Analysis of Existing San Juan County Regulations Pertaining to Streams and Other Upland Fish and Wildlife Habitat Conservation Areas

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Overview

This report is organized around the major components of the County's existing regulations that cover the upland themes of Fish and Wildlife Habitat Conservation Areas. These components are:

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4. Buffers for Lakes and Ponds
5. Habitat for Upland Plants and Animals

Within most of these sections, there are subsections that quote and/or describe the following:

- State regulations most-relevant to that component
- Existing county regulations (1992 SJCC as amended)
- Analysis of existing county regulations – relationship to BAS and State regulations, and description of deficiencies, aspects considered to be overly restrictive as compared with BAS, and aspects needing clarification/ simplification/ coordination.
- Options for addressing problems – not necessarily comprehensive

In the last (Options) subsection, the Option which the author believes best complies with BAS, State regulations, and conditions in San Juan County is in bold font.

1. Types of FWHCAs to Include

1.1 State Regulations Most-relevant to Defining FWHCAs

WAC 365-190-090 (2) states:

> (2) Fish and wildlife habitat conservation areas that must be considered for classification and designation include:
>
> (a) Areas where endangered, threatened, and sensitive species have a primary association;
>
> (b) Habitats and species of local importance, as determined locally;
>
> (c) Commercial and recreational shellfish areas;
>
> (d) Kelp and eelgrass beds; herring, smelt, and other forage fish spawning areas;
>
> (e) Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat;
>
> (f) Waters of the state;
>
> (g) Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity; and
>
> (h) State natural area preserves, natural resource conservation areas, and state wildlife areas.

1.2 Existing County Regulations That Define FWHCAs

The County's SJCC 18.30.160(A) states:

1. Upland Category I. Priority habitat areas as listed below:
    a. Areas having a primary association with bald eagles, which are protected under the Washington State Bald Eagle Protection Rules (WAC 232-12-292), as well as the federal Bald Eagle Protection Act and Endangered Species Act.
2. Upland Category II. Priority habitat areas as listed below, except those included in Upland Category I.
    a. Habitat areas associated with rare plants and priority species as identified by the Washington Department of Natural Resources, Natural Heritage Program.
3. Upland Category III. Important habitat areas which are not based on use by a specific species. These areas are protected by their conservation ownership or management status and are not subject to the protection standards within this section:
    a. Areas listed as national wildlife refuges, national parks, national estuary reserves, natural area preserves, or any preserve or reserve designated under WAC 332-30-151;
    b. State natural area preserves, or natural resource conservation areas identified by state law and managed by the Department of Natural Resources; and
    c. Areas with recognized wildlife habitat value owned by The Trust For Public Lands, The Nature Conservancy, The San Juan Preservation Trust, the Bureau of Land Management, or the San Juan County land bank.
4. Freshwater Habitat Areas. These areas include the following:
    a. Streams and riparian areas classified as Type 2 through 5 Waters of the State and any associated riparian areas within 50 feet of a Type 2 stream or 25 feet of a Type 3, 4, or 5 stream. (Stream types are as identified by the Department of Natural Resources; cf. Chapter 222-30 WAC); and
    b. Lakes and ponds 20 acres or larger, which are also subject to Chapter18.50 SJCC. (Wetlands and ponds smaller than 20 acres are regulated in SJCC18.30.110(D) and 18.30.150(E)(6).
5. Marine Habitat Areas. These areas include the following:
    a. All kelp and eelgrass beds;
    b. Priority shellfish areas as follows:
        i. All public and private tidelands or bedlands which are approved or conditionally approved by the Washington Department of Health for shellfish harvest;
        ii. Any shellfish protection districts created under Chapter 90.72 RCW; and
        iii. Areas with all of the following attributes: broad intertidal areas, bays with geographically restricted wave action and circulation, poor or limited flushing, warmer water temperatures, seasonally reduced salinities, and increased potential for algae bloom; and
    c. All identified smelt spawning areas.

1.3 Analysis of Existing County Regulations

The reference in SJCC18.30.160A(1)(a) to bald eagle being protected under the federal Endangered Species Act (ESA) is no longer correct. The species is, nonetheless, still protected under the other statutes mentioned. The County's list does not conform exactly to the State requirements. It does not explicitly include WAC 365-190-090 2(g) "Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal

entity." However, counties and cities are only charged with "considering" the types of habitat areas listed in the WAC, and in this case BAS does not support inclusion of that type of habitat area (if anything, planting of game fish in San Juan fresh waters is detrimental to the overall aquatic integrity of such waters). Also, the County's code does not explicitly identify 2(b) "Habitats and species of local importance, as determined locally." However, in SJCC 18.30.160(A)2(a) it does mention "Habitat areas associated with rare plants and priority species as identified by the Washington Department of Natural Resources, Natural Heritage Program." SJCC18.30.160(A) contains a process for nominating and approving species of local concern, but no formal proposals have been made to the County in the many years since adoption of the SJCC.

