/or buffers require mitigation as described in BMC 19.40.330. While the Code as written does include language regarding impact avoidance and minimization (BMC 19.40.330.2 and BMC 19.40.050), repeating the mitigation sequencing procedure in the general requirements section is recommended. Wetlands are complex ecosystems, which are not easily replaced. Therefore, as documented in BAS, impact avoidance is the best protection measure, followed by minimization, and lastly compensatory mitigation.

A direct comparison of wetland buffer widths in the current Code (BMC 19.40.310.2) and BAS is not possible because the underlying rating systems are different. However, both are four-tiered rating systems. Wetland buffer requirements under the current City Code are listed in Table 7 below.

Table 7. Wetland Categories and Buffer Widths under current City Code.

Wetland Category	Standard Wetland Buffer (feet)
Category 1	200
Category 2	100
Category 3	50
Category 4	30

To provide a comparison of the current Burien regulations and a BAS-based approach, albeit a limited one, two wetlands were reviewed: 1) the Walker Creek headwater wetland, and 2) Arbor Lake, the headwater wetland of Miller Creek. Following Burien's current wetland classification system, the Walker Creek wetland is a Category 1 due to its size, approximately 35-acres, and number of wetland classes, three. The Arbor Lake wetland is approximately 6-acres and is comprised of three wetland classes; it is a Category 2 wetland under the current Code. Using the Ecology wetland rating form, The Walker Creek wetland has a habitat score greater than 20 points and scored 51 – 69 points for total functions.

The Arbor Lake wetland score less than 20 habitat points and 30 – 50 points for total functions. In summary, the Walker Creek Wetland is a Category II with moderate habitat functions and Arbor Lake Wetland is a Category III with low habitat functions under the Ecology rating system. The adjacent land use intensity for both wetlands is presumed to be moderate. Land use intensity and the buffer alternatives presented below are further explained in this section. As the example in Table 8 shows, basing buffer widths on wetland category, habitat functions, and land use intensity (BAS – based Alternative 3) allows the City to manage wetlands in a more site-specific manner. This can result in lesser buffers in some cases.

Table 8. A sample comparison of current wetland regulations and BAS-based options.

	City of Burien		BAS - based approach using Ecology recommendations			
				Buffer Width *		
Wetland Name	Wetland Category	Buffer Width	Wetland Category	Alternative 1	Alternative 2	Alternative 3
Walker Creek Wetland	1	200 ft	II	300 ft	225 ft	110 ft
Arbor Lake Wetland	2	100 ft	III	150 ft	110 ft	60 ft

* Buffer width alternatives are further explained in Table 9 below and the preceding text. As described in Table 10, buffer widths may be refined based on habitat function scoring.

Effective buffer widths vary depending on the targeted wetland functions, intensity of surrounding land use, and buffer characteristics; protecting habitat functions generally requires wider buffers. The City may choose to assign a single fixed buffer width for each wetland category or to vary those buffer widths according to land use intensity and/or habitat functions. Land use intensity is characterized as high, moderate or low. Examples of high intensity land uses are commercial, institutional, dense residential (>1 unit/acre), and high-intensity recreation, such as ball fields. Moderate intensity land uses include residential (≤ 1 unit/acre), moderate-intensity open space, paved trails, and maintained utility corridors. Low intensity land uses include low-intensity open space, unpaved trails, and low maintenance utility corridors.

Two BAS-based wetland buffer options (Buffer Alternatives 2 and 3) from the Ecology publication, *Wetlands in Washington State – Volume* (see Appendix C), are provided in Table 9 below. Ecology's Buffer Alternative 1, which is not included in Table 9, presumes high intensity land use in all cases and applies the most restrictive buffer for each wetland category. Buffer Alternative 2 modifies the buffer width in accord with adjacent land uses. Buffer Alternative 3 considers both adjacent land use and wetland habitat functions when determining an appropriate buffer width for each wetland category.

