As agreed at the September 6th Planning Commission meeting, I have prepared mark-up versions of the evaluation forms for my recommended amendments 2-10 and 2-12 for the Planning Commission's consideration. (I have not completed 2-11 yet.) These markups are in Word document format and are attached. Please distribute them to the Planning Commission and other interested parties.

Thanks,
Reid Brockway
### Site Specific Stream Buffer Location

**Item 2-10**

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Neutral</th>
<th>Implementation</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Decreased on-site protection of streams²</td>
<td></td>
<td>- Less clear regulations¹⁵, increased chance for unintended consequences¹¹</td>
<td></td>
</tr>
<tr>
<td>- Neutral protection of public assets and resources (e.g. streets, water quality)</td>
<td></td>
<td>- Decreased ability for consistent, efficient implementation by the staff¹³</td>
<td></td>
</tr>
<tr>
<td>- Neutral impact on streams</td>
<td></td>
<td>- Decreased likelihood of support/approval by other agencies¹₁</td>
<td></td>
</tr>
<tr>
<td>- Increased cumulative impacts to streams¹</td>
<td></td>
<td>- Neutral on mitigation, neutral on monitor</td>
<td></td>
</tr>
<tr>
<td>- Negative potential to restore damaged stream channels or buffers¹</td>
<td></td>
<td></td>
<td>Neutral on property owner¹₄</td>
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<tr>
<td>- Increased chance of damage to streams⁵</td>
<td></td>
<td></td>
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<tr>
<td>- Increased potential to damage high-quality, unique streams⁵</td>
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<td></td>
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<tr>
<td>- Net loss of stream functions and values⁷</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Can encourage reestablishment of viable habitat⁸</td>
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</tbody>
</table>

This amendment is based upon the premise that buffers serve no value if separated from the stream by a physical barrier. A review of BAS indicates this is not an accurate premise. The proposed amendment will result in the elimination of buffer areas, decreasing the protection of on-site streams and increasing the cumulative impacts to streams and buffers. In the case of some low value buffer functions, BAS would suggest increasing buffers rather than elimination. The proposed amendment creates an increase in unpermitted alterations, which increases the risk of damage to streams, including unique streams corridors, and results in a net loss to stream functions and values. The amendment also reduces options for restoration of degraded buffer areas⁴.

<table>
<thead>
<tr>
<th>Property</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Increased flexibility and options for property owner's use of property</td>
<td></td>
</tr>
<tr>
<td>- Increased property value</td>
<td></td>
</tr>
<tr>
<td>- Decreased predictability for permit applicants and neighbors¹²</td>
<td></td>
</tr>
<tr>
<td>- Increased recognition of site improvements and existing uses in standards</td>
<td></td>
</tr>
<tr>
<td>- More expensive / more time¹⁸</td>
<td></td>
</tr>
<tr>
<td>- Provides current residents relief from inequities in the current one-size-fits-all approach</td>
<td></td>
</tr>
<tr>
<td>- Provides developers increased flexibility with neutral environmental effect</td>
<td></td>
</tr>
</tbody>
</table>

The proposed amendment will generally increase the flexibility and options for property owners in the use of their property by basing the stream buffer on the site improvements and existing uses. Location of buffers will be highly dependent on each site's conditions, which decreases the predictability and equity in permitting for property owners and neighboring properties. The permit review requirements will be increased and will minimize issues with consistency and possible mis-location of stream buffer areas¹⁹.

<table>
<thead>
<tr>
<th>Overall Effect</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td></td>
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</tbody>
</table>

**Reid Brockway Submittal**
<table>
<thead>
<tr>
<th>Existing Regulation(s)</th>
<th>Proposed Amendment &amp; Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream buffers are established based upon the edge of the stream (ordinary high water mark) and extend a specified distance (between 50 and 150 feet). The stream buffer is based <em>solely</em> upon the type of the stream, and may encumber land that is already improved in some fashion (e.g. house, driveway, landscaping, etc). Existing legally created development is afforded some protection for the restrictions associated with a stream buffer. <em>However restrictions to land use do not currently take into account actual range of influence on the stream or watercourse.</em></td>
<td>Allow residents and developers the option of hiring qualified professionals to determine appropriate buffer extent based on site features and topography. Stream buffers would be established based upon the actual width of viable habitat, drainage patterns relative to the stream channel, and slope stability (if applicable). Exclude from stream buffers areas that have been improved (e.g. house, driveway, etc) and areas perceived to provide little if any functions that contribute to the stream health, and areas that are effectively isolated from the stream by such features.</td>
</tr>
</tbody>
</table>

**Desired Result of Amendment:**
Regulate Establish stream buffers based upon the actual site conditions between the stream and a regulated activity. Buffers would more accurately reflect the portions of a development site or existing use that will provide value to a stream, and not burden land use for negligible environmental benefit.