1.4 Options for Addressing Problems

Option A. Retain only the existing provisions of the SJCC. This does not reflect BAS.

Option B.
1) Delete the reference to bald eagle protection under the ESA, but continue to mention its protection under the other statutes.
2) Add "Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity." This would be counter to current BAS.
3) Reword SJCC 18.30.160(A)2 as follows (proposed changes are italicized):

> a. Habitat areas associated with rare *or highly sensitive* species *and ecological communities* as identified by the Washington Department of Natural Resources (Natural Heritage Program), *Washington Department of Fish and Wildlife, or other sources of Best Available Science, and as approved by these agencies and the County.*

Option C.
Adopt provisions (1) and (3) above, plus add to SJCC 18.30.160(A)2:
b. The following ecological communities: West Side Prairie, Oak Woodlands & Savanna, Herbaceous Balds & Bluffs. [These are defined in section 4.3.1.3 of the BAS document]
Note: In June 2009 the County's CAO Committee approved inclusion of these.
To protect any of these habitats as well as some species (as the SJCC currently does), extend the current SJCC's requirements for development and implementation of a site specific plan (by a qualified professional). As part of the permitting process, the County could require that a qualified professional inventory a proposed development area for these, and that they be identified and their boundaries marked. When such occurs, the County could attach predetermined conditions of approval to the permit, if approval is deemed necessary.

Option D. Adopt Option C, plus add to SJCC 18.30.160(A)2:

c. Areas where the following locally rare and/or sensitive species have been determined to breed as of the time of adoption of this ordinance or at a later time, and during multiple years: Sharp-tailed Snake, Rubber Boa, Western Fence Lizard, Western Toad, Northwestern Salamander, Golden Eagle, Northern Harrier, Merlin, Northern Goshawk, Black Oystercatcher, Wilson's Snipe, Short-eared Owl, Long-eared Owl, Northern Pygmy-Owl, Sooty Grouse, Common Nighthawk, American Dipper, Western Bluebird, Chipping Sparrow, Vesper Sparrow, Horned Lark, Western Meadowlark, Fox Sparrow, Golden-crowned Sparrow, Island Marble butterfly, Great Arctic butterfly, Valley Silverspot butterfly, Sand Verbena Moth. Also, caves or other natural features that consistently are used for roosting by concentrations of bats.

2. Stream Habitat Protection

2.1 State Regulations Most-relevant to Stream Habitat Protection

Under WAC 365-190-130(3):

> (3) When classifying and designating these areas [streams and other Waters of the State], counties and cities must include the best available science, as described in chapter 365-195 WAC.
>
> (a) Counties and cities should consider the following:
>
> (i) Creating a system of fish and wildlife habitat with connections between larger habitat blocks and open spaces, integrating with open space corridor planning where appropriate;
>
> (ii) Level of human activity in such areas including presence of roads and level of recreation type (passive or active recreation may be appropriate for certain areas and habitats);
>
> (iii) Protecting riparian ecosystems including salmonid habitat, which also includes marine nearshore areas;
>
> (iv) Evaluating land uses surrounding ponds and fish and wildlife habitat conservation areas that may negatively impact these areas, or conversely, that may contribute positively to their function;
>
> (v) Establishing buffer zones around these areas to separate incompatible uses from habitat areas.

The WAC does not mention specific widths that should be required for stream buffers generally or by stream type. However, Best Available Science must be used according to RCW 36.70A.172.

2.2 Existing County Regulations

The SJCC 18.30.160 (A)(4) contains the following:

> a. Streams and riparian areas [are] classified as Type 2 through 5 Waters of the State and any associated riparian areas within 50 feet of a Type 2 stream or 25 feet of a Type 3, 4, or 5 stream. (Stream types are as identified by the Department of Natural Resources; cf. Chapter 222-30 WAC)

Also, SJCC 18.30.160(B)(2) states that:

> Septic drainfields and a 100 percent repair area must be at least 100 feet from the edge of the habitat area.

Considering that the "habitat area" as defined in SJCC 18.30.160 (A)(4) extends 50 feet from a Type 2 stream or 25 feet from a Type 3, 4, or 5 stream, this means the septic buffer requirement for these is currently 150 feet for a Type 2 stream [fish-bearing with high use by fish, wildlife, or people] and 125 feet for a Type 3 [fish-bearing with moderate to slight use by fish, wildlife, or people], 4 [perennial streams without fish], or 5 stream [seasonal non-fish streams connected to type 1-4 stream].

The SJCC does not specify buffer widths to protect streams from anything other than septic pollution.