Table 9. Two BAS-based options for assigning wetland buffer widths (Ecology 2005).

Wetland Category [1]	Buffer Alternative 2			Buffer Alternative 3			
	Land Use Impact			Habitat Score	Land Use Impact		
	Low	Moderate	High		Low	Moderate	High
I	150 ft	225 ft	300 ft	29-36	150 ft	225 ft	300 ft
				20-28	75 ft	110 ft	150 ft
				< 20	50 ft	75 ft	100 ft
II	150 ft	225 ft	300 ft	29-36	150 ft	225 ft	300 ft
				20-28	75 ft	110 ft	150 ft
				< 20	50 ft	75 ft	100 ft
III	75 ft	110 ft	150 ft	20-28	75 ft	110 ft	150 ft
				< 20	40 ft	60 ft	80 ft
IV	25 ft	40 ft	50 ft	N/A	25 ft	40 ft	50 ft

[1] Wetland Categories based on the Western Washington Wetland Rating System (Ecology publication # 04-06-025)

Another approach to wetland buffers, similar to Buffer Alternative 3 above, is provided in sample CAO language in *Wetlands Guidance for Small Cities Western Washington Version*, page A-6 (Ecology publication # 10-06-002). A summary of those buffer widths is provided in Table 10 below. This is another BAS-based option to consider when determining what is the most practical approach for updating the City's wetland buffer regulations.

Table 10. A BAS-based option for assigning wetland buffer widths (Ecology 2010)[1].

Wetland Category [2]	Buffer Width according to Habitat Score			
	< 21 points	21-25 points	26-29 points	30-36 points
Category I	190 ft			225 ft
Bogs				
Category I (based on total score)	75 ft	105 ft	165 ft	225 ft
Category II	75 ft	105 ft	165 ft	225 ft
Category III	60 ft	105 ft	165 ft	165 ft
Category IV	40 ft			

[1] The table above is an excerpt of wetland buffer options relevant to City of Burien.

[2] Wetland Categories based on the Western Washington Wetland Rating System (Ecology publication # 04-06-025)

For further details and examples see the following guidance documents (Appendix B and C, respectively).

- Wetlands and CAO Updates: Guidance for Small Cities (Ecology 2010)
- Wetlands in Washington State – Volume 2, Appendix 8C (Ecology 2005).

8.3 Wetlands - Permitted Alterations (BMC 19.40.320)

It is not clear what wetland alterations are allowed under BMC 19.40.320.3.B. However, BAS emphasizes that in order to protect wetland functions and values, no direct wetland impacts should be exempted from a critical areas review.

More concise language in BMC 19.40.320.D is recommended to protect wetlands from surface water discharges. To minimize the impact of storm water outfalls within wetland buffers, these structures are generally restricted to the outer buffer (e.g. outer 25 percent of buffer). Effective buffer widths for storm water control (hydrology maintenance) functions range from 50 to 300 feet (The Watershed Company 2011).

8.4 Wetlands – Mitigation Requirements (BMC 19.40.330)

Since wetland mitigation ratios in the Code (BMC 19.40.330.A) are based on an outdated wetland rating system, a direct comparison with BAS mitigation ratios is not possible. However, the Code does group wetland mitigation ratios for multiple categories, which may result in more or less mitigation than recommended in current BAS-based guidance. For reference existing mitigation ratios in BMC 19.40.330.7.A are listed in Table 11 below.

Table 11. Wetland Mitigation Ratios under the current City Code.

Wetland Category	Creation or Restoration Ratio
Category 1 and 2	3-to-1
Category 3 and 4	2-to-1

BAS wetland mitigation ratios (Appendix C, Table 8C-11) are based on the current Ecology Rating System. Compensatory mitigation can be achieved by assigning a mitigation ratio to each wetland according to wetland category and mitigation approach. This gives the applicant more options while focusing on maintaining wetland functions and values. See the summary in Table 12 below.