**Amendment Source:**
Public comment

**Best Available Science Support:**
- Best Available Science Report “Streams and Fish and Wildlife Habitat Conservation Areas” by AMEC Environment & Infrastructure, Inc.
- AMEC Report Issues 3-5, Issue 3

**Affected Code Section(s) (includes duplicative and overlapping sections):**
- 21A.50.330 - Streams – Development standards
- 21A.50.340 - Streams – Permitted alterations
- 21A.50.350 - Streams – Mitigation requirements

**Public Comment Reference(s):**
5, 22, 73, 122

**Notes:**

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**Evaluation Form**

Reid Brockway Submittal
Note on terminology: in these remarks I refer to the process of site specific buffer location as “buffer delineation” or “delineation” for the sake of brevity. Several environmental scientists I have spoken with refer to it as that, and it is a recognized concept among these professionals.

1. There is unquestionably more work for the city to review buffer delineation studies, and to regulate buffers whose boundaries are not defined by a simple fixed dimension. However, so long as the onus is placed on the resident or developer to submit a competent and thorough analysis by qualified professionals, with appropriate maps and other documentation, this impact should be manageable. As for the property owner, he will undertake the process because he sees a net benefit, so the effort involved will be a minor if not neutral factor to him.

2. The effect on a stream, by design, should be neutral. The central purpose of buffer delineation is to determine the true range of influence on a critical area and define a buffer that assures protection in that range. To assert that the effect is negative reflects a lack of understanding of this concept.

3. The cumulative effect of a neutral impact is still neutral. See #2.

4. Highly questionable assumption. The code should pertain to the current reality, not some possible state in the future, e.g., that a house or road will be removed permitting a wider buffer. Further, the “potential to restore a stream buffer” still exists should this happen. If desired, code can be added to address that circumstance.

5. See #2

6. See #2

7. See #2

8. Buffer delineation is not unidirectional; expanded width can result as well. And since it focuses attention on areas where protection and/or habitat are high value, property owners may opt to restore buffer function where feasible (e.g., convert formal landscaping to native vegetation).

9. The premise for this argument seems to be that a buffer of a standardized width provides necessary protection for the environmental feature regardless of circumstance, and that any reduction in width is to some extent harmful. This premise is not supported by science – a fact recognized by some jurisdictions willing to forego the one-size-fits-all approach in favor of a more insightful one (for references, see Best Available Science Support section). The following is an assessment of the assertions made within this paragraph.

“This amendment is based upon the premise that buffers serve no value if separated from the stream by a physical barrier.” – Incorrect. This amendment is based on the premise that a stipulated width does not necessarily reflect the true range of influence on a stream, and that range can be determined by science-based analysis of features and topography present. It may be found to be more or less than the stipulated width. In some cases a feature like a road may not constitute a physical barrier to influence; a driveway crossing a grade where water can sheet flow across and enter a stream is one example. Buffer delineation takes such considerations into account. In buffer delineation a buffer is “cropped” (a practitioners’ term for it) only where effect on the critical area truly stops.

“A review of BAS indicates this is not an accurate premise.” – Again, the true premise is that some features do constitute a true barrier to influence. If the city is aware of validated studies that show that features like a house or a road categorically do not constitute barriers to influence, they should be asked to produce them.

“The proposed amendment will result in the elimination of buffer areas, decreasing the protection of on-site streams and increasing the cumulative impacts to streams and buffers.” – It is true that this approach can eliminate buffer areas that do not benefit the stream, but that is precisely the point – eliminating restricted land use where it is of no benefit. The assertion that his will necessarily decrease protection and increase cumulative impact it wholly unspecified. (See #2 above)

“In the case of some low value buffer functions, BAS would suggest increasing buffers rather than elimination.” – This may be true; the city should be requested to provide specifics. But in any case an increase in buffer width is one possible result of the delineation. It works both ways.

“The proposed amendment creates an increase in unpermitted alterations, which increases the risk of damage to streams, including unique streams corridors, and results in a net loss to stream functions and values.” – On the contrary, buffer delineation addresses the problem of unpermitted alterations done “under the radar” because regulations are perceived as unreasonable. A party who has gone thru the process of buffer delineation is inherently vested in the result.

