

2017

Whatcom County Critical Areas Ordinance 2017 Update – Best Available Science Review: Addendum to the 2005 BAS Report



Planning and Development Services

Whatcom County

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Contents

1. INTRODUCTION.....	3
1.1 Purpose	3
1.2 How the Requirements for including the best available science are Met.....	3
1.3 Background	5
1.4 Review Process.....	5
1.5 Relationship to the Shoreline Management Program	6
2. Article 1 – Purpose and Intent	6
2.1 Synopsis of Amendments.....	6
2.2 Updated Best Available Science References.....	6
3. Article 2 – Administrative Provisions	6
3.1 Existing Whatcom County Policies and Code Provisions	6
3.2 Synopsis of Amendments.....	6
3.3 Updated Best Available Science References.....	9
4. Article 3 – Geologically Hazardous Areas.....	9
4.1 Existing Whatcom County Policies and Code Provisions	9
4.2 Synopsis of Amendments.....	10
4.3 Updated Best Available Science References.....	12
5. Article 4 – Frequently Flooded Areas.....	12
5.1 Existing Whatcom County Policies and Code Provisions	12
5.2 Synopsis of Amendments.....	13
5.3 Updated Best Available Science References.....	14
6. Article 5 – Critical Aquifer Recharge Areas (Caras).....	15
6.1 Existing Whatcom County Policies and Code Provisions	15
6.2 Synopsis of Amendments.....	15
6.3 Updated Best Available Science References.....	15
7. Article 5.5 – Areas Within the Rural Residential District of Lummi Island.....	16
7.1 Existing Whatcom County Policies and Code Provisions	16
7.2 Synopsis of Amendments.....	16
7.3 Updated Best Available Science References.....	16
8. Article 6 – Wetlands.....	16
8.1 Existing Whatcom County Policies and Code Provisions	16

8.2	Synopsis of Amendments.....	17
8.3	Updated Best Available Science References.....	19
9.	Article 7 – Habitat Conservation Areas.....	20
9.1	Existing Whatcom County Policies and Code Provisions	20
9.2	Synopsis of Amendments.....	20
9.3	Updated Best Available Science References.....	24
9.3.1	Maps and Data	24
9.3.2	Wildlife Corridors	25
9.3.3	Beavers.....	25
9.3.4	Fish	25
9.3.5	Nearshore.....	26
9.3.6	Miscellaneous	28
10.	Article 8 – Conservation Program on Agriculture Lands (CPAL)	28
10.1	Existing Whatcom County Policies and Code Provisions	28
10.2	Synopsis of Amendments.....	29
10.3	Updated Best Available Science References.....	31
11.	Article 9 – Definitions.....	32
11.1	Synopsis of Amendments.....	32
11.2	Updated Best Available Science References.....	33
12.	Appendices.....	33
12.1	Appendix A: Conservation Program on Agriculture Lands.....	33
12.2	Appendix B: Notification Example	33
12.3	Appendix C: Native Growth Protection Easement Sign Installation Guidelines	33
12.4	Appendix D: Special Status Fish and Wildlife Species Protected Pursuant To Article 7 of This Chapter.....	33
12.5	Appendix E (now B): Locally Important Habitat Designations – Marine Shorelines and Chuckanut Wildlife Corridor	33
13.	Recommendations for Follow-Up Projects/Amendments.....	34
13.1	Administrative Follow-Up Actions:	34
13.2	Follow-Up Actions that Would Need Council Support:	34
	Appendix A – Draft Critical Areas Ordinance Showing Edits and Notes for Potential Amendments	38

1. INTRODUCTION

1.1 PURPOSE

Whatcom County is required to integrate critical areas protection into zoning regulations, clearing and grading provisions, stormwater management requirements, subdivisions regulations, and other applicable plans and policies. The County last updated its Critical Areas Ordinance (CAO) in 2005. The Best Available Science (BAS) on which the 2005 CAO was based at that time is documented in *Whatcom County Critical Areas Ordinance Best Available Science Review and Recommendations for Code Update* (Parametrix, 2005). Said report also describes the process used to develop the proposed amendments.

It is now 2017 and per the Growth Management Act (GMA) the County is required to review, and update if necessary, those set of regulations aimed at protecting critical areas and minimizing risk from hazardous areas using Best Available Science (BAS).

The basic rules described in the 2005 BAS report still pertain. However, in the intervening years some changes have been made to the RCWs, the WACs, and the guidance documents issued by the Department of Commerce (DOC, formerly CTED), the Department of Ecology (DOE), and other agencies. Additionally, the Growth Management Hearings Boards (GMHB) and the courts have ruled on certain cases, furthering our understanding of the rules. And finally, there have been new studies done that contribute to the body of BAS. This BAS is being used as the basis for revising the County's development regulations and Comprehensive Plan elements pertaining to critical areas.

1.2 HOW THE REQUIREMENTS FOR INCLUDING THE BEST AVAILABLE SCIENCE ARE MET

The statutory requirements for determining what BAS is and how it should be used are found in WAC 365-195.

WAC 365-195-905 is the criteria for determining which information is the "best available science." It states that the characteristics of a valid scientific process include Peer review, Methods, Logical conclusions & reasonable inferences, Quantitative analysis, Context, and References. The studies accepted and used to support amendments have been found to meeting these criteria unless otherwise noted (whereupon an explanation is provided in the tables below).

WAC 365-195-910 is the criteria for obtaining the best available science. As explained in Section 1.4, BAS was initially provided by the Technical Advisory Committee, comprised of representatives of State agencies, Tribal governments, and other experts in their fields. BAS was also submitted by members of the Citizens Advisory Committee. Additional studies were added by staff as the draft code went through Planning Commission and County Council review.

WAC 365-195-915 is the criteria for including the best available science in developing policies and development regulations. These include:

- (1) To demonstrate that the best available science has been included in the development of critical areas policies and regulations, counties and cities should address each of the following on the record:

- (a) The specific policies and development regulations adopted to protect the functions and values of the critical areas at issue.

Response: In the tables of BAS below, the specific study(ies) used to support the amendments are noted.

- (b) The relevant sources of best available scientific information included in the decision-making.

Response: Sources of the BAS are noted in the citations of the studies, below. All are available on the County's CAO website.

- (c) Any nonscientific information—including legal, social, cultural, economic, and political information—used as a basis for critical area policies and regulations that depart from recommendations derived from the best available science. A county or city departing from science-based recommendations should:
- i. Identify the information in the record that supports its decision to depart from science-based recommendations;
 - ii. Explain its rationale for departing from science-based recommendations; and
 - iii. Identify potential risks to the functions and values of the critical area or areas at issue and any additional measures chosen to limit such risks. State Environmental Policy Act (SEPA) review often provides an opportunity to establish and publish the record of this assessment.

Response: No policies or regulations depart from recommendations derived from the best available science.

- (2) Counties and cities should include the best available science in determining whether to grant applications for administrative variances and exemptions from generally applicable provisions in policies and development regulations adopted to protect the functions and values of critical areas. Counties and cities should adopt procedures and criteria to ensure that the best available science is included in every review of an application for an administrative variance or exemption.

Response: The proposed code does not provide for administrative variances; all are quasi-judicial and are decided upon by a Hearing Examiner. However, the code does provide for some administrative relief (other than variances), in the way of minor modifications to standards. However, in either case, a Critical Area Assessment is required and the applicant must demonstrate that the functions and values of critical areas are protected.

It should be noted that the use of BAS is necessary for policies and development regulations that to protect the functions and values of critical areas (WAC 360-195-900). Whatcom County understands that to mean those regulations that set standards for protection (such as setback distances, timing, whether something should be protected or not, etc.). However, we do not understand that to mean that BAS is required to guide administrative processes (e.g., permit processes, who makes decisions, etc.). Therefore, we have not tied those types of decisions to BAS in this report.

1.3 BACKGROUND

This report is being issued as an addendum to the 2005 BAS report as a record of the BAS considered in updating the County's Critical Areas Ordinance in 2017. This report should be read in tandem with the previous one, as much of the background information and legal bases for the work will not be repeated. However, unlike the 2005 report, the proposed amendments to the code are documented in a strikeout/underline version of the CAO (Appendix A), with only some of the more substantive amendments described within the body of this report. Thus, it too should be read in tandem with this report.

1.4 REVIEW PROCESS

This report was prepared by Planning and Development Services staff and reviewed by a Technical Advisory Committee (TAC) and a Citizens Advisory Committee (CAC)¹ before being reviewed (and amended) by the Planning Commission and County Council. The Technical Advisory Committee was composed of experts from federal, state, tribal, and local agencies, and the CAC was composed of local citizens representing various stakeholder groups. These committees conducted their reviews during a series of public meetings in 2014-2016, both meeting twice a month, wherein they heard presentations from various staff (and others) covering the various topics. Staff explained how they do their permit review, how they implement the code, and their suggestions for improvement. From this, the Committees helped develop a list of potential issues. The TAC members then each took on sections of the code (within their area of expertise), made the first cut at amendments, provided the scientific studies as BAS to support their proposals, and reviewed them with the committees. Though many studies were submitted and reviewed, not all were ultimately used. These are separated out in the lists below under the headings "Documents Specifically Relied On" and Documents Reviewed But Not Specifically Relied On." Documents fall into this latter category if a proposed amendment was rejected by the Committees.

These two committees reviewed and approved the proposed code amendments. Interests were wide and varied on the CAC in particular, and many issues led to animated debates. Decision making was mostly consensus based, though votes were taken on a few issues. There were few issues on which the two Committees disagreed (though some members may have). The draft code only contains those proposed amendments for which there was a majority in favor, sometimes requiring a formal vote to determine. Those on which consensus couldn't be reached were flagged and the Planning Commission and Council made aware of the disagreement.

The recommended code amendments were then submitted to the Planning Commission for public review. They held a series of 7 workshops from March to June 2016, and two public hearings, one on May 12 and one on June 9, 2016, before sending their recommendation to the County Council.

Before starting their review, the Council held a public hearing on October 25, 2016 to gather input from the public. They then held 19 public study sessions between September 20, 2016 and October 24, 2017, making motions the various proposed amendments as they went along. This culminated in the final

¹ See Acknowledgements for a list of members.

draft of the code, which was introduced on November 21, 2017, with a second public hearing held December 5, 2017.

1.5 RELATIONSHIP TO THE SHORELINE MANAGEMENT PROGRAM

The County is also required to integrate the CAO provisions with its Shoreline Master Program (SMP). Whatcom County has done so by adopting the CAO by reference within the SMP. This reference (23.10.060) is being updated to reflect the 2017 updated CAO.

2. ARTICLE 1 – PURPOSE AND INTENT

2.1 SYNOPSIS OF AMENDMENTS

Some new language has been added to 16.16.100.