Additionally, buffer requirements for created wetlands are not clearly stated in the Code. To adequately protect mitigation wetlands, they should be subject to the same buffer requirements as existing wetlands.

Table 12. Wetland Mitigation Ratios recommended by Ecology[1].

Category of Impact Wetland [2]	Creation Only	Rehabilitation Only	Creation and Rehabilitation	Creation and Enhancement	Enhancement Only
Category I: based on total score	4:1	8:1	1:1 C and 6:1 RH	1:1 C and 12:1 E	16:1
Category I: Forested	6:1	12:1	1:1 C and 10:1 RH	1:1 C and 20:1 E	24:1
Category I: Bog	Not possible	6:1 RH of a bog	Not possible	Not possible	Case-by-case
Category II	3:1	6:1	1:1 C and 4:1 RH	1:1 C and 8:1 E	12:1
Category III	2:1	4:1	1:1 C and 2:1 RH	1:1 C and 4:1 E	8:1
Category IV	1.5:1	3:1	1:1 C and 1:1 RH	1:1 C and 2:1 E	6:1

Legend: C = Creation, RH = Rehabilitation, E = Enhancement.

[1] Wetlands in Washington State – Volume 2, Appendix 8C (Ecology 2005).
[2] Wetland Categories based on the Western Washington Wetland Rating System (Ecology publication # 04-06-025)

9 STREAMS (BMC 19.40.340 - 19.40.370)

Stream regulations should be updated to improve protection and align with current BAS. Considerations for updates to stream designation, classification and performance standards in the current Code are discussed below and a summary of this Code review is provided in the following table.

Table 13. BMC 19.40.340 through 19.40.370: Code Review Summary, Streams.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations *
19.40.340	Streams - Designation and Classification	No	Yes	• Ditched non-fish bearing streams are not protected under the Code as written • Recommend updating stream classification to use the Permanent Water Typing System (WAC 222-16-030).
19.40.350	Streams - Performance Standards	No	Yes	• BAS-based buffer width recommendations
19.40.360	Streams - Permitted Alterations	Yes	Yes	
19.40.370	Streams - Mitigation Requirements	Yes	Yes	

* See discussion of comments/recommendations in the subsections below this table.

9.1 Stream Designation and Classification (BMC 19.40.340)

Targeted revision of stream designation and classification are recommended to improve clarity and concurrence with BAS.

9.1.1 Stream Designation - Applicability (BMC 19.40.340.2)

Applicability as defined in the Code excludes ditches from stream regulations, unless current fish use is documented. The intent of this Code language, to exclude artificial drainage features from stream regulations, is practical. However, historic stream flow is frequently ditched, particularly in urban environments. As defined in WAC 173.22.030(8), streams include natural waterbodies that are conveyed in open artificial channels or ditches. All natural (historic) open channel stream segments should be subject to critical area Code provisions.

9.1.2 Stream Classification (BMC 19.40.340.3)

To standardize stream classifications across the State, the Department of Natural Resources recommends adopting the Permanent Water Typing System (WAC 222-16-030). The Permanent Water Typing System is more descriptive and inclusive than the stream classification system defined in the current Code. The primary difference between the current and recommended stream classification systems is that the recommended system considers all fish use, not just salmonids. Table 14 below describes the Permanent Water Typing System.

Table 14. Permanent Water Typing System (WAC 222-16-030).