“The amendment also reduces options for restoration of degraded buffer areas.” – The city should be asked to explain this. Buffer delineation is not inherently irreversible, and if in the future a barrier like a house or road should be removed (or a property abandoned altogether), there is nothing to prevent expanding the buffer accordingly.
The new regulations will be unclear only if they are poorly written. Buffer delineation is an established approach that can be clearly spelled out. This writer has offered to submit a draft. In fact, it offers an alternative to regulations that are currently unclear, such as the nature and extent of grandfathering in the current code when it comes to stream buffers.

Questionable assertion. See discussion of this element of the paragraph below (#15).

It is true that fixed-width buffers are easier to apply and enforce. But this comes at a significant human cost to property owners who must deal with the inequities that often result from indiscriminate regulations. The way to ensure consistency is to maintain a high standard for the thoroughness and scientific substantiation of the buffer delineation studies when they are under review.

If Sammamish were to be the first to implement this approach, this argument might be more compelling. But see discussion for Best Available Science section below. This is where the city needs to be thorough in its review of the science and efficacy of the concept and the practices of other jurisdictions so that a strong case for it can be made. AMEC’s statement, “in summary, there is no method supported by BAS to establish buffers on a site-by-site basis” is simply wrong, and displays either a profound bias or an ignorance of the concept.

This is an option for the resident or developer, not a requirement. If that party chooses to incur the cost and effort of buffer delineation, it is because it deems it worthwhile vis a vi a fixed width buffer. Providing him the option is therefore essentially of neutral effect.

The following is an assessment of the assertions made within this paragraph:

“There is inherent variability in the quality of stream buffer analysis and review, which increases the chance for unintended consequences, and decreases the city’s ability to ensure consistent and efficient implementation.” - Some variability is unavoidable, perhaps, but that is where it is incumbent on the city to maintain standards for review of these studies, just as it does with other kinds of environmental studies it requires. The city should be asked to characterize the kinds of unintended consequences it anticipates as a result of the net variability remaining after adequate review.

“The proposed amendment also appears to create a possible incentive for property owners to not obtain city approval prior to alterations to stream buffers: creating additional demands on resources for code compliance.” - The city should be asked to clarify its concern here. Presumably it is over the creation of features that would bound a buffer (paving, structure, solid wall) prior to the delineation study. Note that removing native vegetation is not basis for buffer reduction. In any case, this is an enforcement issue and not a flaw in the concept of buffer delineation.

“Further, as this amendment does not appear to be supported by Best Available Science, there is a decreased likelihood of support or approval by other agencies.” - This approach is well supported by BAS. See Best Available Science section below.

The human benefit of this amendment is large. The inequities in the current code are substantial. Numerous individual cases (victims) can be pointed to as evidence. Space does not permit relating them here, but I have attempted to portray the nature of this problem in my prior testimony, and individuals have come forward with their own stories during the current ECA process. Buffer delineation provides a means to bring environmental reality into the picture and offers a viable solution to many of these problems.

The city should be asked to explain this. The kind of predictability that comes from one-size-fits-all buffers is not necessarily a good thing, especially for the homeowner who must get a permit to change a shrub. The unpredictability, to the extent that it exists, of the result of assessing the true range of influence is something the sponsor accepts. Neighbors will have the same option, or can stay with existing buffer as they see fit. This predictability aspect is of neutral consequence.

As noted in #14 above, this is an option available to the resident or developer wherein he chooses to incur the cost in money and time because he sees a net benefit. This aspect should therefore be considered neutral.

The problems with this paragraph are largely addressed by the remarks on the preceding bullets. As for the “possible mis-location of stream buffer areas”, the risk of this is only as great as the city’s quality standards for these analyses allow. As with any other environmental studies the city requires, buffer delineation should be performed only by qualified professionals and subject to careful review by Staff. Further, it should be recognized that there is also a risk to the citizens posed by the existing code, with buffers based as they are on forest practices, which can burden areas of urban property substantially in excess of that which has significant environmental value.

Buffer delineation is a practical and scientifically sound process that has been used by other jurisdictions. As mentioned in my written testimony to both the 4/19 and 5/3 PC meetings, the city of Aberdeen recently completed theirs for all wetlands in the city. It was performed by the firm HDR Engineering at a cost of approximately $50K. One reason it is this inexpensive is that it makes extensive use of aerial photography and GIS (Geographic Info System) material that is readily available, surveying is not required. Performed for individual properties the cost would be much more modest. As for the scientific basis, there may or may not be a study AMEC is aware of on whether, for example, buildings can constitute barriers to influence on a stream or wetland, but there is plenty of

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Evaluation Form

Reid Brockway Submittal
scientific basis for that presumption. I have spoken with multiple environmental scientists who state that the buffer delineation process is supported by BAS. I can refer the city to such an expert if desired.
### Environmental