2.3 Analysis of Existing County Regulations

To comply with BAS, the County should clarify that buffers shall be used to protect stream functions from all types of threats associated with stormwater pollution and vegetation clearing -- not just from septic pollution. Also, seasonal non-fish streams should have buffers if they connect to tidal waters (not just if they connect to type 1-4 streams), and specific buffer widths that the County should require for streams of various types in various situations should be described. Also, for the sake of clarity the numbered stream types should be cross-walked with their stream letter labels, e.g., types F, Np, Ns under the current State classification system.

2.4 Options for Addressing Problems

Option A. Make no changes to the existing provisions of the SJCC that pertain to streams and buffers. This would not reflect BAS and the need to protect resources from future harm. Buffer determinations would be made by qualified professionals as appropriate.

Option B. Make the changes described in 2.3 above and also adopt **a variable-width buffer determination procedure tailored to the specific conditions of San Juan County, which reflects the most current BAS, provides greater protection to salmonids, and which allows for *minimal risk* to stream functions. That procedure is described in Appendix A.**

Option C. Same as C, except allowing for *medium risk* to stream functions. That procedure is also described in Appendix A.

Option D. Make the changes described in 2.3 above except adopt a standard-sized buffer for all SJC streams. This would not reflect BAS and the need to protect resources

from future harm. It would result in unnecessary regulation of development activities on some properties and insufficient regulation of development activities on others.

3. New Activities Exempt or Allowed in Stream Buffers

3.1 State Regulations Most-relevant to Exempt/Allowed Activities in Buffers

As part of requirements for protection of streams as part of city and county Critical Areas Ordinances, there are no State regulations that explicitly allow or prohibit specific activities or land uses in stream buffers.

3.2 Existing County Regulations

The existing SJCC does not specify particular activities as being allowed, disallowed, or regulated in stream buffers. Rather, SJCC 18.30.160 (B)(1) states the following:

> c. Temporary and permanent erosion and sedimentation controls must be provided to prevent the introduction of sediments or pollutants to water bodies or water courses within the habitat area.
> d. Clearing and grading must be limited to that necessary for establishment of the use or development and must be conducted so as to avoid significant adverse impacts and to minimize the alteration of the volume, rate, or temperature of freshwater flows to or within the habitat area and any buffer specified in this section.
> e. The proposal will not introduce hazardous substances to the habitat areas that would have significant adverse impacts on that area, including but not limited to fertilizers, herbicides, pesticides, fuel and waste oil, and human or livestock fecal matter.
> f. Stream flows must be protected from changes to the normal flow, temperature, turbidity, and discharge to the maximum extent practicable.

3.3 Analysis of Existing County Regulations

To comply with BAS and add certainty to the permitting process, the County should specify particular activities that will or will not be allowed in stream buffers.

3.4 Options for Addressing Problems

Option A. Make no changes to the existing provisions of the SJCC. This would not reflect BAS and the need to protect resources from future harm.

Option B. In stream buffers, allow the activities in Appendix B and disallow or permit those in Appendix C. Make the allowance or prohibition of particular activities in the stream or its buffer contingent on the type of stream (e.g., fish-bearing or not). This

would not reflect BAS and the need to protect all aquatic life (not just fish) from future harm.

Option C. Same as Option B, but do *not* make the allowance or prohibition of particular activities in the stream or its buffer contingent on the type of stream.

Option D. Modify the lists in Appendix B and/or C, adding or deleting particular listed activities in stream buffers. Then make the allowance or prohibition of particular activities in the stream or its buffer contingent on the type of stream. This would not reflect BAS and the need to protect all aquatic life (not just fish) from future harm.

Option E. Same as Option D, but do not make the allowance or prohibition of particular activities in the stream or its buffer contingent on the type of stream.

Option F. For any of the above, allow some of the prohibited activities (Appendix C) to occur in the outer 25% of a buffer (the part closest to the development and farthest from the stream being protected).

4. Buffers for Lakes and Ponds

4.1 State Regulations Most-relevant to Lakes and Ponds

Lakes larger than 20 acres are also subject or regulations under the Shoreline Management Act and the Shoreline Master Program, as provided in RCW 90.58.030(2)(d)(iii).

4.2 Existing County Regulations

The existing SJCC 18.50.330(D)(2) has the following setback requirements for residential development on lake shorelines:

> Residential structures shall be located behind the treeline and set back a minimum of 50 feet from the OHWM, top of bank or berm, whichever is greater. Residential structures are also subject to the following:
> b. If there is no natural screening or if the shoreline area is cleared so as to preclude natural screening before a building permit application is approved, then a minimum setback of 100 feet from the OHWM or from the top of bank or berm, whichever is greater
> c. A setback less than the minimums specified above may be authorized by the administrator only if it will result in a lesser environmental or visual impact.
> d. If existing houses on adjoining waterfront lots are closer than the specified minimum setback, a lesser setback may be authorized by the administrator. This setback may be equal to the average setback of

existing houses on adjacent lots, if the minimum setback would cause obstruction of views from the building site due to the location of existing houses and if consistent with other applicable regulations in this master program.