Permanent Water Typing	Brief Description	Full Description
Type S	Shoreline of the State	All waters, within their bank-full width, as inventoried as "shorelines of the state" under chapter 90.58 RCW and the rules promulgated pursuant to chapter 90.58 RCW including periodically inundated areas of their associated wetlands.
Type F	Fish bearing stream (may be perennial or seasonal)	Segments of natural waters other than Type S Waters, which are within the bankfull widths of defined channels and periodically inundated areas of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat or are described by one of the following four categories: (a) Waters, which are diverted for domestic use by more than 10 residential or camping units or by a public accommodation facility licensed to serve more than 10 persons, where such diversion is determined by the department to be a valid appropriation of water and the only practical water source for such users. Such waters shall be considered to be Type F Water upstream from the point of such diversion for 1,500 feet or until the drainage area is reduced by 50 percent, whichever is less; (b) Waters, which are diverted for use by federal, state, tribal or private fish hatcheries. Such waters shall be considered Type F Water upstream from the point of diversion for 1,500 feet, including tributaries if highly significant for protection of downstream water quality. The department may allow additional harvest beyond the requirements of Type F Water designation provided the department determines after a landowner-requested on-site assessment by the department of fish and wildlife, department of ecology, the affected tribes

Permanent Water Typing	Brief Description	Full Description
		and interested parties that: (i) The management practices proposed by the landowner will adequately protect water quality for the fish hatchery; and (ii) Such additional harvest meets the requirements of the water type designation that would apply in the absence of the hatchery; (c) Waters, which are within a federal, state, local, or private campground having more than 10 camping units: Provided, That the water shall not be considered to enter a campground until it reaches the boundary of the park lands available for public use and comes within 100 feet of a camping unit, trail or other park improvement; (d) Riverine ponds, wall-based channels, and other channel features that are used by fish for off-channel habitat. These areas are critical to the maintenance of optimum survival of fish. This habitat shall be identified based on the following criteria: (i) The site must be connected to a fish habitat stream and accessible during some period of the year; and (ii) The off-channel water must be accessible to fish.
Type Np	Non-fish bearing perennial stream	All segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are flowing waters that do not go dry any time of a year of normal rainfall and include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
Type Ns	Non-fish bearing seasonal stream	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 Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

9.2 Stream Performance Standards (BMC 19.40.350)

As discussed in the *Burien Comprehensive Plan Update Best Available Science Review* (The Watershed Company 2011), a wide range of stream buffer widths are recommended depending on the target functions and buffer condition. Buffer continuity and vegetative quality are important factors in determining effective buffer widths. Stream buffer requirements under the current Code (BMC 19.40.350.2) are generally at the low end of the recommended scale. The table below provides a summary of buffer widths ranges derived from BAS and other local jurisdictions.

Table 15. Appropriate buffer ranges by stream type per BAS.

Stream Type	Sample Buffer Ranges
S	115 - 165 ft
F	100 - 165 ft
Np	50 - 65 ft
Ns	50 - 65 ft

The current Code requires a 25 foot buffer for perennial or seasonal non-fish bearing streams (see table below). However, buffers narrower than 33 feet (10 meters) are generally not considered functionally effective (The Watershed Company 2011).

Table 16. Stream Classification and Buffer Widths under the current City Code.

Stream Type	Standard Stream Buffer (feet)
Type 1	125
Type 2	100
Type 3	50
Type 4	25

10 Fish and Wildlife Habitat Conservation Areas (FWHCA) (BMC 19.40.380 - 19.40.410)

To incorporate BAS into the FWHCA Code section and consistently provide adequate protection of priority habitats and species, Code revisions are recommended (see Table 17). Code revisions should be based on the principles identified in the Washington's Comprehensive Wildlife Conservation Strategy (WDFW 2005) and on data specific to the City).

Additionally, to improve clarity and ease of use, some restructuring of this Code Section is recommended. For example, timing, sequencing, and restrictions are specific limitations and allowances and would more appropriately be addressed in "Permitted Alterations," BMC 19.40.400.

Table 17. BMC 19.40.380 through 19.40.410: Code Review, FWHCA.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations
--	FWHCA Section	--	--	• Recommend reorganizing Code for better clarity and ease of use.
19.40.380	Fish and Wildlife Habitat Conservation Areas - Designation	Yes	Yes	• Could include a list of species of local importance.
19.40.390	Fish and Wildlife Habitat Conservation Areas - Performance Standards	No	Yes	• Corridor preservation and habitat networks should be preserved and defined, respectively.

