

## TECHNICAL MEMORANDUM

Date:	August 21, 2025 (Revised Sept. 15, 2025)
To:	Kirsten Mandt, Kristina Gallant
From:	Nell Lund, Senior Ecologist Doug Yormick, Environmental Planner
Project Name:	Bellevue CAO Update
Facet Number:	2411.0456.00

### Stream Buffer Regulation Options

This memo presents options for regulating stream buffers under the Critical Areas Ordinance (CAO) in Bellevue. The City is considering updates to reflect best available science (BAS), improve consistency with state and federal guidance, and support restoration goals in a highly urbanized environment. Staff are evaluating changes to buffer measurement methods, incorporating slope-related buffer extensions, and establishing clear standards for stream daylighting and meandering. The following options compare varying levels of protection, implementation complexity, and ecological benefit to support informed decision-making during the CAO update process.

### Comparison of Stream Buffer Options

As part of Bellevue's Critical Areas Ordinance (CAO) update, staff are evaluating revisions to stream buffer standards to reflect best available science, implementation efficiency, and restoration incentives. Recent policy directions include:

1. Transitioning from top-of-bank to ordinary high water mark (OHWM) for buffer measurement.
2. Applying a 25-foot buffer extension from top of slope where a steep slope ( $\geq 40\%$ ) is within 25 feet of a stream.
3. Eliminating buffer distinctions between developed and undeveloped parcels.
4. Retaining legacy buffers where a recorded Native Growth Protection Area (NGPA) exists.
5. Adding stream daylighting and stream meandering standards to encourage ecological restoration.

The table outlines two policy options for stream buffer regulations in Bellevue. Each option is evaluated for its ecological alignment, regulatory complexity, and impact on land use.

**Option 1** would replace the current stream classification and buffer system with the SPTH model. The model assigns riparian protection zones based on ecological site potential as determined by soil type and associated dominant tree height after 200 years of growth. Applicants would either use the online

WDFW Riparian Ecosystem mapping tool or hire a forester to conduct a site-specific assessment of SPTH. Riparian buffer widths under the SPTH<sub>200</sub> approach can offer high ecological benefit but would significantly expand buffer areas and require more technical resources. Development in urban centers would be limited to allowed expansions of existing nonconforming uses. More agency consultation may be necessary to clarify questions around site assessments and implementation.

**Option 2** would maintain a stream classification system paired with increased riparian buffer widths to better align with SPTH widths and ecological function protections. As documented in the *July 2025 Stream Buffer Analysis Technical Memorandum*, Facet conducted a GIS analysis of current stream buffers and SPTH Riparian Management Zone (RMZ) recommendations. This analysis shows an average SPTH value in Bellevue of approximately 180 feet. The relationship between buffer width and level of function is not linear. As shown in the Forest Ecosystem Management Assessment Team (FEMAT) graph below, a point of diminishing returns occurs as buffer widths approach 100 percent cumulative effectiveness. The 150-foot Type F stream buffer width proposed under Option 2 is 83 percent of the average SPTH value for Bellevue; that value is near the asymptote of the FEMAT curves below.

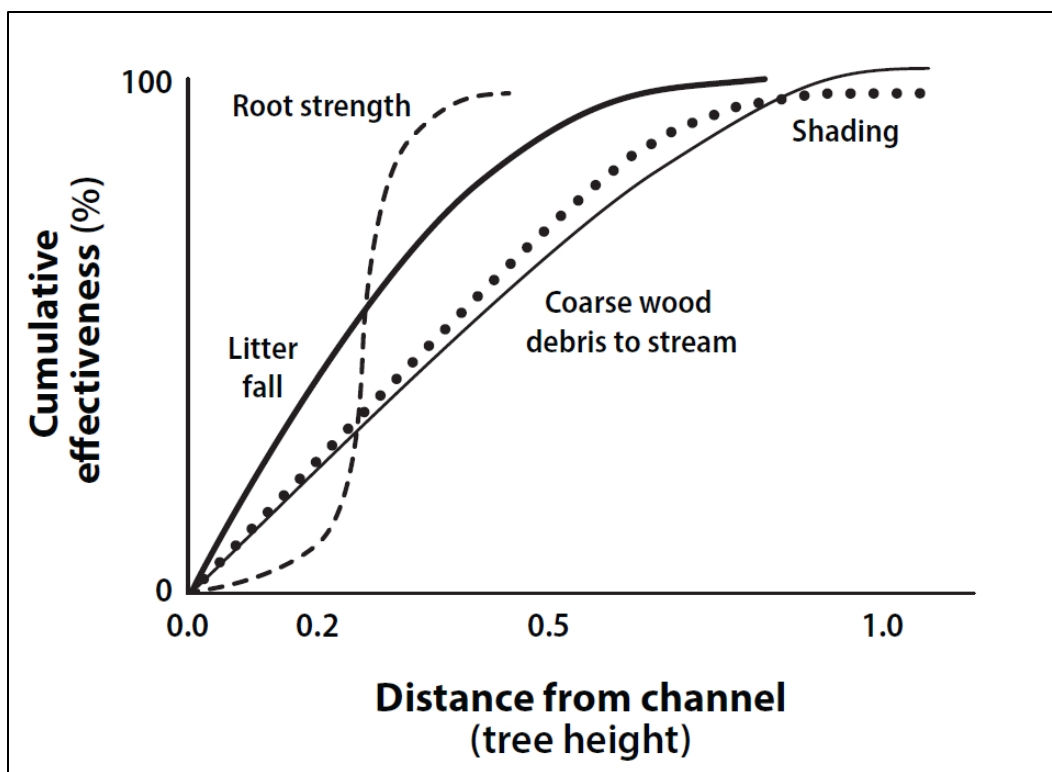


Figure 1. FEMAT Curves, [FEMAT 1993 in *WDFW Riparian Ecosystems: Volume 2: Management Recommendations* (Rentz et al. 2020)]

The intent of riparian buffer width increases proposed under Option 2 is to provide moderate ecological improvement with manageable implementation. To match the WAC 222-16-030 interim water typing system, non-fish streams would be classified as either perennial (Type Np) or seasonal

(Type Ns). The Type O designation would be removed. Riparian buffer width increases would be paired with clear standards and incentives to improve resource stewardship. Study requirements and implementation would be similar to what is in-place today.