Section	Amendment	Associated BAS
16.16.100	Adding additional language to further clarify the CAO's intent and authority.	N/A

2.2 UPDATED BEST AVAILABLE SCIENCE REFERENCES

No BAS is required for the changes to this Article.

3. ARTICLE 2 – ADMINISTRATIVE PROVISIONS

3.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies regarding administrative provisions are contained throughout the Comprehensive Plan. In general, the policies guide us to:

- Keep regulations and procedures as simple but effective and efficient as possible,
- Include regulatory and non-regulatory mechanisms for protecting the environment,
- Support public education as a means of encouraging environmental protection and stewardship,
- Promote cooperation and coordination among government agencies to as to minimize duplication and confusion.

3.2 SYNOPSIS OF AMENDMENTS

In general, most of the amendments pertain to correcting grammar, updating references to other documents or laws, clarifying procedures, etc. These minor or self-explanatory changes are explained in the comments embedded in the draft code (Exhibit A). Additionally, a few subsections were moved to sections they seemed to fit into better. While there are other changes embedded in the draft code that are self-explanatory, changes of note include:

Section	Amendment	Associated BAS
16.16.205 Authorizations Required	Amending the language to better clarify that critical areas cannot be altered without having proper authorization.	N/A
16.16.230 Exempt Activities	Clarifying that even if exempt from this Title one cannot violate the requirements of it.	N/A
16.16.230(F) Exempt Activities	Moving tree felling activities from Exempt Activities to 16.16.235(B)(4) Activities allowed with notification, as a tree risk assessment is a submittal requirement to determine if a tree meets the definition of Hazard Tree.	
16.16.230(G) Exempt Activities	Moving restoration activities to Exempt Activities (from Activities allowed with notification), as these types of activities are exempt per RCW 77.55.181(4)).	N/A
16.16.235(B)(4)	Requiring that a tree risk assessment, son by a qualified professional, be done prior to removing hazard trees from a critical area or buffer.	92
16.16.235(B)(8) Activities Allowed with Notification	Deleting the use of pesticides in buffers as an “Activity allowed with notification” since insects are important to the food chain. Also clarifying that herbicides are only allowed for eradicating invasive species, not native plants.	N/A
16.16.240(A)(2) & (C)(2) Technical Administrator and Hearing Examiner Authority	Amending to give the Technical Administrator decision-making authority over all Reasonable Use Exceptions for single family residential uses, including those in geohazard area, so as to minimize cost to the typical homeowner.	N/A
16.16.250 Submittal Requirements and Critical Areas Review Process	Amending section to reflect process developed under Kaizan review procedures and now used. Also adding language to make it clear that decisions should provide written explanations of how they were made (findings).	N/A
16.16.260 General Mitigation Requirements	Amending to make it clearer that, even though mitigation sequencing has always been a requirement, that alternatives and cumulative impacts be analyzed.	N/A
16.16.260(E) General Mitigation Requirements	Adding a paragraph explicitly stating that mitigation areas are to be permanently protected, though that if future development is proposed on the mitigation site, any restrictions can be removed as long as the final plan meets the requirements of this chapter for all cumulative impacts.	N/A
16.16.261, 262, and 263	Three different alternative mitigation strategies (Alternative or Innovative Mitigation Plans, Watershed-Based Management Plans, and Mitigation Banking) were contained in one section. These have been broken into three sections now, and a new section 263(D) (Use of Bank Credits) added based on DOE guidance.	N/A
16.16.264 In-Lieu Fees	Adding a new section authorizing a mitigation in-lieu fee program. This language, which comes from DOE guidance documents, allows for such a program to be established, though such a program would still need to be developed and approved by Council.	N/A

Section	Amendment	Associated BAS
16.16.265(B) Critical Areas Protective Measures	Adding language that would allow the Technical Administrator to waive the notice on title requirement for certain, low risk geohazards.	N/A
16.16.265(E) Critical Areas Protective Measures	Adding a requirement that applicants indemnify the County when a permit is granted for development or use within a geologic, flood, or other hazard area.	N/A
16.16.265(F) Critical Areas Protective Measures	Adding a paragraph notifying applicants that temporary protection measures are required during construction.	N/A
16.16.270 and 16.16.273 Reasonable Use Exceptions and Variances	In the existing code, the rules for reasonable use exceptions and variances were contained in the same section. However, these are very different mechanisms, and each deserve their own section so have been split. Most changes in these sections have to do with separating them out.	N/A
16.16.270(B)(2)(g & h) Reasonable Use Exceptions	Splitting g & h into two sections. Amending (g) to state that any proposed activities won't cause damage to other properties, and (h) to state that the activities won't <i>increase</i> risk, as opposed to <i>guarantee no threat</i> , which is an impossibility (earthquakes and other geohazards may still happen; no one can guarantee they won't).	N/A
16.16.270(B)(2)(k) Reasonable Use Exceptions and Variances	Amending the language to set a Maximum Impact Area of 4,000 sf for CAO reasonable use exceptions and Shoreline Management Program variances, and to not include utilities and non-native landscaping in that calculation.	N/A
16.16.275 Nonconforming Uses/Buildings	Increasing the time for completing reconstruction of nonconforming structures from 18 months to 5 years	N/A
16.16.280 Appeals	Amending the language to require that any issues brought on appeal to the courts were raised and heard by the County's appeal body. This is a standard legal practice for appeals these days.	N/A
16.16.285 Penalties and Enforcement	Changing the time for property owners to respond to code violations from 30 calendar days to 30 business days	N/A
16.16.285(G) Penalties and Enforcement	Adding an "After the Fact Permit Fee." Charging "after the fact" fees is consistent with how PDS handles "after the fact" building permits. It should be cheaper to ask for permission than forgiveness.	N/A
16.16.290 (Conservation Program on Agriculture Lands)	The CPAL provisions (16.16.290 and Appendix A) have been combined and moved to a new Article 8.	N/A

3.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

The following documents were submitted by a member of CAC in support of their recommended amendments:

Ref. #	Document
Documents Specifically Relied On:	
92	Koeser, Hasing, McLean, & Northrop. <i>Tree Risk Assessment Methods: A Comparison of Three Common Evaluation Forms</i> . University of Florida, IFAS Extension. http://edis.ifas.ufl.edu/pdf/EP/EP48700.pdf
Documents Reviewed But Not Specifically Relied On:	
76	Harris, W. <i>CAO Exemptions for Passive Low Impact Activities</i> , April 2015. (Not BAS per se, but references a dozen or so studies) Ms. Harris submitted these studies as evidence as to why low impact uses, such as hiking, birdwatching, canoeing, etc., should not be an exempt use in critical area buffers (16.16.230(D) Exempt Activities). While these studies do show that such low impact activities can have in impact on wildlife, most were addressing either wilderness areas, heavily visited areas, or habitats of at-risk species. Most critical area buffers in Whatcom County do not fall in these categories (being in people's back yards and such) and are not at such risk. Furthermore, issuing permits or policing such activities would be impossible, and the existing exemption recognizes this.

4. ARTICLE 3 – GEOLOGICALLY HAZARDOUS AREAS

4.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies concerning geologically hazardous areas are contained in the Comprehensive Plan, Chapter 11 – Environment. The Plan highlights the responsibility local governments have for balancing private property rights and the need to protect the public's health, safety, and welfare. The Plan also establishes specific policies aimed at:

- Minimizing public investments for infrastructure in known hazard areas,
- Using best available science to research and investigate hazards and educate the public,
- Informing the public of the potential effects of geological hazards,
- Establishing decision-making criteria for development in hazard areas based on established levels of risk,
- Uses that do not require human habitation when adverse impacts can be minimized or mitigated, and
- Prohibiting critical public facilities in known natural hazard areas unless the public benefits outweigh the risk.

Whatcom County manages and protects geologically hazardous areas primarily by implementing the standards contained in WCC 16.16.300, *et seq.* The stated purpose of the regulations is to minimize hazards to the public and to reduce the risk of property damage from development activities on or

adjacent to geologically hazardous areas. The regulations also regulate land use so as to avoid the need for construction of flood control devices on alluvial fans and allow for natural hydrologic changes.

4.2 SYNOPSIS OF AMENDMENTS

Overall the regulations have worked well and few substantive changes are proposed. Many changes have to do with clarifications, incorporation of standard practices, and updated references. These minor or self-explanatory changes are explained in the comments of the draft code (Exhibit A). While there are other changes embedded in the draft code that are self-explanatory, changes of note include:

Section	Amendment	Associated BAS
Throughout	Changing the terminology from “buffers” to “setbacks” for geohazard areas throughout the article. The reason for this is that whereas for most critical areas development is kept a certain distance away so as to protect the critical area’s functions and values (i.e., it “buffers” the critical area). In the case of geohazards, keeping development away from the hazard is not to protect the hazard, but rather to keep development from encroaching into a hazardous area (i.e., to protect life and property).	N/A
16.16.300 Purpose	Purpose section changing slightly for simplicity, and recognizing that elimination of all risk is not achievable.	N/A
16.16.310.B Designation, Mapping, and Classification	Amending to better acknowledge that the County’s maps are not definitive, and that there may be hazardous areas that we don’t know about.	N/A
16.16.310.C.1 Designation, Mapping, and Classification	Amending to better classify and describe landslide areas and better take into account the surface and subsurface hydrology (a disturbance to which often causes landslides).	From Dan McShane, consulting geologist
16.16.310.C.2 Designation, Mapping, and Classification	Because the International Building Code and International Residential Code contain the only mitigation (construction standards) for typical, widespread earthquakes, the CAO need not address those areas. However, there are specific areas that may need to be avoided; these are left in to be regulated via this code.	N/A
16.16.310.C.3 Designation, Mapping, and Classification	Amending the text to better describe alluvial fan areas.	From Dan McShane, consulting geologist
16.16.310.C.4 Designation, Mapping, and Classification	Amending the text to better describe volcanic hazard areas.	From Andy Weiser, County Geologist

Section	Amendment	Associated BAS
16.16.310.C.5 Designation, Mapping, and Classification	Deleting typical, minor to moderate surface erosion areas as a critical area since the risk of erosion from development proposals should be and is addressed under clearing and grading regulations, stormwater plans, regulations for special watershed management areas, as well as farm plans and agricultural practices. Erosion of surface soils is best addressed in those areas.	N/A
16.16.310.C.6 & 7 Designation, Mapping, and Classification	Splitting the tsunami and seiche hazard area sections, as they are different types of hazards, each with different risks, occurrence probability, and avoidance measures.	N/A
16.16.320 Geologically Hazardous Areas – General Standards	Rearranging and adding new standards to this section making what’s required clearer, though policies are not changing.	
16.16.325 Landslide Hazard Areas – Standards	Three landslide hazard area sections (325, 330, and 335), each with standards, have been combined into one section. 16.16.325.C.3 reiterates that a mitigation plan may be required, and that the setback should be covered by an easement (like other critical areas) so as to inform future purchasers of this hazard.	N/A
16.16.350 Volcanic Hazard Areas – Standards	After hearing from testimony from USGS experts, Emergency Management staff, the County geologist, and citizens, property owners, and businesses, then and weighing all the pros and cons, Council decided that the risk of a major lahar is too minimal to justify development restrictions in the lahar hazard zone, and reduced said restrictions to just having businesses prepare an emergency evacuation plan.	81
16.16.365 & 367	The section has been split into two, as it covered two topics (tsunamis and seiches).	N/A
16.16.375 Review and Reporting Requirements	The language has been simplified.	N/A