19.40.400	Fish and Wildlife Habitat Conservation Areas - Permitted Alterations	Yes	Yes	• BAS suggests the consideration of both local and landscape scale attributes, including structure and composition, special features, patch size, edge, juxtaposition and fragmentation.
19.40.410	Fish and Wildlife Habitat Conservation Areas - Specific Habitats	Yes	Yes	• Habitat definitions could include upland habitat and wildlife corridors.

* See discussion of comments/recommendations in the subsections below this table.

10.1 FWHCA Designation and Classification (BMC 19.40.380)

While the current Code includes some specific priority species and habitats, a comprehensive list is not provided. Species that BAS suggests for consideration would reasonably include those that require a special habitat feature, PHS species, and high-risk [non-listed] species. Other jurisdictions include snag-dependent species: pileated woodpecker, Vaux's swift (both State candidate species), and *myotis* bats. Waterbodies and their near-shore environments are unique habitat components and several Washington species of interest occur in the City's nearshore area. Common loon is a State sensitive species and is thus already included under BMC 19.40.380.1.A; western grebe is a State candidate species; osprey is a State monitor species. All can be expected to use the City's shoreline and nearshore area. Other species that may be found in the City include peregrine falcon (State sensitive species), osprey, green heron, and great blue heron (State monitor species). Herons are expressly considered in the BMC and peregrine falcon is included under the primary association provision as a State sensitive species. A suggested species of local importance list for the City is provided in Table 18 below. Species of local importance are considered priorities for conservation and management. Species on the recommended list below are likely to occur in Burien. The rationale placing for each species on list are given in the following table.

Table 18. Recommended Species of Local Importance List for the City of Burien.

Common Name	Scientific Name	Rationale or Species Status
Bald eagle	*Hailacctus leucocephalus*	State status: sensitive; Federal status: species of concern.
Peregrine falcon	*Falco peregrinus*	State status: sensitive; Federal status: species of concern.
Common loon	*Gavia immer*	State status: sensitive.
Pileated woodpecker	*Dryocopus pileatus*	State status: candidate.
Vaux's swift	*Chaetura vauxi*	State status: candidate.
Purple martin	*Progne subis*	State status: candidate.

Western grebe	*Aechmophorus occidentalis*	State status: candidate.
Great blue heron	*Ardea herodias*	WDFW - Priority species.
Osprey	*Pandion haliaetus*	State status: monitor species.
Green heron	*Butorides striatus*	State status: monitor species.
Western big-eared bat	*Corynorhinus townsendii*	State status: sensitive; Federal status: species of concern.
Long-eared myotis	*Myotis evotis*	State status: candidate.
Chinook salmon	*Oncorhynchus tshawytscha*	State status: sensitive; Federal status: threatened.
Bull trout	*Salvelinus confluentus*	State status: candidate; Federal status: threatened.
Coho salmon	*Oncorhynchus kisutch*	Federal status: species of concern.
River lamprey	*Lampetra ayresi*	State status: candidate; Federal status: species of concern.

Generating a list of species of local importance would accomplish several things. First, it would help planners to identify species that may possibly occur in the City and exclude those that are highly unlikely to. Second, species that have "candidate" or "monitor" status could be considered for inclusion, preempting continued declines and future listing. Finally, a list would clarify the status of species and simplify the definition of FWHCA to some extent.

10.2 FWHCA Performance Standards (BMC 19.40.390)

As stated in BMC 19.40.390.3.A, Habitat Management Plans (HMPs) should be prepared by a qualified professional. To systematically enforce that requirement, the City might consider keeping a roster of "qualified professionals" able to complete HMPs.

Required HMP components are listed in the BMC and include establishment of buffers and other protective measures. HMP requirements as listed in BMC 19.40.390.3.B could be brought into line with the most current BAS by including a detailed analysis of landscape-level habitat components, functions, and impacts, in addition to the required on-site assessment.