4.3 Analysis of Existing County Regulations

To comply with BAS and add certainty to the permitting process, the County should specify width of lake buffers site-specifically, and identify particular activities that will or will not be allowed in lake buffers.

4.4 Options for Addressing Problems

Option A. Implement the same buffer widths and buffer determination procedures for non-tidal ponds and lakes as are proposed for SJC wetlands. Under that procedure, shorelines of all lakes, and non-tidal ponds larger than 5 acres, could be assigned an Importance of "Medium." As such, if those wetlands procedures are adopted, that would mean the minimum buffer width for lakes and large ponds could be 25-250 ft under the medium-risk option if that is adopted, or 40-400 ft under the minimal-risk option if that is adopted, with the exact width depending on the intensity of the proposed development and the potential for pollutant transport at a particular location.

Option B. Implement an as-yet-to-be-determined procedure for specifying buffers for the parts of lake and large-pond shorelines that do not contain wetlands.

5. Habitat for Upland Plants and Animals

Based on the Best Available Science, the County in amending current regulations could do the following:

1. Consider and possibly adopt or expand incentives to landowners to voluntarily and permanently set aside natural lands and open space for species and habitat protection. Highest priority could be given to habitat on islands that currently have the lowest proportion of lands permanently set aside for conservation, as well as to habitat elsewhere that is known to support Priority Habitats, Priority Species, and other species listed in section 1.4 of this document. Higher priority could also be given to patches of these habitats that are larger and/or are in the best condition, are most vulnerable to future land use conversion, and/or are most likely to be self-sustaining over the long term.

2. Provide information to private landowners describing voluntary measures, consistent with sections 4.3.1.5 and 4.3.2.1 of the BAS report, which they can take to recognize and avoid impacting sensitive species and habitats on their lands, as well as to enhance habitat for sensitive species in a self-sustaining manner.

3. Encourage and help fund the centralized compilation, databasing, and synthesis of much species and habitat distributional information already collected by SJC citizens and various private groups on properties, but not yet in the public domain. Organize a committee of scientists or agency personnel to provide quality control on submitted records, adding all submitted records to the database but assigning a quality score to each based on qualifications of the contributor and/or amount of documentation provided (e.g., photos with automated date-year and GPS coordinates stamped). Without disclosing publicly the exact locations of the most sensitive species, continue to use the data to help refine priorities for the San Juan County Land Bank and other open space and conservation efforts.

4. Facilitate and help fund a countywide biological inventory, covering all private lands where landowners voluntarily grant access permission to qualified observers, that builds upon the above database, and catalogs *where* all uncommon species breed or otherwise occur in SJC.

5. Support waste management programs and enforce littering regulations to ensure that all garbage remains as inaccessible as possible to raccoons, crows, and other songbird nest predators.

6. To minimize illegal harassment of sensitive shorebirds, enact and/or ensure strict enforcement of leash laws in known shorebird concentration areas (e.g., Westcott Bay, False Bay) along marine and lake shorelines.

7. Wherever landscaping of County property is needed or desired, use native plants and minimize the creation of new lawns. Continue supporting programs for noxious weed control throughout the county. Use herbicides only when no practical alternatives exist.

8. For Threatened, Endangered, and Sensitive species, the County could support -- through regulations, policies, and/or public education -- the actions shown in Appendix D.

9. The County could request nominations from qualified botanists of additional locally-sensitive plant species, and add those and appropriate protective actions to the list of sensitive wildlife species in section 1.4 (Option D).

6. Literature that most influenced the recommendations

FEMAT (Forest Ecosystem Management Assessment Team). 1993. Forest ecosystem management: An ecological, economic, and social assessment. U.S. Departments of Agriculture, Commerce, and Interior. Portland, Oregon.

Marczak, L., T. Sakamaki, S. Turvey, I. Deguise, S. Wood, and J. Richardson. 2010. Are forested buffers an effective conservation strategy for riparian fauna? An assessment using meta-analysis. Ecol. Appl. 20(1):126-34.

Mayer, P.M., S.K. Reynolds, M.D. McCutchen, and T.J. Canfield. 2007. Meta-analysis of nitrogen removal in riparian buffers. *J. Environ. Qual*. 36:1172-80.

Appendix A. Stream Buffer Determination Procedure

This describes a six-step procedure for determining the width of buffers to protect the water quality of SJC streams and their capacity to provide habitat for aquatic and riparian-dependent species.

Step 1. The County could use Table 1 and information provided by the landowner, could make an initial determination of the **Development Intensity** rating (HIGH, MEDIUM, LOW) of the proposed development.

