March 25, 2015

David Johanson
Senior Planner
City of Burien
400 SW 152nd Street, Suite 300
Burien, WA 98166

Re: City of Burien – Critical Areas Ordinance Update, Addendum to Best Available Science and Gap Analysis Reports
The Watershed Company Reference Number: 110316

Dear David:

The Growth Management Act (GMA) mandates that cities include best available science (BAS) in developing regulations to protect the functions and values of critical areas (RCW 36.70A.172(1)). The Watershed Company completed a review of BAS for critical areas in the City of Burien in 2011, and a gap analysis of the City's existing Critical Areas Ordinance (CAO) (BMC 19.40) in 2012. Since that time, some new BAS has been published. Additionally, the Washington State Department of Ecology (Ecology) has provided preliminary review comments on the City's existing CAO.

The purpose of this document is to summarize those comments and the new BAS that is relevant to the City's critical areas, and to make recommendations for revisions to the City's existing CAO. These recommendations are intended to ensure that the City's CAO meets the requirements of the GMA, and may be considered together with other relevant information during a complete review and update of the CAO.

This document serves as an addendum to the *Burien Comprehensive Plan Update, Best Available Science Review* (BAS Report) (The Watershed Company 2011) and the *Burien Comprehensive Plan Update, Critical Areas Ordinance Gap Analysis* (The Watershed Company 2012).

BAS Review

Frequently Flooded Areas (BAS Report, Section 3)

Frequently Flooded Areas (FFAs) provide vital salmon habitat through recruitment of woody debris and gravels, and riffle/pool side channel rearing and refuge (Knight 2009). Ecology issued *Guidance to Local Governments on Frequently Flooded Area Updates in CAO's*

in January 2015. This guidance document identifies key considerations when updating Frequently Flooded Areas (FFA) designation, mapping, and standards. Designation and mapping of FFAs should reflect updated Flood Insurance Rate Maps (FIRM) from the Federal Emergency Management Agency (FEMA).

Climate change summaries predict over a 1.5 foot rise in global sea level by 2100. Climate change is also predicted to increase storm intensities, increase rates of erosion, increase landslide hazards, and cause saltwater intrusion into low-lying wells in coastal communities (http://www.ecy.wa.gov/climatechange/risingsealevel.htm).

The FEMA *National Marine Fisheries Service Biological Opinion* (FEMA BiOp)(NMFS 2008) documents the importance of floodplain habitat for listed salmonids. The FEMA BiOp found that implementation of the National Flood Insurance Program (NFIP) in the Puget Sound region jeopardizes the continued existence of federally threatened salmonids and resident killer whales. As a result, NMFS established Reasonable and Prudent Alternatives to ensure that development within the Special Flood Hazard Area (100 year floodplain), floodway, channel migration zone (CMZ), and riparian buffer zone do not adversely affect water quality, water quantity, flood volumes, flood velocities, spawning substrate, or floodplain refugia for listed salmonids. 2015 Ecology guidance on FFAs emphasizes local planning implications of the FEMA BiOp and notes local government's role in Endangered Species Act (ESA) compliance. "Because local government growth management and shoreline management plans regulate many of the land use decisions in these areas, local governments are in a unique position to influence the protection and restoration of salmonid habitat" (Knight 2009).

Wetlands (BAS Report, Section 5)

Since the BAS Report was issued for City of Burien, Ecology updated the Western Washington Wetland Rating System in June 2014. This change also affects Ecology recommendations for buffer widths. Additionally, Ecology published an updated review of wetland buffer science in October 2013.

Wetland Rating System

The current BAS-based wetland rating system is the *Washington State Wetland Rating System for Western Washington* (Hruby 2014, Ecology Publication No. 14-06-029).

Using reference wetlands, Ecology calibrated the updated 2014 wetland rating system to maintain roughly the same distribution of wetland categories that were present under the prior 2004 rating system. A comparison sample of the distribution of wetland categories under the old and new rating systems is provided below (Hruby 2014).

Table 1. Number of Sampled Wetlands in Each Category Based on Their Score for Functions (Hruby 2014).

Category	2004 Rating System	Updated Rating System
I	13	11
II	52	44
III	39	49
IV	7	7

The substantive changes to the wetland rating system are: 1) a High, Medium, or Low ranking for each function instead of numeric scores; and 2) the opportunity section was replaced with two new sections: landscape potential, and value. The shift to a High, Medium, Low ranking was prompted by a statistical analysis of wetland rating data, which indicated that the rapid-assessment wetland rating tool is not scientifically accurate beyond a qualitative ranking of High, Medium, or Low. The total point range changed from 0-100 to 9-27 (Hruby 2014).

Wetland Buffers

To update and supplement the prior 2005 BAS synthesis Ecology issued, Hruby (2013) reviewed recent publications on wetland buffer functions. The primary conclusions of this review are as follows. Wetland buffer effectiveness at protecting water quality varies in conjunction with several factors, including width, vegetation type, geochemical and physical soil properties, source and concentration of pollutants, and path of surface water through the buffer. Wider buffers are generally higher functioning than narrower buffers. Depending on site-specific environmental factors, different buffer widths may be needed to achieve the same level of protection. To protect wetland-dependent wildlife, a broader landscape-based approach that considers habitat corridors and connections is necessary. Many animals, particularly native amphibians, require undisturbed upland habitats for their survival (Hruby 2013). The review does not include any buffer width recommendations.