<table>
<thead>
<tr>
<th></th>
<th>Neutral</th>
<th>Implementation</th>
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<tbody>
<tr>
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</tr>
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<td></td>
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</tr>
<tr>
<td>Decreased potential to restore damaged stream channels</td>
<td></td>
<td>Neutral effect on effective mitigation, harder to monitor</td>
</tr>
<tr>
<td>Increased chance of damage to streams</td>
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<tr>
<td>Neutral potential to damage high quality, unique streams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net loss of stream functions and values</td>
<td></td>
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</tbody>
</table>

The proposed amendment will decrease the protection of streams, which will result in an increased cumulative impact to streams overall. Regulation of streams based upon flow is not supported by BAS as an approach that accurately reflects the stream's function and values. Evaluation of flow as the basis for regulation will increase the likelihood of impacts to streams and decrease the opportunities to restore damaged stream channels.

### Property

<table>
<thead>
<tr>
<th></th>
<th>Neutral</th>
<th>Overall Effect</th>
</tr>
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<tbody>
<tr>
<td>Increased flexibility and options for property owner's use of property</td>
<td></td>
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<td></td>
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<tr>
<td>Increase of expense / time</td>
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The proposed amendment will likely result in the classification of some watercourses as either a "lower quality" stream or as something other than a stream, which in turn will reduce property owner constraints on the use of their property. Flow rates will change the classification of previously classified streams, which will decrease predictability in the stream protection standards for neighboring properties. Stream evaluation based on the new metric may require additional study to document flows resulting in an increase in time and expense.

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**Evaluation Form**

Reid Brockway Submittal
Streams are defined consistent with Best Available Science\(^5\), the Growth Management Act, and relevant sections of the Washington Administrative Code (220-110). Streams are generally defined with a focus on providing fish and wildlife habitat (including salmonids), water quality, and include features where surface waters produce a defined channel or bed. Streams may also include artificially altered watercourses that provide salmonid habitat or are used to convey streams naturally occurring prior to alteration.

An additional component would be added to the stream definition to evaluate the amount of water flowing within the stream (i.e. flow rate). \(^6\)

Desired Result of Amendment:
The proposed amendment would allow for increased variation between streams, recognizing that streams with little flow may not provide salmonid habitat. There needs to be a finer scaling of the protection required for watercourses based on the actual environmental value they represent.

Amendment Source:
Public comment

Best Available Science Support: Not supported \(^?\)
- Best Available Science Report “Streams and Fish and Wildlife Habitat Conservation Areas” by AMEC Environment & Infrastructure, Inc.
- AMEC Report Issues 3-5, Issue 5

Affected Code Section(s) (includes duplicative and overlapping sections):
- 21A.15.1240 - Streams (definition)
- 21A.50.330 - Streams – Development standards
- 21A.50.340 - Streams – Permitted alterations
- 21A.50.350 - Streams – Mitigation requirements

Public Comment Reference(s):
122, 163

Notes:

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Evaluation Form

Reid Brockway Submittal
Flow Part of Stream Definition

Item 2-12

While the arguments contained in this box may be true to some extent, they miss the main points of this proposed amendment. Those are, a) that so-called streams can have vastly different environmental values that our code definitions fail to recognize, and b) it is possible to overprotect watercourses and this comes at a human cost.

A sizeable salmon bearing stream like Ebright Creek is an environmental asset deserving of significant protection. But a small drainage charged by rainstorms may support no fish nor have much value as habitat. Yet both are being treated the same by our city if they discharge into Lake Sammamish, as most watercourses on the western slope of the plateau do. Both are categorized as Type F streams per the definitions in 21.A.15.1240 if they have the potential to support salmonid uses, and the city's default presumption seems to be that if the flow into the lake they do have that potential. (An example of this can be provided wherein it took a hearing examiner's ruling to establish that what the city considered a Type F stream was merely "a stormwater runoff conveyance device not regulated as a stream under Chapter 21A.50 SCC...")

As a consequence of the absence of flow as a consideration, both Ebright Creek and a small storm drainage may be categorized as Type F streams, imposing 330 foot bands of restricted land use. Per current code, a property owner cannot erect a small garden shed within 165 feet of an intermittent drainage of this Type, nor plant a non-native species within 150 feet of it without first obtaining "a state or federal permit or approval" (21A.50.340 (3)). And where lots are narrow, this can restrict the use of multiple properties on either side of a watercourse.