Step 2. From the most recent version of the County's Streams map, the County or the landowner could determine:

(a) if there is a **perennial** stream within 400/200*, 300/175*, or 200/150* ft of the proposed Development Area and the Development Intensity was rated as HIGH, MEDIUM, or LOW respectively. If not the case, then determine

(b) if there is an **intermittent** stream within 200/150*, 150/125*, or 125/100* ft of the proposed Development Area and the Development Intensity was rated as HIGH, MEDIUM, or LOW respectively.

* The number to the left of each slash is the distance within which the feature (perennial or intermittent stream) would need to be searched for (but not necessarily regulated) under the *minimal* risk option; the number to the right of each slash is the distance under the *medium* risk option (see section 2.4).

The above determinations would be made regardless of whether the stream is on the landowner's parcel or a neighbor's. The landowner also could note the type of stream (Ns, Np, or F) if that is reported on the map. If no stream is shown, the landowner could be required to confirm that no surface water flows naturally for even brief periods along drainageways that connect to a mapped stream, wetland, lake, or marine waters. The landowner could use the County's 2010 Drainageways map, as well as maps of drainage and culverts compiled by the Department of Public Works, to help locate such areas within the specified distances of the proposed development. However, neither map source can be presumed to be complete and accurate, and would not comprise a regulation. In all matters pertaining to streams in buffers, the definitions of stream types in WAC 222-16-030 and -031 would prevail.

Step 3. Using Table 2, the landowner or County could determine the **Pollutant Transport** rating associated with the proposed development and potentially impacted streams.

Step 4: Based on the above information provided by the landowner and/or its own determinations, the County could use Table 3 to make an initial estimate of the **required buffer width** for streams potentially impacted by the development. The specified buffer width could be applied only to the side of the stream closest to the Development Area and would include all lands that are along a direct line connecting the Development Area and the stream (see Figure 1). Impervious areas could not be counted towards meeting the buffer requirements. For example, if a 15-ft wide road currently exists within the area to be designated as the buffer, the exterior edge of the buffer could be extended by 15 feet. Similarly, parts of the buffer that have slopes exceeding 30% could not be counted towards meeting the buffer width requirement. The buffer's dimension measured parallel to the stream could be considered to be no greater than the maximum dimension of the proposed Development Area measured parallel to the stream.

Step 5. If the stream is categorized as Ns (non-fish bearing, seasonal or intermittent), the buffer widths shown in Table 3 could be **reduced** to 75% of the otherwise required width if one or more of the measures described below are undertaken and are maintained in a fully functioning condition in perpetuity:

(a) The landowner implements all or most applicable Low Impact Development (LID) measures described in the *Low Impact Development Technical Guidance Manual for Puget Sound* (Puget Sound Action Team/Washington State University, 2005) as revised, provided they are geotechnically and ecologically feasible and appropriate for the particular Development Parcel. These could include, for example, sod roofs, rain gardens, and use of non-erodible surfacing on driveways and parking areas that is designed to facilitate infiltration or which directs runoff in small quantities to areas with greater infiltration capacity. Credit could be given for use of LID in the new development or for retrofitting of existing development located upslope of a stream and within its buffer; or

(b) The landowner signs a recorded organic land management agreement with the County, stipulating that no chemical herbicides, insecticides, rodenticides, or fertilizers will be used on site, that roofing materials will be of a type that is not susceptible to growth of moss and will not contain zinc or copper, and that building construction materials will be of a type that is not susceptible to termites or carpenter ants; or

(c) The landowner removes or reduces the extent of existing buildings, impervious areas (including lawns), and/or drainage features currently affecting more than 10% of a stream buffer area; or

(d) Where appropriate and effectiveness can be improved significantly, the landowner replaces and upgrades an existing septic system.

Removing and substituting native for exotic vegetation or adding downed wood to a stream could not by themselves qualify a landowner for a buffer width reduction, because BAS indicates those do not necessarily improve stream functions in a self-sustaining manner.

Step 6. If the proposed development is actually built or implemented, the County could be required to visit the Development Area within 12 months after completion of the development, and periodically thereafter to ensure that:

(a) Development Intensity was properly classified (e.g., the Developed Area on the parcel was no more or less extensive than specified by the Development Intensity rating that was partially used to calculate the required buffer width), and
(b) neither the buffer nor the stream has been intentionally altered (prohibited activities have been excluded, see Appendix C), and
(c) the features that were the basis for any buffer modifications that were agreed to (Step 4) are functioning as intended.

If the County is unable to determine the above at the time of final approval and/or issuance of a final certificate of occupancy, the County could require the landowner to sign a financial guarantee and completion agreement.

If the approved plan includes ongoing action (e.g. restricted use of pesticides, maintenance of stormwater management systems) a recorded agreement between the property owner and County could be required.