Performance standards are one component of an HMP, which should include species and habitat analyses, and management recommendations and/or requirements. In order to comply with BAS, an HMP should define and promote effective protection of non-critical area habitat (or compliance with FWHCA regulations).

Requirements should address protection of areas of importance (breeding and congregating sites) of protected species, as well as preservation of native habitat and habitat features, minimization of fragmentation, and landscape continuity

and character. Currently, an HMP is required when a FWHCA is on-site or within 200 feet of the subject property (BMC 19.40.390.3.B.i.b). However, recommended nest-site buffers for a number of PHS and listed species exceed this minimum, and thus 200 feet is not adequate for protection of these species. BAS should be applied in the decision to require an HMP. WDFW management recommendations exist for some species and may be used for guidance in both requiring HMPs and in defining site- and species-specific performance standards, which should be included in HMPs. Other factors regarding habitat protection and management should be addressed in HMPs and may include mitigation sequencing, construction timing restrictions, disturbance limits, line-of-sight standards, corridor preservation, and an analysis of habitat quality and distribution in the surrounding area. Performance standards refer to benchmarks by which effectiveness of implemented protection actions are measured. Performance standards in each HMP should focus specifically on pertinent habitat components, e.g., a plan that requires retained vegetation of a specific height should set a minimum height standard for retained trees.

10.3 FWHCA Permitted Alterations (BMC 19.40.400)

For species of interest, both local- and landscape-scale features should be considered (to comply with BAS). At the local scale, factors such as habitat structure and composition, species features, recruitment opportunity for snags and LWD, and water should be managed for wildlife at present and in the future. Landscape-scale features requiring consideration in land use planning include patch size and juxtaposition, edge, corridors and fragmentation, and proximity of critical areas. The HMP should require attention to these factors in the development of management actions. Subsequently, permitted alterations are somewhat site-specific, based on the HMP.

The BMC (19.40.400) effectively addresses most habitat components and areas in which management and/or protection is required. An update of HMP requirements, which should include mitigation sequencing, landscape-level analysis, and attention to a wider range of species (as described in Part 9.1), will further increase the effectiveness of this section of the code by providing greater and more ecologically substantiated detail in the determination of buffers, restrictions, and permitted uses covered in BMC 19.40.400.

10.4 FWHCA Specific Habitats (BMC 19.40.410)

This section could be revised to include more “habitats” by addressing the previous suggestions. While aquatic habitats are covered elsewhere in the BMC, non-critical area habitat (often referred to as “upland”) could be specifically added and afforded some protection, particularly where key habitat, such as mature forest or snag-rich habitat, or habitat corridors occur. . The addition of special habitats (shoreline, nearshore) and additional species (candidate and

monitor species) would aid in the refinement of specific habitats. As an example, BMC 19.40.410A would be updated to include common loons and western grebes, requiring attention to impacts on shoreline and nearshore areas. Similarly, "upland" habitat would be assessed at the landscape level, and an addition to this code section would require that landscape-wide corridors and habitats be considered in site-specific land use planning and permitting.

11 CRITICAL AQUIFER RECHARGE AREAS (CARAS) (BMC 19.40.420 - 19.40.430)

To protect Critical Aquifer Recharge Areas (CARAs), recommended BAS-based protection measures include identifying and categorizing CARAs, indentifying potential sources of contamination, assessing vulnerability of water resources, imposing protections, and managing CARA withdrawals (The Watershed Company 2011). Current management of CARAs in the City is in-step with BAS recommendations.

Table 19. BMC 19.40.240 through 19.40.430: Code Review, CARAs.

Code Section	Title	Includes current BAS?	Covered by Comp. Plan?	Review Comment / Recommendations
19.40.420	Critical aquifer recharge areas - Designation and Classification	Yes	Yes	
19.40.430	Critical aquifer recharge areas - Performance Standards	Yes	Yes	

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