4.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

Ref. #	Document
Documents Specifically Relied On::	
81	Central Puget Sound Growth Management Hearings Board. <i>Tahoma Audubon Society, People for Puget Sound, and Citizens for a Healthy Bay v. Pierce County, Park Junction Partners, and Snohomish County, Final Decision and Order</i> . CPSGMHB Consolidated Case No. 05-3-0004c, 05304c Tahoma-Puget Sound FDO.doc (July 12, 2005)
Documents Reviewed But Not Specifically Relied On:	
77	Porter, M., Jakob, M., and Holm, K. <i>Risk-based landslide safety assessments in Canada</i> , June 2017. 2017 3 rd North American Symposium on Landslides. Roanoke, Virginia.
78	Porter, M., and Morgenstern, N., 2013. <i>Landslide Risk Evaluation – Canadian Technical Guidelines and Best Practices related to Landslides: a national initiative for loss reduction</i> ; Geological Survey of Canada, Open File 7312, 21 p. doi:10.4095/292234
79	Guthrie, R. H., et al. May 2012. The 6 August 2010 Mount Meager rock slide-debris flow, Coast Mountains, British Columbia: characteristics, dynamics, and implications for hazard and risk assessment. <i>Nat. Hazards Earth Syst. Sci.</i> , 12, 1277–1294, 2012. www.nat-hazards-earth-syst-sci.net/12/1277/2012/ doi:10.5194/nhess-12-1277-2012
80	<i>Whatcom County Natural Hazards Mitigation Plan</i> , Whatcom County Division of Emergency Management, June 1, 2015

5. ARTICLE 4 – FREQUENTLY FLOODED AREAS

5.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies concerning Frequently Flooded Areas (FFAs) are contained in the Comprehensive Plan, Chapter 11 – Environment. The Plan emphasizes using natural processes to manage floods, moving away from trying to control flooding through major engineering projects. The Plan also establishes specific policies aimed at:

- Minimizing the potential loss of life, damage to property, the expenditure of public funds, and degradation of natural systems resulting from development in hazardous areas.
- Discouraging new development in the floodplain.
- Protecting and enhancing natural systems when flood hazard management measures are used.
- Recognizing natural wetlands such as swamps, bogs, saltwater marshes, and ponds for their value in cleaning water, reducing flood damage, providing valuable habitat for plants, fish and wildlife, and as sites for groundwater recharge.

Flood hazard regulations are contained in both the WCC Chapter 16.16 (Critical Areas) and in WCC Title 17 (Flood Damage Protection). WCC Chapter 16.16 designates FFAs as critical areas, provides some general development standards, and specifies review and report requirements, while WCC Title 17 contains the majority of the development standards. The two portions of the code are used jointly to regulate development in the floodplain.

5.2 SYNOPSIS OF AMENDMENTS

Because the majority of development standards for development in the floodplain are found in WCC Title 17, WCC 16.16 Article 4 is quite short, mainly stating that any development must meet the requirements of Title 17. And procedurally, PDS staff relies on DPW staff to review proposals in the floodplain. In the not-too-distant past, most if not all of the review focused on the mechanics and engineering of minimizing the risk a proposed development might have on itself or on other properties due to increased flooding potential. However, since the issuance of the Biological Opinion (BiOp) on FEMA’s National Flood Insurance Program (NFIP) in 2008, the County must now consider the effects of its decisions on endangered species as well. Such review has been implemented; however, WCC Chapter 16.16 has not been updated to reflect this.

Thus, the majority of changes in this Article are aimed at integrating the FEMA National Flood Insurance Program (NFIP) Biological Opinion (BiOp) requirements into the regulations. The existing code doesn’t even mention it, as the BiOp was implemented after the last CAO update. The changes made reflect the process staff uses, and specify which Department has what review authority. While there are other changes embedded in the draft code that are self-explanatory, changes of note include:

Section	Amendment	Associated BAS
16.16.400 Purpose	It is required that we comply with the FEMA BiOp, and we do. However, the existing CAO doesn’t even mention it, as the BiOp was implemented after the last CAO update. This change adds compliance with the NFIP as one of this chapter’s purposes. In 2008, the NOAA Fisheries Service issued a Biological Opinion establishing significant harmful impacts to Puget Sound fish, wildlife and habitat that result from floodplain development. NOAA’s Fisheries Service determined that it was the broad availability of federal flood insurance in Puget Sound that stimulated development in the floodplains, increasing loss of floodplain species and habitats. Changes were required to the National Flood Insurance Program (NFIP) in order to meet the requirements of the federal Endangered Species Act within Puget Sound. Local governments must limit the types of development allowed in floodplains in order to remain eligible for continuing federal flood insurance coverage and to receive other federal benefits. For example, under some circumstances no development is permitted. In others, greater restrictions are placed on bulkheads and shoreline modifications. Three basic options, each with its own guidelines and recommendations were issued by FEMA and continue to be updated. These options include: 1) adopting a model statute; 2) incorporating new requirements into existing environmental statutes such as the CAO and SMP, or 3) establishing compliance on a permit by permit basis, subject to the approval of the National Marine Fisheries Service. (Known as the reasonable and prudent alternative.)	1, 2

Section	Amendment	Associated BAS
	FEMA recommended that communities with CAOs and SMPs update their regulations, and has issued a checklist of the bi-op requirements. This is the simplest option and the one adopted by most jurisdictions. It allows the greatest flexibility, and where existing regulations fail to address an element of FEMA compliance, the model ordinance section can be adopted. Whatcom County participated in the development of an updated program to comply with the biological opinion (March 2011 NFIP conference). The County selected Option 3 (Door 3), which is similar to a site specific EIS for habitat assessment for individual permits, which is the most cumbersome and expensive way (for the developer) to proceed. For example, it must address issues such as cumulative impacts generated from the site. At least as of 2013, most of the permits submitted by the county involved subdivision and development not within a floodplain. A few mitigation projects were approved, but the thornier issue of floodplain structural development remains to be addressed. The local jurisdiction with permitting authority must demonstrate to FEMA that any proposed development in the FEMA designated floodway, the CMZ plus 50 feet (as identified according to Ecology 2003), and the riparian buffer zone (RBZ, as described by the Department of Natural Resources 2007 stream typing system and WDFW's 1997 stream buffer guidelines) does not adversely affect water quality, water quantity, flood volumes, flood velocities, spawning substrate, and/or floodplain refugia for listed salmonids. The proposed changes address that.	
16.16.420 Frequently Flooded Areas – General Standards	Adding a requirement that development within FFAs be consistent with the National Flood Insurance Program and Article 7 (Habitat Conservation Areas).	N/A
16.16.430 Review and Report Requirements	Changes herein better clarify which County department (PDS or DPW) has what review authority, and adds reporting requirements to critical areas assessment reports for FFAs.	N/A

5.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

The following documents were submitted by members of either the TAC or the CAC in support of their recommended amendments:

Ref. #	Document
Documents Specifically Relied On:	
1	Federal Emergency Management Agency (2007). <i>National Flood Insurance Program, Floodplain Management Requirements, A Study Guide and Desk Reference for Local</i>

	<i>Officials. 2007. http://www.fema.gov/floodplain-management-requirements.</i>
2	National Marine Fisheries Service and U.S. Fish and Wildlife Service (2008). <i>Endangered Species Act – Section 7 Consultation, Final Biological Opinion, Washington State Fish Passage and Habitat Enhancement Restoration Programmatic Consultation</i> . 2008. http://www.fema.gov/media-library/assets/documents/30021
Documents Reviewed But Not Specifically Relied On:	
3	WA Depts. of Ecology and Transportation (2003). <i>A Framework for Delineating Channel Migration Zones</i> . Ecology Publication # 03-06-027. http://www.ecy.wa.gov/biblio/0306027.html
4	Whatcom County (2009). <i>Erosion and Avulsion Hazard Mapping and Methodologies for use in the Nooksack River Channel Migration Zone Mapping</i> . 2009.

6. ARTICLE 5 – CRITICAL AQUIFER RECHARGE AREAS (CARAS)

6.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies concerning Critical Aquifer Recharge Areas (CARAs) are contained in the Comprehensive Plan, Chapter 11 – Environment. The Plan emphasizes protecting groundwater quality from contamination, protecting quantity by protecting wetlands, which help recharge aquifers, and working cooperatively with other jurisdictions given that aquifers cross boundaries.

Regulations protecting aquifers are found in WCC 16.16 Article 5 (Critical Aquifer Recharge Areas), which designate CARAs as critical areas, preclude certain types of (potentially hazardous) development near CARAs and regulate other types of development, higher density development, and septic systems when near CARAs.

6.2 SYNOPSIS OF AMENDMENTS

No proposed changes other than a cross-reference.

6.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

Ref. #	Document
Documents Specifically Relied On:	
82	Department of Ecology EIM Well Data, 2016. Analyzed 6/11/2017 by the Whatcom Conservation District. This data was obtained from the Department of Ecology. While it has not yet been published, it is pending, according to Barb Carey, LHg, DOE author of the soon-to-be-released report. The data shows that nitrate concentrations in many of the DOE test wells are declining.
93	Carey, Barbara. 2017. <i>Sumas-Blaine Aquifer Long-Term Groundwater Quality Monitoring, 2009-2016</i> . WA Dept. of Ecology, Pub. No. 17-03-013. https://fortress.wa.gov/ecy/publications/documents/1703013.pdf

Documents Reviewed But Not Specifically Relied On:

- | | |
|-----------|--|
| 65 | Carey, B. and Cummings, R. 2012. <i>Sumas-Blaine Aquifer Nitrate Contamination Summary</i> . Department of Ecology Pub. No. 12-03-026, June 2012 (revised February 2013). www.ecy.wa.gov/biblio/1203026.html . |
| 67 | Cox, S. E. and S. C. Kahle 1999. <i>Hydrogeology, groundwater quality, and sources of nitrate in lowland glacial aquifers of Whatcom County, Washington, and British Columbia, Canada</i> . U.S. Geological Survey Water-Resources Investigations Report 98-4195. 251 pages, 5 plates. |
| 70 | Redding, M., B. Carey, and K. Sinclair, 2011. <i>Poster: Nitrate Contamination in the Sumas-Blaine Aquifer, Whatcom County, Washington</i> . Presented at the Eighth Washington Hydrogeology Symposium on April 26, 2011, in Tacoma WA. Washington State Department of Ecology, Olympia, WA. Publication No. 11-03-027. www.ecy.wa.gov/biblio/1103027.html |

7. ARTICLE 5.5 – AREAS WITHIN THE RURAL RESIDENTIAL DISTRICT OF LUMMI ISLAND

7.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

There are no specific Comprehensive Plan policies regarding the protection of wells on Lummi Island.