Table 1. Proposed Option for Categorizing Development Intensity

Assign a rating of HIGH:
If implementation of the proposed development involves any of the following:
(a) removal or alteration of vegetation such that the new plus existing Developed Area comprises greater than the following percentages:

Parcel Size	0-3 acres	3-5 acres	5-10 acres	10-20 acres	>20 acres
New Developed Area:	**50%**	**45%**	**40%**	**35%**	**30%**

(b) removal of trees results in fewer than 25 trees per acre; they must be well-distributed within the Development Parcel(s), or
(c) changes in the land surface, within or between the Developed Area and the stream, that intentionally redirect runoff which otherwise would reach the stream during wet periods, e.g., construction of cut-off trenches, ditches, berms, ponds. Cisterns and features designed to increase infiltration are exempt.

Assign a rating of MEDIUM: If neither HIGH nor LOW.

Assign a rating of LOW:
If implementation of the proposed development meets all of the following:
(a) not located in or immediately adjacent to areas known to support Threatened or Endangered species, or which qualify as Locally Significant Habitat Conservation Areas under Fish and Wildlife Habitat Conservation Area provisions of this ordinance; and
(b) any clearing of vegetation associated with the development does not create a linear forest opening wider than 100 ft in a manner that causes a forested area larger than 100 acres to be separated from a forested area that would otherwise be contiguous to it; and
(c) hydrology of the land surface is not changed as described in (c) above, and
(d) lighting complies with standards described in San Juan County Code Section 18.60.170 (Lighting) and Ord. 2–1998 Exh. B § 6.15, as amended; and
(e) the new Developed Area comprises less than the following percentages:

Parcel Size:	0-3 acres	3-5 acres	5-10 acres	10-20 acres	>20 ac
New Developed Area:	**35%**	**30%**	**25%**	**20%**	**15%**

Table 2. Proposed criteria for rating Pollutant Transport Potential
Assign a rating of HIGH: If <u>any</u> of the following are true: (a) the same mapped Drainageway intersects both the Development Area and a Downslope Stream, and no more than 400 horizontal feet separate the two, or (b) the percent slope of land, measured between the Development Area and the Downslope Stream, is greater than 30%, or (c) more than 10% of the land between the Development Area and the Downslope Stream is Impervious Area or will become so as part of the proposed development.
Assign a rating of LOW: If <u>both</u> of the following are true: (a) no Drainageway intersects both the Development Area and a Downslope Stream that is located within 400 horizontal feet, and (b) The average percent slope of land, measured between the proposed development and the Downslope Stream, is <10%.
Assign a rating of MEDIUM: If neither HIGH nor LOW above.