Gap Analysis

Frequently Flooded Areas (Gap Analysis, Section 6)

The city standards must adhere to the FEMA *National Marine Fisheries Service Biological Opinion* (FEMA BiOp)(NMFS 2008) through the application of reasonable and prudent alternatives to prevent and/or minimize the degradation of channel and floodplain habitat (Ecology 2015). Specifically, the FEMA BiOp requires "changes to implementation of the National Flood Insurance Program (NFIP) in order to meet the requirements of the Endangered Species Act (ESA) in the Puget Sound watershed" (FEMA 2013). Because the NFIP is implemented by FEMA through participation by local jurisdictions that adopt and enforce floodplain management ordinances, FEMA has

delegated responsibility to the local jurisdictions to ensure that development does not adversely affect listed species.

The NFIP standards apply to the Special Flood Hazard Area (SFHA), which covers the mapped one percent chance (100 year) floodplain. However, in its biological opinion, NMFS identified the "Protected Area" as the 100 year floodplain plus the riparian buffer zone (RBZ), which extends 250 feet from the ordinary high water mark, and the CMZ, plus 50 feet. In many areas, the "Protected Area" will extend far beyond the 100 year floodplain. To comply with NFIP, only the 100 year floodplain must be protected. Cities and counties have an independent responsibility to protect any floodplain functions and processes that may extend beyond the 100 year floodplain in order avoid take of ESA listed species. A model ordinance is provided in the BiOp Checklist (FEMA 2010).

To comply with the requirements of the FEMA BiOp, the City may either develop specific floodplain regulations or require habitat assessments for development in the floodway or floodplain. Habitat assessments must evaluate impacts to stormwater, floodplain capacity, and vegetative habitat. Current City code requires that an alteration, construction, development, or activity within a critical area, including flood hazard areas, submit a critical area study prepared by a qualified professional (BMC 19.40.090 through 19.40.130). The code is currently in compliance with the FEMA BiOp process, but could be strengthened by including habitat assessment requirements in the FFA code section. Per Ecology and NMFS recommendations, the City may wish to incorporate specific development regulations to further protect the functions and values of its flood hazard areas. The City's options for managing development within the floodplain are:

1. Adopt the model ordinance;

2. Develop floodplain regulations that protect floodplain functions on a programmatic basis;

3. Require the completion of a floodplain habitat assessment for any development within the floodplain. Habitat assessments must evaluate impacts to stormwater, floodplain capacity, and vegetative habitat.

Unless the City adopts the model ordinance or develops customized floodplain regulations that are reviewed and approved by FEMA, the third option, also referred to as "Door 3" is the default requirement. Option 1, the model ordinance, would likely represent the most conservative approach to protecting floodplain functions, but it would also be expected to be the most restrictive option in terms of future development and provide the least flexibility in implementation. The second option, or "Door 2," allows local jurisdictions to establish regulations that recognize local conditions and may

incorporate programs that enhance floodplain functions into the evaluation of how floodplain functions are maintained. However, FEMA must approve any "Door 2" approach before it is implemented. "Door 3" is the most common approach taken by local jurisdictions.

Ecology also recommends applying standards more stringent than the minimum FEMA-required protections. For example, minimum elevation of new structures should be at least two or three feet above the Base Flood Elevation (BFE), instead of just one foot above.

Wetlands (Gap Analysis, Section 8)

Wetlands – Designation and Classification - Applicability (BMC 19.40.300.2)

According to CAO review comments provided by Donna Bunten at Ecology, small (less than 1,000 SF) Category III and IV wetlands may be exempted from this chapter, if they are not associated with a riparian area, not part of a wetland mosaic, and do not contain any WDFW identified priority species.

Wetland Rating and Classification (BMC 19.40.300.4)

We recommend adopting the current BAS-based wetland rating system, which is the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014, Ecology Publication No. 14-06-029).

Wetland Performance Standards – Buffers (BMC 19.40.310)

Donna Bunten at Ecology recommends adopting wetland buffer widths per the table on page A-6 of the Small Cities Guidance document (Ecology 2012). Buffer widths recommended in that table coincide with recommended buffer widths in Table 10 of the Gap Analysis. Since the 2014 wetland rating system has a different total score range, the habitat point values in the buffer width tables need to be converted. Ecology rating score conversion tables are posted on their website (http://www.ecy.wa.gov/programs/sea/wetlands/ratingsystems/2014updates.html). The habitat score conversions are provided in the table below.

Table 2. Comparison of wetland rating scores using 2004 and 2014 methods.

2004 Rating Form	Final Habitat Score	2014 Rating Form
29-36	High	8-9
20-28	Medium	5-7
≤19	Low	3-4

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Nell Lund, PWS
Ecologist

References

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FEMA (Federal Emergency Management Agency), Region 10. 2013. Floodplain Management and the Endangered Species Act, Checklist for Programmatic Compliance. http://www.fema.gov/pdf/about/regions/regionx/Biological_Opinion_Checklist8_12._10.pdf

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