7.2 SYNOPSIS OF AMENDMENTS

Other than grammatical, no changes are proposed.

7.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

No additional documents were submitted.

8. ARTICLE 6 – WETLANDS

8.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies concerning wetlands are contained in the Comprehensive Plan, Chapter 11 – Environment. The Plan recognizes the importance of wetlands in protecting water quality and quantity and providing habitat for wildlife. The Plan also establishes specific policies aimed at:

- Striving to achieve no net loss of functions and values of wetlands
- Using Best Available Science to evaluate and avoid impacts
- Mitigating unavoidable impacts

Wetland regulations are contained in WCC Chapter 16.16 (Critical Areas). WCC Chapter 16.16 designates wetlands as critical areas, classifies wetland types, describes what type of activities are permitted near wetlands under certain conditions, provides standard buffers for their protection (while allowing some modifications under certain circumstances), prescribes assessment procedures and standards, and provides appropriate mitigation methods.

8.2 SYNOPSIS OF AMENDMENTS

As with other articles, many of the changes have to do with clarifications, incorporation of standard practices, and updated references. These minor or self-explanatory changes are explained in the comments of the draft code (Exhibit A). Changes of note include:

Section	Amendment	Associated BAS
16.16.600(D) Purpose	Adding “establishing minimum delineation standards” as one of the Article’s purposes.	N/A
16.16.610 Wetlands Designation, Rating, and Mapping	Deleting the description of wetlands, deferring instead to the definition contained in Article 8.	N/A
16.16.610(C) Wetlands Designation, Rating, and Mapping	Updating the wetlands classification system to meet the Department of Ecology’s newer rating system. Ecology has updated the Washington State Wetland Rating Systems for eastern and western Washington. These updates replace the 2004 versions of the rating systems including the annotated versions. The effective date of the 2014 rating systems is January 1, 2015. This effective date means that if you rate a wetland on or after that date, you will be required to use the 2014 updates for projects needing Ecology authorization.	14
16.16.610(C) Wetlands Designation, Mapping, and Classification	Reducing the minimum size of a regulated Class IV wetland from 4,356 to 1,000 square feet. The 4,356 sf standard was from previous Department of Ecology guidance (more than 10 years old now). The TAC says this exemption isn’t scientifically sound, and was made more as a policy choice. We now know that some species (e.g., fairy shrimp) are predominately found in smaller wetlands, and that even small wetlands serve important hydrologic functions.	5, 9, 10, 11, 83, 84, 85, 86, 87, 88, 89
16.16.620(G)2(iv) Wetlands – General Standards	Limiting stormwater dispersion outfalls to the outer 25% of a buffer, per DOE guidance.	11, 13
16.16.620(H) Wetlands – General standards	Adding new standards for trails, including a maximum width for private trails, limiting trails to the outer 25% of a buffer (instead of 50), and avoiding significant trees.	11, 13
16.16.620(K) Wetlands – General standards	Adding a provision to allow phosphorus reducing BMP structures approved and installed through the Homeowners’ Improvement Program within the Lake Whatcom watershed to treat runoff from existing development to be permitted within the outer 50% percent of wetland buffers.	N/A
16.16.630(A) Wetland Buffer Widths	Adding standards for what type of existing nonconforming uses or infrastructure may allow a portion of a standard buffer to not be considered buffer.	N/A

Section	Amendment	Associated BAS
16.16.630(C) Wetland Buffer Widths	Merging the 3 existing tables of buffer widths into one, and formatting it to fit with the new DOE scoring system. However, standard buffers are not changing.	
16.16.640 Wetland Buffer Reduction	In Table 1, merging Category IV wetland buffer requirements into one standard, since regardless of the habitat score the Department of Ecology recommended buffer widths are the same.	N/A
16.16.640(D) Wetland Buffer Reduction	Adding language from the new Ecology guidance (land use intensity table) regarding what type of implemented measures will reduce use intensity. The idea behind these mitigating measures is that use of them will decrease the intensity of the proposed adjacent land use so the buffer would be decreased from high to moderate or moderate to low land use intensity with associated buffers.	15
16.16.670(B)(6 & 7) Review and reporting requirements	Adding language to specify what should be contained in a wetland report, making it clearer for applicants and consultants.	N/A
16.16.670 Review and reporting requirements & 16.16.690 Compensatory Wetland Mitigation Plan	Revising the wetland review and reporting requirements to allow various components to be submitted separately, if the Technical Administrator believes it will lead to a more efficient review.	N/A
16.16.680(C) Wetland Mitigation	Replacing wetland replacement ratio table with new one based on new DOE classification system, as this table allows a greater combination of mitigation types. The ratios remain pretty much the same.	12, 13, 14, 15
16.16.680(D) Wetland Mitigation	Limiting the Technical Administrator's ability to reduce buffers on replacement wetlands because it is not appropriate to require one person to have less buffer requirement than another just because they chose a more constrained site. If there is not enough room on a site for the full mitigation buffer, then they need to find additional mitigation in another location or go to the bank for the remaining area.	N/A
16.16.680(E)(3) Wetland Mitigation	Changing one of the criteria for reducing replacement ratios from "when meeting them would adversely affect other characteristics" to "when using the DOE guidance manual results in a lower mitigation ratio than the standard." Reducing the standard ratios should be based on the degree of impacts and whether functions are being replaced, not on the size of the mitigation site. If the ratios are too small, and functions are not being adequately replaced, the mitigation bank should be considered for the remainder of credits.	11, 12, 13

8.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

The following documents were submitted by members of either the TAC or the CAC in support of their recommended amendments:

Ref. #	Document
Documents Specifically Relied On:	
5	Marton, et al (2015). <i>Geographically Isolated Wetlands are Important Biogeochemical Reactors on the Landscape</i> . BioScience, Vol. 65 No. 42015, April 2015, pp 408 – 418.
9	Van Meter, Kimberly, and Nandita Basu (2015). Signatures of human impact: size distributions and spatial organization of wetlands in the Prairie Pothole landscape. <i>Ecological Applications</i> , 25(2), 2015, pp. 451–465.
10	WA Dept. of Ecology (2005). <i>Wetlands in Washington State - Volume 1: A Synthesis of the Science</i> . DOE Publication 05-06-006, March 2005. https://fortress.wa.gov/ecy/publications/summarypages/0506006.html
11	WA Dept. of Ecology (2005). <i>Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands</i> . DOE Publication 05-06-008, April 2005. https://fortress.wa.gov/ecy/publications/summarypages/0506008.html
12	WA Dept. of Ecology (2008). <i>Making Mitigation Work: The Report of the Mitigation that Works Forum</i> . Ecology Publication No. 08-06-018, December 2008. https://fortress.wa.gov/ecy/publications/documents/0806018.pdf
13	WA Dept. of Ecology (2013). <i>Update on Wetland Buffers: The State of the Science</i> . Ecology Publication #13-06-011, October 2013. http://www.ecy.wa.gov/programs/sea/wetlands/bas/BufferUpdate.html
14	WA Dept. of Ecology (2014). <i>Wetland Rating Form for Western Washington</i> . https://fortress.wa.gov/ecy/publications/summarypages/1406029.html
15	WA Dept. of Ecology (2014). <i>Wetlands in Washington State Volume 2, Appendix 8-C: Guidance on Widths of Buffers and Ratios for Compensatory Mitigation for Use with the Western Washington Wetland Rating System</i> . Ecology Publication No. 05-06-008, 2014. https://fortress.wa.gov/ecy/publications/parts/0506008part1.pdf
16	WA Dept. of Ecology (2015). <i>Washington State Wetland Program Plan</i> , 2015. Ecology Publication No. 14-06-005, March 2015.
83	Adamus, P. R. (2013). Wetland functions: not only about size. <i>National Wetlands Newsletter</i> , 35(5), 18-19.
84	Detenbeck, N. E. (2013). SLOSS (single large or several small) or not? Factoring wetland size into decisions for wetland conservation, enhancement, restoration, and creation. <i>National Wetlands Newsletter</i> , 35(5), 15-17.
85	Semlitsch, R., Anderson, T. L., Drake, D. L., Ousterhout, B. H., Peterman, W. E., & Shulse, C. D. (2013). Small, clustered wetlands promote amphibian persistence. <i>National Wetlands Newsletter</i> , 35(5), 20-21.
86	Gibbs, J. P. (1993). Importance of small wetlands for the persistence of local populations of wetland-associated animals. <i>Wetlands</i> , 13, 25-31.
87	Richter, K. O., & Azous, A. L. (1995). Amphibian occurrence and wetland characteristics in the Puget Sound Basin. <i>Wetlands</i> , 15(3), 305-312.
88	Raisin, G. W. (1996). The role of small wetlands in catchment management: Their effect on diffuse agricultural pollutants. <i>Internationale Revue der Gesamten Hydrobiologie</i> , 81(2), 213-222.

Ref. #	Document
89	Semlitsch, R. D., & Bodie, J. R. (1998). Are small isolated wetlands expendable? <i>Conservation Biology</i> , 12, 1129-1133.
Documents Reviewed But Not Specifically Relied On:	
6	U.S. Army Corps of Engineers, WA State Dept. of Ecology, and WA State Dept. of Fish & Wildlife (2012). <i>Interagency Regulatory Guide: Advance Permittee-Responsible Mitigation</i> . Ecology Publication no. 12-06-015. December 2012. https://fortress.wa.gov/ecy/publications/summarypages/1206015.html
7	U.S. Environmental Protection Agency. <i>Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence</i> . January 2016. http://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=521415
8	U.S. Fish and Wildlife. <i>National Wetland Inventory maps for the Puget Sound Region</i> . http://www.fws.gov/wetlands/

9. ARTICLE 7 – HABITAT CONSERVATION AREAS

9.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies concerning fish and wildlife Habitat Conservation Areas (HCAs) are contained in the Comprehensive Plan, Chapter 11 – Environment. The Plan recognizes the importance of protecting threatened, endangered, and other listed species and habitat. The Plan also establishes specific policies aimed at:

- Protecting and enhancing natural systems.
- Maintaining riparian corridors and their vegetation.
- Encouraging the use of soft armoring along shorelines.
- Protecting water quality entering out streams, lakes, rivers, and marine environment.
- Supporting the Salmon Recovery Board's efforts.