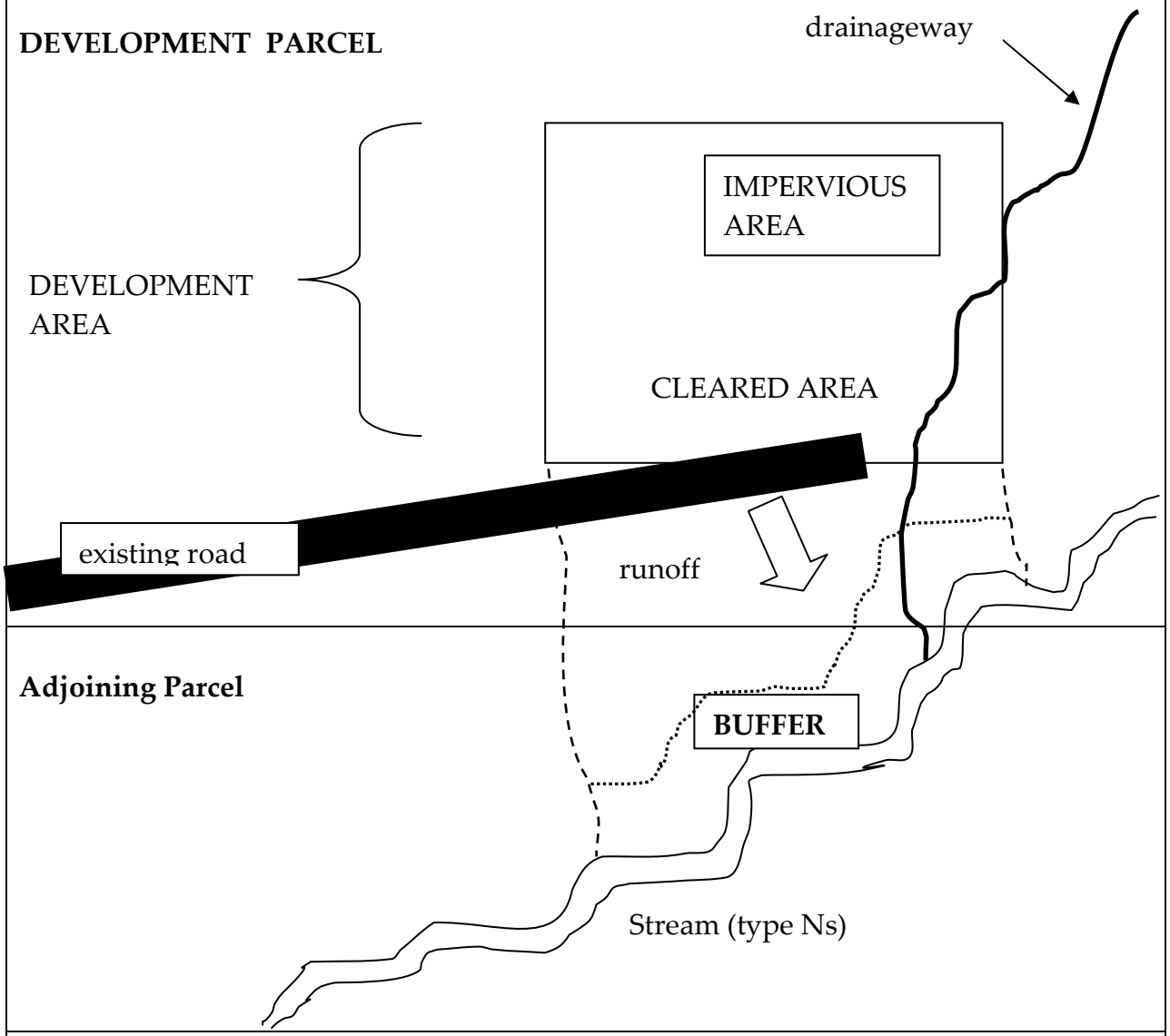

Figure 1. Example of locating a stream buffer.

Although the stream is partly on an adjoining parcel, it is within 350 ft of the Development Area in a downhill direction. Its buffer extends across both parcels, beginning at the stream and extending a uniform distance towards the Development Area. When determining the required buffer width, the choice of a Development Intensity category is affected partly by the size of the Development Area relative to the size of the Development Parcel. The buffer in this example is wider than it otherwise might be because the Development Area is intersected by a Drainageway and some Impervious Area currently exists within 350 ft of the stream. These increase the Pollutant Transport rating. No buffers are required for the Drainageways themselves. See accompanying narrative for full explanation of the procedures.

Table 3. Proposed options for buffer width specifications for SJC streams					
		Buffer Width (ft) Necessary for **Minimal** Risk to Functions		Buffer Width (ft) Necessary for **Medium** Risk to Functions	
Intensity of Proposed Development	Transport Factors	Perennial Streams* (F and Np)	Intermittent Streams (type Ns)**	Perennial Streams* (F and Np)	Intermittent Streams (type Ns)**
HIGH	High	350	200	225	150
	Medium	300	150	175	125
	Low	250	125	125	100
MEDIUM	High	200	150	150	125
	Medium	150	125	125	100
	Low	125	100	80	75
LOW	High	100	80	80	75
	Medium	80	65	70	60
	Low	75	50	60	50

* Measured from the Ordinary High Water Mark, or where present, from the edge of the area of special flood hazard as shown on the most current FEMA maps.

** Intermittent streams include some streams that may not be labeled Ns but which seasonally drain directly to the ocean.

Note: Buffers shown do not include setbacks and vegetation management measures that may be necessary along some streams to maintain bank stability and thus protect property. These are determined by a licensed geologist or engineer.

Rationale

1. Stream buffers are intended partly to provide for the protection of trees and vegetation near channels. The narrowest recommended buffer under a medium-risk approach, with low intensity of development and potential for pollutant transport, was set at 50 feet. That is partly because information from studies in other parts of the Pacific Northwest (FEMAT 1993) suggests that most large wood in streams is provided by trees that are within a horizontal distance of 0.5 (50% wood delivery effectiveness) and 0.8 (90% effectiveness) tree-height of water, and that most leaf litter originates from trees that are within 0.2 (for 50% effectiveness) and 0.4 (for 90% effectiveness) of the water. In the soils and climate present in the San Juan Islands, most trees grow to about 85 feet tall. Thus, most large wood in SJC streams is likely to originate within 43-68 feet of water, and most leaf litter within 17-34 feet, so a minimum buffer width of 50 ft, applicable to intermittent streams, is proposed herein to provide between 50 and 90% effectiveness for wood delivery. The 50-foot buffer width would not protect the trees

immediately adjacent to an intermittent stream from accelerated rates of windthrow and blowdown. For that, the BAS indicates that the width of buffers, if they are currently forested, would need to be at least 75 feet. Such a buffer width is proposed for the County's perennial streams. Although extensive blowdowns could cause some streams to heat up and could thus potentially harm native fish, limited amounts of sporadic windthrow may be desirable to resupply streams with wood that benefits many aquatic species.