### Comparison of Buffer Policy Options

Option	Description	Pros	Cons
<b>1. Adopt SPTH200 (WDFW RMZ)</b>	<ul style="list-style-type: none"> <li>1. 100–231 ft</li> <li>2. Measured from OHWM</li> </ul>	<ul style="list-style-type: none"> <li>1. Fully aligned with BAS (WDFW Riparian Ecosystems Vol. 1) and recommendations (WDFW Riparian Ecosystems Vol. 2)</li> <li>2. Highest ecological benefit</li> <li>3. Targets functional potential by site</li> </ul>	<ul style="list-style-type: none"> <li>1. Uses new system that’s likely to raise new questions requiring additional review and agency coordination.</li> <li>2. Significant increase in regulated area (~1,679 new buffer acres)</li> <li>3. Increase in existing nonconformance</li> <li>4. May limit infill/redevelopment</li> </ul>
<b>2. Increase Type F to 150’ and Type Np to 100’, Type Ns to 75’</b>	<ul style="list-style-type: none"> <li>1. Increase Type F to 150’</li> <li>2. Increase Type Np to 100’, Type Ns to 75’</li> <li>3. Drop Type O classification</li> <li>4. All buffers measured from OHWM, not top-of-bank</li> <li>5. OHWM + 25 ft slope trigger.</li> <li>6. Flexibilities and incentives</li> </ul>	<ul style="list-style-type: none"> <li>1. High ecological function across all stream types</li> <li>2. Closely aligns with SPTH200 averages</li> <li>3. Retains stream classification distinctions for ease of administration</li> <li>4. Applies OHWM methodology</li> <li>5. Provides additional protection where buffers overlap steep slopes</li> <li>6. Incentives likely to improve degraded conditions</li> </ul>	<ul style="list-style-type: none"> <li>1. Significant increase in regulated riparian buffer areas</li> <li>2. Increases the number of properties subject to critical area permitting</li> <li>3. In some cases, riparian protections would be lower than fully site potential</li> <li>4. Some buffer options are below the 100-foot BAS-based minimum for water quality (WQ) protection. Additional review could be included to ensure WQ is maintained.</li> </ul>

## Stream Restoration Standards

The following stream restoration standards are proposed as a way to address City concerns about balancing GMA requirements and public comments, while incentivizing improvements to degraded

streams. Suggested flexibility for stream daylighting and stream meandering are summarized below. The City may also consider increasing closed stream setback requirements to encourage stream daylighting.

#### A. Stream Daylighting Standards

- a. Applicability: Applies to removal of culverts or restoration of buried stream segments.
- b. Buffer standards: A minimum 50-foot buffer from OHWM shall apply to all newly daylighted stream segments, regardless of stream type. Performance criteria below must be met.
- c. Performance Criteria:
  - i. Apply performance standards detailed under LUC 20.25H.080.A to site planning;
  - ii. Install habitat structures (e.g., LWD, root wads, boulder clusters);
  - iii. Design for channel complexity (e.g., pool-riffle, variable widths);
  - iv. Plant native riparian vegetation (trees, shrubs, groundcover); and
  - v. Demonstrate water quality protection will be maintained:
    - 1. Incorporate low impact development (LID) and stormwater pre-treatment where feasible; and
    - 2. Incorporate Salmon-Safe urban standards as applicable, including stormwater management, water use management, erosion prevention and sediment control, water quality protection in landscaping, and climate resiliency<sup>1</sup>.
- d. Buffer Flexibility:
  - i. Consider buffer averaging for daylighted stream segments as long as mitigation sequencing and performance criteria are fully met. Buffer averaging must meet criteria under LUC 20.25H.075.C.3.a.
  - ii. Buffer width may supersede legacy NGPA if net ecological gain is demonstrated

#### B. Stream Meandering and Reconfiguration

- a. Applicability: Applies to armored or straightened stream channels
- b. Purpose: Encourages reconfiguring straightened or confined stream channels to improve natural processes.
- c. Buffer standards: Standard stream buffer widths under LUC 20.25H.075 should be applied first. If the applicant demonstrates performance criteria are met and an ecological lift in functions will occur, a minimum 50-foot buffer from OHWM may apply to all newly restored stream segments, regardless of stream type.

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<sup>1</sup> [Salmon-Safe Urban Standards Version 3.1 | June 2023 | Salmon-Safe Inc.](#)

- d. Performance Criteria
  - i. Allowed within existing stream buffer if results in net ecological gain
  - ii. Must include riparian enhancement, bank stabilization, and instream complexity
  - iii. Must demonstrate water quality protection will be maintained"
    - 1. Incorporate low impact development (LID) and stormwater pre-treatment where feasible; and
    - 2. Incorporate Salmon-Safe urban standards as applicable, including stormwater management, water use management, erosion prevention and sediment control, water quality protection in landscaping, and climate resiliency<sup>2</sup>.
  - iv. A critical areas report must show improved function (e.g., habitat, flow attenuation, sediment retention)

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<sup>2</sup> [Salmon-Safe Urban Standards Version 3.1 | June 2023 | Salmon-Safe Inc.](#)