HCA regulations are contained in WCC Chapter 16.16 (Critical Areas). WCC Chapter 16.16 designates HCAs as critical areas, classifies the types of HCAs, describes what activities are permitted near HCAs under certain conditions, provides standards and buffers for their protection (while allowing some modifications under certain circumstances), prescribes assessment procedures and standards, and provides appropriate mitigation methods.

9.2 SYNOPSIS OF AMENDMENTS

While there are other changes embedded in the draft code that are self-explanatory, changes of note include:

Section	Amendment	Associated BAS
16.16.700 Purpose	Amending the purpose statement to include “protect and restore” as well as maintain fish and wildlife populations. The County Council has endorsed the WRIA 1 Salmonid Recovery Plan and is committed to implement actions under the plan as part of the Puget Sound Chinook Recovery Plan under the ESA. The goal of the plan is to restore self-sustaining salmon populations that result in de-listing and which will support a harvestable surplus. Current spring Chinook, bull trout, and steelhead populations are critically low. Most other salmonid populations, such as Lake Whatcom kokanee salmon and Lake Whatcom cutthroat trout are also depressed so “maintaining” a depressed population is not the purpose we should state.	N/A
16.16.710(B) Designation, Mapping, and Classification	Clarifying that while maps show known areas of HCAs, they don’t show the unknown areas, and thus applicants are still responsible for doing their own reconnaissance.	N/A
16.16.710(C)(1) Designation, Mapping, and Classification	Converting to the DNR stream classification system and clarifying which types of streams are regulated. While what is regulated is not changing, there has been some confusion, especially regarding ditches vs. ditched streams so we’re trying to make it more clear and consistent with DNR and WDFW criteria.	N/A
16.16.710(C)(2 - 5) Designation, Mapping, and Classification	Adopting the WDFW priority habitat and species lists in lieu of including the listed species and habitats (which change over time) in an appendix (which can’t change without a code amendment as the lists change). PDS will keep a current list of those species and habitats found in Whatcom County on line and at the counter for customers’ convenience.	16, 23, 24
16.16.710(C)(6) Designation, Mapping, and Classification	Combining commercial and recreational shellfish, Shellfish Habitat Conservation Areas, kelp and eelgrass beds, and fish spawning grounds under the heading of “state listed saltwater critical areas, which they all are.	N/A
16.16.710(C)(7) Designation, Mapping, and Classification	Amending so that manmade or artificial ponds (not including ag, fire, or stormwater ponds) are considered HCAs because there are a lot of older ponds that have naturalized and become important habitat. Ponds that derive their water from streams are no longer allowed to be created per WDFW and CAO regulations, thus any ponds created after 9/30/05 would be illegal. The date was chosen because 9/30/05 is 10 days after the Exec signed Ord 2005-068, which contains the first instance of this section. Also added “fire protection” ponds as an exemption.	WDFW recommendation

Section	Amendment	Associated BAS
16.16.710(C)(9) Designation, Mapping, and Classification	Adding Aquatic Reserves to the list of DNR protected aquatic environments.	N/A
16.16.710(C)(10) Designation, Mapping, and Classification	Updating the list of what parts of the San Juan Islands National Monument are within Whatcom County, and thus protected.	N/A
16.16.710(C)(11) Designation, Mapping, and Classification	Adding Frequently Flooded Areas that are subject to the Federal Emergency Management Agency’s National Flood Insurance Program Biological Opinion (FEMA BiOp) so as to help implement the FEMA BiOp.	1, 2
16.16.710(C)(12)(a) Designation, Mapping, and Classification	Deleting the list of Species of Local Importance, as no one knows where this list came from. The current list includes the dace and sucker, which are already on the WDFW priority species list, and thus are already protected, and the TAC questioned the inclusion of osprey and turkey vulture. In previous versions of the CAO the list was longer, but it appears that species were removed once they appeared on WDFW’s PHS lists. Furthermore, without specific management plans different than what WDFW already recommends, staff can’t impose any additional restrictions than what’s already required by this Article. However, the listing criteria are maintained so that proponents may propose to add some in the future.	16, 23, 24
16.16.720(C) General Standards	Updated the reference to the WDFW guidelines and added their current design standards for bridges these days to ensure bridges don’t get clogged with debris during floods.	WAC 220-660-190(4)
16.16.720(G) General Standards	Added reference to 303(d) impaired waterbodies (already a requirement, just not stated here), and the standard to design outlets to exclude fish from entering a stormwater system, which is already required by WDFW for an HPA.	WAC 220-660-260(4)
16.16.720(H) General Standards	Added a reminder to give special scrutiny to certain Water Resource Special Management Areas as per WCC 20.80.735 when clearing and grading. Also cross-referenced the DOE Stormwater Manual for BMPs.	N/A
16.16.720(I) General Standards	For streambank stabilization and shoreline protection, added that it needs to be designed to WDFW guidelines, which is already a requirement via the HPA.	N/A
16.16.720(J) General Standards	Amending to allow trails only in the outer 25% (rather than 50%) of an HCA buffer, per current WDFW guidelines. Also limiting private trails to 4 feet wide and public trails to 12 feet wide, which are the standard trail widths these days (was 30 feet, the width of a road).	75
16.16.720(K) General Standards	Updating the standards for putting utilities into an HCA, consistent with more current standards.	N/A

Section	Amendment	Associated BAS
16.16.720(N) General Standards	Deleting the ability to install private launch ramps in HCAs, as all lakes now have public access and no more new private launches should be permitted.	N/A
16.16.720(S) General Standards	Continuing to allow the removal of beaver and their dams, but requiring that an analysis must be done first and the code met. Studies have shown that beaver works provide a lot of ecological benefit, including water quality, flood prevention, groundwater infiltration, etc., and this is borne out by the Best Available Science. Furthermore, there has been a Growth Management Hearings Board decision (GMHB 14-2-0009) regarding this matter, which says that the County should not just exempt beaver dams and rely on an HPA, but should do its own analysis of the effects of removal, which we in Whatcom County do require. Furthermore, state law (RCW 77.36.030) still authorizes the removal of wildlife (including beaver) that negatively impacts property.	30, 31, 32, 33, 68, 69, 70, 71
16.16.720(T) Habitat Conservation Areas – General Standards	Amending the submittal requirements for bald eagle permits on Eliza Island, since the state and federal designations and requirements have changed.	Letter from WDFW
16.16.720(U) Habitat Conservation Areas – General Standards	Adding a provision to allow phosphorus reducing BMP structures approved and installed through the Homeowners' Improvement Program within the Lake Whatcom watershed to treat runoff from existing development to be permitted within the outer 50% percent of wetland buffers.	N/A
16.16.740(D)(4) Buffer Standards	Adding mitigation ratio for HCA buffer impacts. There was no mitigation ratio specified, and applicants should know what to expect.	Developed by Natural Resources staff
16.16.740(E)(7) Buffer Standards	Adding ability of Technical Administrator to require buffer enhancement where buffer has been reduced so as to provide a fully vegetated buffer, thus minimizing impacts and helping with no net loss.	N/A
16.16.750 Review and Reporting Requirements	Removing reporting exemption for development outside of buffers within upland portions of shellfish conservation areas, as it makes no sense given that development within the areas but outside their buffers could have impacts.	N/A
16.16.750(A) Review and Reporting Requirements	Removing reporting exemption for single family development of less than ½ acre, as clearing of a half-acre could have impacts and should go through and analysis and mitigation sequencing.	N/A
16.16.750(B) Review and Reporting Requirements	Adding language to better clarify what needs to be addressed in an HCA assessment report.	N/A

Section	Amendment	Associated BAS
16.16.760(B)(4) Mitigation Standards	Clarifying that impacts and mitigation for HCA's should be considered on a smaller reach, scaled to the size of impacts and offsetting mitigation. Loss of shade, large woody debris, leaf litter, bank hardening, substrate manipulation, erosion, or sedimentation cannot be adequately offset at other locations; thus the need for increased mitigation for offsite activities. Also adding mitigation ratios for impacts to HCAs. The code didn't specify, and it is best that applicants know what might be expected.	Developed by Natural Resources staff
16.16.760(B)(6) Habitat Conservation Areas – Mitigation Standards	Changing the monitoring requirement for HCA's from a case-by-case basis to a period of 5 years.	N/A

9.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

9.3.1 Maps and Data

The following documents were submitted by members of either the TAC or the CAC in support of their recommended amendments:

Ref. #	Document
Documents Specifically Relied On::	
19	U.S. Fish and Wildlife Service. <i>Critical Habitat Maps and List of Threatened and Endangered Species</i> . http://criticalhabitat.fws.gov/
23	WA Dept of Fish and Wildlife. <i>Priority Habitats and Species (PHS) Database</i> . http://wdfw.wa.gov/hab/phslist.htm
24	WA Dept of Natural Resources. <i>Washington Natural Heritage Database</i> . http://www.dnr.wa.gov/ResearchScience/Topics/NaturalHeritage/Pages/amp_nh.aspx
17	Nelson, Regan (2007). <i>Mapping Biodiversity in Whatcom County: Data & Methods</i> , for the Whatcom Legacy Project. August 2007.
18	NOAA Fisheries. <i>Critical habitat maps</i> . http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm
20	WA Dept of Ecology. <i>Puget Sound Characterization Project</i> . http://www.ecy.wa.gov/puget_sound/characterization/
21	WA Dept of Fish and Wildlife (2007). <i>Local Habitat Assessment for Whatcom County</i> . http://wdfw.wa.gov/conservation/habitat/planning/lha/whatcom.html
22	WA Dept of Fish and Wildlife (2015). <i>High Resolution Change Detection Project - Land cover Change by Subbasin for Whatcom County</i> . January 12, 2015.
25	Whatcom County Planning and Development Services (1994). <i>Significant Wildlife Areas, Whatcom County</i> . December 1994.

9.3.2 Wildlife Corridors

Ref. #	Document
Documents Reviewed But Not Specifically Relied On:	
26	Haddad, Nick, et al. (2000). <i>On Experimentation and the Study of Corridors: Response to Beier and Noss</i> . Conservation Biology, Vol 14, No. 5, October 2000, pp 1543 - 1545.
27	Noss, Reed and Paul Beier (2000). <i>Arguing over the Little Things: Response to Haddad et al.</i> Conservation Biology, Volume 14, No. 5, October 2000, pp 1546 - 1548.
28	Rosenberg, Daniel, et al. (1995). <i>Towards a Definition of Biological Corridor</i> . International Wildlife Management Congress, 1995.
29	Rosenberg, Daniel, et al. (1997). <i>Biological Corridors: Form, Function, and Efficacy</i> . BioScience Vol. 47 No. 10, November 1997.