21A.15.1240 goes on to state that potential to support salmonid uses is presumed for:

Streams that are fish passable by salmonid populations from Lake Sammamish, as determined by a qualified professional based on review of stream flow, gradient and barriers and criteria for fish passability established by the Washington Department of Fish and Wildlife.

The state code in question is WAC 222-16-031(3)(b)(ii)(A). It defines passability in terms of channel width and gradient, but not flow.

My observation is that the "qualified professional" the city has relied upon is a Staff wetland biologist who interprets these criteria in favor of a watercourse being a Type F stream wherever possible, and does not consider flow in doing so. This is not a criticism, but merely an observation that there is inherently a tendency in this scheme to err in favor of environmental considerations at the expense of human ones.

The inequity in this scheme is that property can be burdened far in excess of the environmental value that is being realized. (A property owner two houses away from one with a storm drainage channel should not have to get a permit to change a shrub, or be precluded from adding a shed, but that is the way our code presently reads.) There is no provision in our code for defining buffers proportionate to the environmental value of the watercourse within a given stream Type. Accounting for flow rate would provide a means of doing this.

Perhaps flow rate is not the criterion -- or not the only criterion -- our code needs to factor in to achieve proportionality in its buffer requirements based on the actual environmental value a watercourse represents. As recommended in my 5/4 testimony, the consultant should be tasked with supplying the science applicable to urban settings that addresses the relative environmental value of watercourses of different flow rates and the extent that buffering should be scaled on that basis. If it is revealed that there is no such science, or the only science that can be identified pertains to unrelated settings (e.g., forests) then common sense should be applied and another means of achieving proportionality should be implemented. (Buffer delineation may be the answer in that case.)

2 The implementation rating for this amendment, (or a variation of it based on factors other than or in addition to flow rate) may be somewhat negative, but not for most of the reasons stated. Certainly fixed width buffers are simpler to locate and regulate. And delineated buffers based on the environmental value of a watercourse require site analysis and documentation. However it is assumed that the city will place responsibility on the property owner or developer for providing such analysis, and they will go to the effort and cost of doing it because they expect a net benefit. So the impact on the owner/developer is essentially neutral and on the city is negative.

As for the premise that there may be problems with support/approval by other agencies, that is a one-time hurdle that can be addressed by a competent scientific analysis, which the city will need in any case in order to define the criteria and proportionality of this provision in the code.

2 The entry in this box greatly understates the benefit of amending city code to recognize gradations in the environmental values of watercourses beyond the three stream Types currently defined. This amendment was proposed to address the problem of an imbalance between environmental and human concerns. Buffer widths well beyond what is proposed to achieve adequate protection of watercourses penalizes property owners for negligible environmental benefit. The burden in some cases borders on the ridiculous, as in requiring a permit merely to replace an ornamental shrub 149 feet away from a storm drainage that falls under the broad definition of a Type F stream, with attendant hassle and expense. It may be the case that the city expects the property owner to ignore the code (or to simply be unaware of it) in such cases and do it anyway, but code that relies on that to avoid inequities is bad code. A solution to this problem will be a very significant benefit to residents now subject to these restrictions.
Flow Part of Stream Definition

4 A slightly negative environmental impact (due to accepting some compromise in limited circumstances in the interest of human concerns), plus a somewhat negative implementation impact, plus a very positive human benefit, equate to a positive overall result.

5 Our city's Stream Type definitions may be consistent with currently accepted BAS, but that does not mean they are fully cognizant of applicable science. It may well be that no peer-reviewed studies are available on the buffering needed for varying qualities of watercourses in urban settings, or of how flow rates or intermittency affect salmonid viability of very small streams. But to assert that our stream definitions are adequate because they are consistent with BAS ignores the reality that they identify only three stream Types and fail to account for varying environmental values within a Type.

6 While this recommended amendment identifies flow rate as the criterion for distinguishing relative value within a given stream Type, the overriding issue is the present coarse categorization of streams into three Types that lacks discrimination of watercourse values within a Type. I am not a wetland scientist and do not know that flow in and of itself is a sufficient discriminator, although I am confident that it is a factor. If there are other criteria that need to be applied to achieve the intended result of this proposal, it should not be rejected for failure to identify them. I encourage the Commission to be guided by the entry in Desired Result of Amendment and entertain any measures that can achieve that.

7 This "Not supported" assertion is not supported. It remains unaddressed (in this evaluation form) whether environmental science allows for assessing the relative environmental value of a watercourse based on flow rate or other criteria beyond those used to establish Type. The AMEC so-called Best Available Science report does not contain or cite any science on the subject; it merely cites policy. The Commission should ask the city to research this matter before declaring the amendment "Not supported".