9.3.3 Beavers

Ref. #	Document
Documents Specifically Relied On:	
30	ECONorthwest (2011). <i>The Economic Value of Beaver Ecosystem Services</i> . October 2011. http://www.econw.com/media/ap_files/ECONorthwest_Publication_Escalante-Beaver-Values_2011-10.pdf
31	Pollock, Michael, et al. (2014). <i>Using Beaver Dams to Restore Incised Stream Ecosystems</i> . BioScience XX, pp 1–12, March 26, 2014.
32	Pollock, Michael, et al. (Editors) 2015. <i>The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains</i> . Version 1.02. United States Fish and Wildlife Service, Portland, Oregon. 189 pp. http://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Beaver.asp
33	Walker, Brian, et al. <i>An Innovative Solution for Water Storage and Increased Late Summer Flows in the Columbia River Basin</i> . The Lands Council (no date but 2007 or later). http://www.ecy.wa.gov/programs/wr/cwp/images/pdf/BeaverStudy.pdf
68	Growth Management Hearings Board of Western Washington (2009). <i>WEAN v Island County, Final Decision & Order</i> . Case No. 14-2-0009, June 24, 2015.
69	Island County Planning and Community Development (2005). <i>Letter to the Island County Planning Commission from Assistant Director Jeff Tate, explaining their review of NRCS Best Management Practices constituting Best Available Science</i> , dated August 30, 2005.
71	Thurston County Superior Court (2013). <i>WEAN v Western Washington Growth Management Hearings Board, et al. Letter Opinion</i> . Thurston County Cause No. 06-2-02026-7, April 2, 2013.

9.3.4 Fish

Ref. #	Document
Documents Reviewed But Not Specifically Relied On:	
34	FEMA (2013). <i>Floodplain Habitat Assessment and Mitigation: Regional Guidance for the Puget Sound Basin</i> . August 2013.
35	Judge, Millie (2011). <i>2011 Implementation Status Assessment Report: A Qualitative Assessment of Implementation of the Puget Sound Chinook Salmon Recovery Plan</i> . 2011.
36	Penttila, D. 2007. <i>Marine Forage Fishes in Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2007-03. Published by Seattle District, U.W. Army Corps of Engineers, Seattle, Washington. http://www.pugetsoundnearshore.org/technical_papers/marine_fish.pdf

37	Small, Maureen, et al. (2005). <i>Temporal and Spatial Genetic Structure among Some Pacific Herring Populations in Puget Sound and the Southern Strait of Georgia</i> . Transactions of the American Fisheries Society 134:000–000, 2005. http://wdfw.wa.gov/publications/01079/
38	WA Dept of Fish and Wildlife (2009). <i>Land Use Planning for Salmon, Steelhead, and Trout</i> . October 2009. http://wdfw.wa.gov/publications/pub.php?id=00033
39	WA Dept of Fish and Wildlife (2014). <i>2012 Washington State Herring Stock Status Report</i> . June 2014. http://wdfw.wa.gov/publications/01628/

9.3.5 Nearshore

Ref. #	Document
Documents Reviewed But Not Specifically Relied On:	
40	Brennan, J.S. 2007. <i>Marine Riparian Vegetation Communities of Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2007-02. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
41	Cereghino, P., J. Toft, C. Simenstad, E. Iverson, S. Campbell, C. Behrens, J. Burke. 2012. <i>Strategies for nearshore protection and restoration in Puget Sound</i> . Puget Sound Nearshore Report No. 2012-01. Published by Washington Department of Fish and Wildlife, Olympia, Washington, and the U.S. Army Corps of Engineers, Seattle, Washington. Available at www.pugetsoundnearshore.org .
42	Clancy, M., I. Logan, J. Lowe, J. Johannessen, A. MacLennan, F.B. Van Cleve, J. Dillon, B. Lyons, R. Carman, P. Cereghino, B. Barnard, C. Tanner, D. Myers, R. Clark, J. White, C. A. Simenstad, M. Gilmer, and N. Chin. 2009. <i>Management Measures for Protecting the Puget Sound Nearshore</i> . Puget Sound Nearshore Ecosystem Restoration Project Report No. 2009-01. Published by Washington Department of Fish and Wildlife, Olympia, Washington.
43	Dethier, M. 2006. <i>Native Shellfish in Nearshore Ecosystems of Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2006-04. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
44	Finlayson, D. 2006. <i>The geomorphology of Puget Sound beaches</i> . Puget Sound Nearshore Partnership Report No. 2006-02. Published by Washington Sea Grant Program, University of Washington, Seattle, Washington. Available at http://pugetsoundnearshore.org .
45	Fresh, K.L. 2006. <i>Juvenile Pacific Salmon in Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2006-06. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington. Available at www.pugetsoundnearshore.org .
46	Fresh, K., C. Simenstad, J. Brennan, M. Dethier, G. Gelfenbaum, F. Goetz, M. Logsdon, D. Myers, T. Mumford, J. Newton, H. Shipman, C. Tanner. 2004. <i>Guidance for protection and restoration of the nearshore ecosystems of Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2004-02. Published by Washington Sea Grant Program, University of Washington, Seattle, Washington. Available at http://pugetsoundnearshore.org .
47	Fresh K., M. Dethier, C. Simenstad, M. Logsdon, H. Shipman, C. Tanner, T. Leschine, T. Mumford, G. Gelfenbaum, R. Shuman, J. Newton. 2011. <i>Implications of Observed Anthropogenic Changes to the Nearshore Ecosystems in Puget Sound</i> . Prepared for the Puget Sound Nearshore Ecosystem Restoration Project. Technical Report 2011-03.
48	Gelfenbaum, G., T. Mumford, J. Brennan, H. Case, M. Dethier, K. Fresh, F. Goetz, M. van Heeswijk, T.M., Leschine, M. Logsdon, D. Myers, J. Newton, H. Shipman, C.A. Simenstad, C. Tanner, and D. Woodson, 2006. <i>Coastal Habitats in Puget Sound: A research plan in support of the Puget Sound Nearshore Partnership</i> . Puget Sound Nearshore Partnership Report No. 2006-1. Published by the U.S. Geological Survey, Seattle, Washington. Available at

Ref. #	Document
	http://pugetsoundnearshore.org .
49	Gleason MG, S Newkirk, MS Merrifield, J Howard, R Cox, M Webb, J Koepcke, B Stranko, B Taylor, MW Beck, R Fuller, P Dye, D Vander Schaaf, J. Carter (2011). <i>A Conservation Assessment of West Coast (USA) Estuaries</i> . The Nature Conservancy, Arlington VA. 65pp.
50	Goetz, F., C. Tanner, C.S. Simenstad, K. Fresh, T. Mumford and M. Logsdon, 2004. <i>Guiding restoration principles</i> . Puget Sound Nearshore Partnership Report No. 2004-03. Published by Washington Sea Grant Program, University of Washington, Seattle, Washington. Available at http://pugetsoundnearshore.org .
51	Greiner C.M. 2010. <i>Principles for Strategic Conservation and Restoration</i> . Puget Sound Nearshore Ecosystem Restoration Project Report No. 2010-01. Published by the Washington Department of Fish and Wildlife, Olympia, Washington and the U.S. Army Corps of Engineers, Seattle, WA.
52	Johannessen, J. and A. MacLennan (2007). <i>Beaches and Bluffs of Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2007-04. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
53	Kriete, B. 2007. <i>Orcas in Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2007-01. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
54	Lanksbury, Jennifer, Laurie Niewolny, Andrea Carey, and James West (2014). <i>Toxic Contaminants in Puget Sound's Nearshore Biota: A Large-Scale Synoptic Survey Using Transplanted Mussels (Mytilus trossulus)</i> . WDFW Report Number FPT 14-08.
55	Leschine, T.M., and A.W. Petersen. 2007. <i>Valuing Puget Sound's Valued Ecosystem Components</i> . Puget Sound Nearshore Partnership Report No. 2007-07. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington. Available at www.pugetsoundnearshore.org .
56	Mumford, T.F. 2007. <i>Kelp and Eelgrass in Puget Sound</i> . Puget Sound Nearshore Partnership Report No. 2007-05. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
57	Schlenger, P., A. MacLennan, E. Iverson, K. Fresh, C. Tanner, B. Lyons, S. Todd, R. Carman, D. Myers, S. Campbell, and A. Wick. 2011. <i>Strategic Needs Assessment: Analysis of Nearshore Ecosystem Process Degradation in Puget Sound</i> . Prepared for the Puget Sound Nearshore Ecosystem Restoration Project. Technical Report 2011-02. Available at www.pugetsoundnearshore.org .
58	Shipman, H. 2008. <i>A Geomorphic Classification of Puget Sound Nearshore Landforms</i> . Puget Sound Nearshore Partnership Report No. 2008-01. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.
59	Simenstad, C.A., M. Ramirez, J. Burke, M. Logsdon, H. Shipman, C. Tanner, J. Toft, B. Craig, C. Davis, J. Fung, P. Bloch, K. Fresh, S. Campbell, D. Myers, E. Iverson, A. Bailey, P. Schlenger, C. Kiblinger, P. Myre, W. Gerstel, and A. MacLennan. 2011. <i>Historical Change of Puget Sound Shorelines: Puget Sound Nearshore Ecosystem Project Change Analysis</i> . Puget Sound Nearshore Report No. 2011-01. Published by Washington Department of Fish and Wildlife, Olympia, Washington, and U.S. Army Corps of Engineers, Seattle, Washington.
60	Van Cleve, F. B., C. Simenstad, F. Goetz, and T. Mumford, 2004. <i>Application of "best available science" in ecosystem restoration: lessons learned from large-scale restoration efforts in the USA</i> . Puget Sound Nearshore Partnership Report No. 2004-01. Published by Washington Sea Grant Program, University of Washington, Seattle, Washington. Available at

Ref. #	Document
	http://pugetsoundnearshore.org .

9.3.6 Miscellaneous

Ref. #	Document
Documents Specifically Relied On:	
75	Barnard, R. J., J. Johnson, P. Brooks, K. M. Bates, B. Heiner, J. P. Klavas, D.C. Ponder, P.D. Smith, and P. D. Powers (2013), <i>Water Crossings Design Guidelines</i> , Washington Department of Fish and Wildlife, Olympia, Washington. http://wdfw.wa.gov/hab/ahg/culverts.htm
Documents Reviewed But Not Specifically Relied On:	
61	Bogan, Michael, Jason Hwan, and Stephanie Carlson (2015). High Aquatic Biodiversity in an Intermittent Coastal Headwater Stream at Golden Gate National Recreation Area, CA. Northwest Science, Vol. 89, No. 2, 2015. http://www.researchgate.net/publication/281296456
62	Brown, Melissa, Michael Maudlin, and Jim Hansen (2005). <i>Nooksack River Estuary Habitat Assessment</i> . Lummi Nation Natural Resources Division, Report for the Salmon Recovery Funding Board; IAC #01-1340N. http://lnnr.lummi-nsn.gov/LummiWebsite/userfiles/10_Lummi%20Nation%20Nooksack%20River%20Estuary%20Habitat%20Assessment.pdf
63	U.S. Environmental Protection Agency (2015). <i>Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence</i> . U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F, 2015.
64	WA Dept of Fish and Wildlife. Landscape Planning for Washington's Wildlife: Managing for Biodiversity in Developing Areas. December 2009. http://www.wdfw.wa.gov/publications/00023/wdfw00023.pdf
90	Gaines, William L.; Singleton, Peter H.; Ross, Roger C. 2003. <i>Assessing the cumulative effects of linear recreation routes on wildlife habitats on the Okanogan and Wenatchee National Forests</i> . Gen. Tech. Rep. PNW-GTR-586. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 79 p.

10. ARTICLE 8 – CONSERVATION PROGRAM ON AGRICULTURE LANDS (CPAL)

10.1 EXISTING WHATCOM COUNTY POLICIES AND CODE PROVISIONS

County policies regarding the protection of the agricultural sector *and* the environment are contained in the Comprehensive Plan, Chapter 11. These policies aim to harmonize what some see as conflicting goals. Historically, agricultural uses have drastically altered the natural landscape, and some continue to pose certain problems if not managed properly. However, in Whatcom County, both hold great value to our citizens; thus, the County continues to seek solutions to promoting agriculture while minimizing environmental impacts.

- Ensure that resource industries (such as agriculture) minimize erosion and sedimentation and significantly reduce pollutants.
- Require landowners to protect surface water quality.

- Allocate water sufficiently for fish, agricultural (and other commercial) uses, and domestic use.
- Protect property rights.

One strategy the County developed early on was to allow the standard critical area requirements be modified for ongoing agricultural uses so long as the farm operators acted as good stewards and used farming Best Management Practices, which are memorialized in a conservation farm plan. This strategy is embodied in the Conservation Program on Agriculture Lands (CPAL) program of the Critical Areas Ordinance.

10.2 SYNOPSIS OF AMENDMENTS

Up to this point the CPAL provisions were found in two places: Section 16.16.290 and Appendix A of the CAO. However, there was concern about having what appeared to be regulations in an appendix, so these two sections have been combined and moved to a new Article 8.

In general, many of the amendments pertain to correcting grammar, updating references to other documents or laws, clarifying procedures, etc. These minor or self-explanatory changes are explained in the comments embedded the draft code (Exhibit A). But while new sections have been created, and a few subsections moved to sections they seemed to fit into better, there really aren't many substantive changes proposed. Changes of note include:

Section	Amendment	Associated BAS
16.16.800 Purpose	Updating the purpose statement to explicitly state the purpose of the program, and what is expected in exchange for having flexible standards.	N/A
16.16.814 Exemptions	Adding exemptions to the CPAL program for landowners who do not exceed a ratio of 1 animal unit per 3 grazable acres and avoid a direct discharge of sediment or fecal matter to surface waters, and for participants in youth agriculture education programs.	72
16.16.820 Classification and Applicability	Renaming farm operation types from low, moderate, and high impact to Type 1, 2, and 3 to avoid value-laden words.	N/A
16.16.820(D)(1)(a) Classification and Applicability	Adding a clarifying sentence that "Row and berry crops do not qualify as low intensity." Though this type of agriculture already falls within the moderate intensity by its definition, it was felt that it would be best just to clarify.	N/A
16.16.820(D)(1)(c) Classification and Applicability	Adding the ability for a Type 1 operation to do a custom (Type 2) plan if they so desired. Though it may take more work to develop, a custom plan done through the Whatcom Conservation District would allow an operator to use prescribed grazing of the vegetative filter strips. Otherwise they may get overgrown with invasive species (e.g., blackberries) which don't provide the filtering action that herbaceous plants do.	N/A

Section	Amendment	Associated BAS
16.16.830(B)(2) Conservation Farm Plans – General Standards	Deleting the small (incomplete) list of what one must ensure when building a new structure. Even under CPAL all new structures must be constructed in compliance with the applicable standard requirements of this chapter and the Whatcom County Code, and are thus addressed by other section.	N/A
16.16.830(B)(3) Conservation Farm Plans – General Standards	Adding a paragraph that explicitly states that a new or expanded drainage system cannot be added via CPAL. This was already the case, but should be explicit.	N/A
16.16.830(B)(4) Conservation Farm Plans – General Standards	Adding a sentence that explicitly states that undeveloped land cannot be converted to agricultural uses via CPAL. This was already the case, but should be explicit.	N/A
16.16.830(C) Conservation Farm Plans – General Standards	Allowing plans prepared for compliance with state or federal regulations (e.g., nutrient management plans), or to obtain an accredited private third-party certification (e.g., GLOBALG.A.P.), or similar plans to be used as part of or in lieu of a Conservation Farm Plan if the Technical Administrator determines they adequately address the requirements of this Title.	
16.16.840(A)(5) Conservation Farm Plan Requirements	Regarding the requirement to retaining native vegetation in critical areas and their buffers, the phrase “to the extent practicable” is proposed to be stricken because the definition of ongoing ag says that no new area will be converted.	N/A
16.16.840(A)(7) Conservation Farm Plan Requirements	Adding “fertilizers other than manure” to the list of issues that must be addressed in a Conservation Farm Plan.	N/A
16.16.850(B) Preparation and Approval of Conservation Farm Plans	Tabularized the list of who can prepare what type of farm plan.	N/A
16.16.850(C) Preparation and Approval of Conservation Farm Plans	Incorporated PDS Policy PL2-85-001C into the code.	N/A
16.16.860(A) Monitoring and Compliance	Incorporated PDS Policy PL1-85-003Z into the code.	N/A

Section	Amendment	Associated BAS
16.16.860(B) Monitoring and Compliance	Adding language that a planning advisor shall withdraw representation if they find “an imminent threat to public health or significant pollution with major consequences occurring as a result of the agricultural operations.” GBoggs stated that the WCD will not report violations, as it must strictly guard its reputation for confidentiality; otherwise, no one would invite them onto their farms and participate in the program. However, they are not obligated to continue to represent the farmer.	N/A
16.16.860(C) Monitoring and Compliance	Incorporating text from PDS Policy PL1-85-003Z into the code.	N/A
16.16.860(D)(3) Monitoring and Compliance	Incorporating text from PDS Policy PL1-85-003Z into the code. Also adding 16.16.860(D)(3)(c), as we want to make sure that if a farm changes from a pasture to a field crop or a field crop to a dairy, for example, it’s clear that a new farm plan is needed.	N/A
16.16.860(D)(4) Monitoring and Compliance	Add text to the list of conditions under which a conservation farm plan is no longer considered valid and a new one must be prepared.	N/A
16.16.860(E) Monitoring and Compliance	Incorporating text from PDS Policy PL1-85-003Z into the code.	N/A
16.16.870 Limited Public Disclosure	Requiring PDS to make available a list of which farms have approved conservation farm plans and the date of their approval.	N/A

10.3 UPDATED BEST AVAILABLE SCIENCE REFERENCES

The following documents were submitted by members of either the TAC or the CAC in support of their recommended amendments:

Ref. #	Document
Documents Specifically Relied On::	
74	Washington Department of Commerce, Growth Management Services (2005). <i>Letter from Leonard Bauer to Phil Bakke regarding Agricultural uses in Island County and Memorandum on use of NRCS BMPs to Protect Critical Areas</i> , dated November 14, 2005.
72	U.S. Department of Agriculture, Natural Resources Conservation Service. <i>Field Office Technical Guide (FOTG)</i> . http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/
Documents Reviewed But Not Specifically Relied On:	
66	Bentrop, G. (2008). <i>Conservation buffers: design guidelines for buffers, corridors, and greenways</i> . Gen. Tech. Rep. SRS-109. Asheville, NC: Department of Agriculture, Forest Service, Southern Research Station. 110 p.

Ref. #	Document
73	U.S. Environmental Protection Agency (2004). <i>Risk Assessment Evaluation for Concentrated Animal Feeding Operations</i> . EPA/600/R-04/042, May, 2004.

11. ARTICLE 9 – DEFINITIONS

11.1 SYNOPSIS OF AMENDMENTS

As with other articles, most of the changes have to do with clarifications, incorporation of standard practices, and updated references. These minor or self-explanatory changes are explained in the comments of the draft code (Exhibit A). Changes of note include:

Section	Amendment
Throughout	Renumbering this Article from 8 to 9, as we added a new Article 8.
16.16.900	Deleting the definition of “actively farmed” as it is not used in the code
16.16.900	Adding definition of “Bankfull width” from WAC 222-16-010
16.16.900	Amending definition of “critical facilities” to keep maximum occupancy of uses under 500 and to exclude cell towers from the definition (needed if an emergency occurs).
16.16.900	Adding definition of “Critical Saltwater Habitat”
16.16.900	Adding definition of “Cumulative Impact,” paraphrased from WAC 173-26-186(8)(d) of the Shoreline Management Act.
16.16.900	Adding definitions of “Designated Species, Federal” “Designated Species, State,” pertaining to federal and state listed species.
16.16.900	Amending definition of “drainage ditch” to try to clear up the public confusion between ditches and streams.
16.16.900	Amending the definition of “Fish and wildlife habitat conservation areas” to more closely match the state’s definition
16.16.900	Amending definition of “geologically hazardous areas” to make consistent with the GMA definition in RCW 36.70A.030(9).
16.16.900	Amending definition of “Grazable acres”
16.16.900	Adding definition of “habitats of local importance” from WAC 365-190-030.
16.16.900	Amending definition of “high intensity land use” to include Class IV Special forest practices (conversion of forest to development).
16.16.900	Amending definition of “hydric soil” by changing the reference to that used by everyone these days.
16.16.900	Adding definition of “Maximum Credible Event,” a term used in the geohazards section.
16.16.900	Adding definition of “May”
16.16.900	Amending definition of “moderate intensity land use” to exclude nurseries and logging roads, both of which the TAC believe should be in the high intensity land use category.
16.16.900	Amending definition of “Planning Advisor” (rather than qualified PA). Used in the CPAL section, “qualified” is not used in the text so it was hard to find in the definitions.
16.16.900	Adding definition of “Prior Converted Croplands”
16.16.900	Amending definition of “qualified professional” to increase the years of professional experience needed for wetland biologist from 3 to 5 years, and to exclude those consultants who’ve had their certification revoked.

Section	Amendment
16.16.900	Amending the definition of “Reasonable Use” to match the state’s definition
16.16.900	Adding definition of “Reasonable Use Exception”
16.16.900	Amending definitions of “reestablishment,” “rehabilitation,” and “restoration” to make consistent with USACE definitions.
16.16.900	Adding definition of "species of local importance" from WAC 365-190-030.
16.16.900	Adding definition of “Stormwater Manual,” referred to throughout as a source for Best Management Practices.
16.16.900	Amending the definition of “Streams”
16.16.900	Adding definition of “Survey”
16.16.900	Adding definition of “Swale”
16.16.900	Adding definition of “Waters of the State” from RCW 90.56.010(26).

11.2 UPDATED BEST AVAILABLE SCIENCE REFERENCES

None applicable. Changes have to do with rectifying Whatcom County’s definitions with state and federal definitions, adding words that hadn’t been defined, or deleting ones no longer used.

12. APPENDICES

12.1 APPENDIX A: CONSERVATION PROGRAM ON AGRICULTURE LANDS

Being deleted, though incorporating the requirements into new Article 8.

12.2 APPENDIX B: NOTIFICATION EXAMPLE

Being deleted, as such details ought not to be in code, but rather delegated to the Director of Planning and Development Services to develop and maintain.

12.3 APPENDIX C: NATIVE GROWTH PROTECTION EASEMENT SIGN INSTALLATION GUIDELINES

Being deleted, as such details ought not to be in code, but delegated to the Director of Planning and Development Services to develop and maintain.

12.4 APPENDIX D: SPECIAL STATUS FISH AND WILDLIFE SPECIES PROTECTED PURSUANT TO ARTICLE 7 OF THIS CHAPTER

Being deleted, as such a list ought not to be in code given that they change over time. Article 7 (Habitat Conservation Areas) now adopts the state and federal lists and delegates authority to the Director of Planning and Development Services to maintain such lists for ease of public use.

12.5 APPENDIX E (NOW B): LOCALLY IMPORTANT HABITAT DESIGNATIONS – MARINE SHORELINES AND CHUCKANUT WILDLIFE CORRIDOR

Being deleted, though giving authority to PDS to publish this map. The map’s data isn’t proposed for amendments, though the format has been updated.

13. RECOMMENDATIONS FOR FOLLOW-UP PROJECTS/AMENDMENTS

There are several follow-up actions that either the TAC or the CAC suggested be taken. Many are administrative actions that Planning and Development Services can advance on its own. However, some are larger potential projects that would need Council directive and/or budgetary support.

13.1 ADMINISTRATIVE FOLLOW-UP ACTIONS:

1. Add a better disclaimer to our Critical Area maps, saying they are based on best available information at the time that they were produced, that they may not be precisely accurate, and that not showing something does not eliminate the need for individual site review.
2. Rescind PDS policies that were incorporated code (PL1-85-002Z, PL1-85-003Z, and PL2-85-001C).
3. Develop protected species and priority habitat lists for the public (for the counter and website) based on state and federal agencies' lists and periodically update.
4. Update the geohazard map:
 - a. So that the classes of hazards shown on it reflect those of the updated code
 - b. Add areas that are identified as underlain by liquefiable soils and due to local topography are also subject to or interpreted as being potentially impacted by lateral spreading
 - c. Areas located within 500 feet of Quaternary fault zones with surface offsets
 - d. Add lahar inundation zones
 - e. map tsunami hazard areas north of Sandy Point (e.g., Birch Bay, Pt. Roberts, etc.) as the DNR maps don't include them
5. Update the Habitat Conservation Areas map
 - a. Show Stewart Mountain as part of the Chuckanut wildlife corridor (it is already included via the text of the Critical Areas Ordinance; it's just not shown on the map properly).
 - b. Add more recent data from state and federal agencies regarding protected species and priority habitat.
6. Update the Wetlands Map. With each new delineation the map should be updated to show previously unknown wetlands and remove any wetlands filled. Require applicants to submit electronic versions of delineations that can easily be added to the GIS system.

13.2 FOLLOW-UP ACTIONS THAT WOULD NEED COUNCIL SUPPORT:

7. **In-Lieu Mitigation Fee Program.** Explore and potentially implement an in-lieu mitigation fee program, which would allow applicants causing minor, unavoidable impacts that cannot be mitigated otherwise (after pursuing the mitigation sequencing in 16.16.260(A)) ((e.g., for exempt activities, cumulative impacts, etc.) to pay into a fund that the County would use to purchase and protect critical areas in priority locations. Coincidentally, some of the local jurisdictions (Bellingham, Ferndale) are also exploring this strategy, and a multi-jurisdictional working group has been convened to explore it.
8. **Geohazards Mapping, Risk Analysis and Emergency Planning.** In the near future we are expecting new LiDar data for much of the County (that the County is helping fund), which will be

useful for several geohazard actions. First, it will help better delineating lahar inundation zones. This would allow the County to develop travel time zones and formal emergency management and evacuation plans, which could potentially allow the County to permit more, or more types of, development within certain areas of the lahar inundation zones (i.e., Glacier) while still protecting the public health, safety, and welfare. It can also be used to update the alluvial fan and landslide inventory GIS layers, to map potentially unstable landforms, and to develop landslide susceptibility maps; updated maps can be administratively adopted under 16.16.310.B. The new mapping will support landslide runout models to help delineate landslide runout hazard zones where risk to current or future development may not be well defined.

9. **Hazards Geospatial Database.** Fund and develop an internal process and resources to systematically update and maintain the hazards geospatial database, train staff on its use, and make the information available to the public via the internet will be needed.
10. **Landscape-Based Planning.** Develop a watershed/landscape-based planning system. The watershed/landscape-based approach to community planning involves consideration of air, land and water and living organisms – including humans – as well as the interactions among them to achieve integrated outcomes. In its simplest expression a watershed/landscape-based approach to community planning is aimed at the:
 - Protection of people and property from natural hazards.
 - Preservation and conservation of self-sustaining ecosystems.
 - Continuation and growth of resource based economic activity.
 - Provision of an affordable, sustainable and maintainable infrastructure.

This approach involves decision-making that:

- Uses science-based, local, and cultural knowledge about the relationships among physical, biological and human processes.
- Applies precautionary and risk avoidance principles to growth management and day to day human activity decisions which affect environmental health, ecosystems and resource production capability.
- Clearly defines expected outcomes with reference to a realistic and reasonable understanding of what can be achieved efficiently and effectively in different development settings and timeframes.
- Is based on careful and thorough assessments of the distribution of costs and benefits of planning and regulatory goals, objectives, policies, and programs.
- Promotes the fair and equitable use of voluntary, regulatory, incentive, and public investment approaches to the achievement of public and private interests.

Yet it goes beyond this set of objectives and looks for triple bottom line social, economic, and environmental outcomes. In many respects, this is “what municipal planners already do.” In other respects the approach builds on lessons learned from past and more recent practice with respect to the need to integrate environmental, social, and economic considerations throughout the planning and implementation process. As a result it is more comprehensive, and it focuses on effective and efficient integration and performance. It starts with an assessment of community social, economic, and environmental interests, moves step-by-step through a set of

“external influences” and “on the ground” considerations and ends with an integrated community development plan and implementation strategy.

11. **Better Critical Areas Monitoring.** Develop a better critical areas monitoring system. Members of both the TAC and the CAC bemoaned the fact that Whatcom County does not have a robust, long-term monitoring program in place. While the rules are set up to achieve no net loss of ecological functions, services, and values, everyone has a tale of an incident where it appeared that this wasn’t the case, or a “feeling” that we’re not meeting that goal. And while PDS does monitor mitigation sites for 5 years, none of the data is accumulated in one place or report. Thus, the committees suggest that the County develop a formal monitoring program, with a periodic report presented to the Council (and public).

It should be noted that such a robust monitoring program is not a requirement. A search of the RCWs and WACs produced only one result, which was:

WAC 365-195-905 Criteria for determining which information is the "best available science."

(6) Counties and cities are encouraged to monitor and evaluate their efforts in critical areas protection and incorporate new scientific information, as it becomes available.

Likewise, a search for Growth Management Hearings Board cases resulted in zero results (though there were several that referred to monitoring, none imposed a requirement).

Critical Areas monitoring reports have only been produced by two jurisdictions: King County and Snohomish County. Both were one-time, though multi-year, studies funded through grants.

12. **Mitigation Bank(s).** Develop one or more County-sponsored mitigation banks, possibly in cooperation with other local jurisdictions. Currently there is only one mitigation bank in Whatcom County, owned and operated by the Lummi Nation. However, committee members noted how expensive credits are through this bank, and recommend that the County investigate and potentially start its own so as to introduce competition and potentially lower the cost per credit.
13. **Develop an Annual CPAL Report.** Given that conservation farm plans are, for the most part, not subject to public disclosure, there was concern from some committee members that it’s hard for the public to know whether CPAL is actually working like it’s supposed to. PDS is able to glean certain data from the farm plans for use in bulk analysis and reporting, but this has not been done. It was suggested that PDS start doing so, and present an annual report to the Council so that the public can determine the programs efficacy.
14. **Conservation Farm Plan Training.** It was suggested that Whatcom County should offer training on preparing a Type 1 Conservation Farm Plan so that other consultants can qualify. It wouldn’t make them Planning Advisors able to do Type 2 or 3 Conservation Farm Plans, but would spur competition.
15. **Channel Migration Zones.** Determine boundaries of and formally adopt Channel Migration Zones on the County’s major waterways. Doing so would alert property owners to potential risks, as well as assist in floodplain and ESA-listed species management.

16. **Update Landslide Hazard Classification System.** Section 16.16.310.C.1 contains descriptors for some landslide types and hazard areas. These can be useful when conveying general indicators of past or potential slope instability to the lay audience. However, once the updated landslide mapping is available (see item 8), adoption of a standard landslide classification system that is well established in the scientific and engineering communities would create a common framework for describing landslide hazards and risks in a structured, reproducible, and defensible manner. Such a system will be used by Washington State Department of Natural Resources to update landslide maps in Whatcom County and elsewhere in Washington and is incorporated into changes to the Washington Forest Practices Board Manual. Use of a standard classification for landslide hazards is administratively very similar to how the wetlands rating system contained in 16.16.610.D is used.
17. **Publicly Adopt Geohazard Acceptable Levels of Risk.** An ongoing challenge for staff administering the geological hazards section of the CAO is defining an acceptable level of risk. Updated and new geological data will better define hazards (e.g. the potential for an event) and risks (e.g. consequences if an event happens) but cannot answer the policy question of whether that risk is acceptable. Other jurisdictions nationally and internationally have adopted risk guidelines; such a system could be evaluated for local adaptation, adoption, and use.

APPENDIX A – DRAFT CRITICAL AREAS ORDINANCE SHOWING EDITS AND NOTES FOR POTENTIAL AMENDMENTS