2. As a whole, salmonids and other aquatic organisms are more persistent and abundant in **perennial** (Np, F) streams than intermittent streams, so their potential for exposure to pollutants is greater, other factors being equal[2]. For this reason, for perennial streams it is appropriate to use buffers widths that are *intermediate between narrower ones used to protect intermittent streams, and wider ones recommended to protect wetlands, lakes, and other areas with longer water residence times* (and which are thus at greater risk of oxygen deficits that impair aquatic life, as well as excessive sedimentation and bioaccumulation of contaminants). An exception is that the minimum buffer width for streams of all types is set at 50 feet (as opposed to 15 ft for wetlands). This is because of the demonstrated importance of tree-originated organic inputs to streams, as well as the greater importance of maintaining stream temperatures critical to native fish that are absent from many non-tidal wetlands.

3. The buffer widths for **intermittent** (Ns) streams are based on (a) the need to provide shade that minimizes temperatures lethal to fish and some other aquatic life (during the late spring, before most intermittent streams dry up), (b) the need to shade stream banks in order to limit the invasion of reed canary-grass, which reduces native plant diversity and clogs channels, (c) the need to avoid excessive levels of suspended sediment which when deposited can fill the pools so critical to the survival of organisms that use intermittent streams, and (d) the importance of providing the intermittent stream with natural levels of woody debris, which reduces runoff energy and captures and allows instream leaves to decay slowly before they reach marine waters, thus potentially enhancing their nutritional value in marine food webs. Although studies of buffers along intermittent streams are few, it is commonly suggested that buffer widths of about 50 to 80 feet may be appropriate because, as noted in #1 above, vegetation located farther than that from a stream is much less likely to provide significant amounts of shade, large wood, leaves, and sediment to the stream.

[2] This might be countered to an unknown degree by the generally greater water circulation and dilution that occurs in perennial streams.

4. The "Minimal Risk" buffer option for both perennial and intermittent streams assumes (a) some but not most of the loads of soluble pollutants from new developments will travel aboveground (in runoff) in some parts of the county during prolonged or intense wet periods, (b) *more than 90%* of the pollutant load will be processed in a stream buffer of the specified width before it reaches a stream, (c) the proposed stream buffers, in combination with existing protected natural lands, will be sufficient for maintaining *all* aquatic life within the natural range of variation expected for SJC streams, and (d) there is *very low* ("beyond a reasonable doubt") probability that adverse impacts to stream functions will be worse than described in this report.

5. The "Medium Risk" assumes (a) *all* loads of nearly all soluble pollutants from new developments will travel entirely belowground during prolonged or intense wet periods, (b) *between 50 and 90%* of the pollutant load is processed in a stream buffer of the specified width before it reaches a stream, (c) the proposed stream buffers, in combination with existing protected natural lands, will be sufficient for maintaining *most* aquatic life within the natural range of variation expected for SJC streams, and (d) there is a *moderate* possibility that impacts to stream functions will be worse than described in this report.

6. Use of this range of widths to protect streams from soluble pollutants was influenced significantly but not exclusively by the statistical analysis of over 60 studies of nitrate transport and assimilation published by Mayer et al. (2007). As a whole, newer studies have not refuted conclusions from that analysis. That analysis and many others were not used by FEMAT (1993), Knutson & Naef (1997), or the WDOE (Granger et al. 2005) in arriving at their buffer specifications because Mayer et al. published their analysis after those authors had published theirs. The other reviews did not use the rigorous, statistical analysis (meta-analysis) of the literature that Mayer et al. used. The newer analysis focused on just one soluble substance (nitrate). BAS is insufficient to determine if buffers needed to adequately remove or retain some of the other potentially harmful substances and human pathogens, in the concentrations they do or could occur in SJC, should be narrower or wider.

7. The width of buffer needed to protect **habitat** functions of streams (apart from water quality, temperature, wood supply) could not be specified with confidence because it may depend on the type of stream (e.g., only riparian areas that are forested are susceptible to blowdown) and species that are present (e.g., woody vegetation that is beneficial to fish and some riparian songbirds may reduce stream aquatic productivity). Desirable riparian buffer widths have not been documented in applicable literature for any of the priority or sensitive wildlife species that occur along SJC streams. Nonetheless, buffer widths sufficient to protect stream water quality (as described

above) are expected to be sufficient to protect most riparian species in the county. This conclusion was influenced significantly by the literature analysis of Marczak et al. (2010).

Appendix B. Activities proposed to be allowed (without permits) in SJC stream buffers

a. Normal maintenance, repair, or operation of existing structures, facilities, or improved areas, such as lawns, landscaping, orchards, gardens, and driveways. Maintenance and repair do not include any modification that changes the character, scope, or size of the original structure, facility, or improved area, and do not include the construction of a maintenance road.
b. Modification or expansion of existing uses and structures, pursuant to the requirements of the nonconforming use and structure provisions of SJCC18.40.310 and 18.80.120.
c. Outdoor recreational activities, including hunting and fishing (pursuant to state law), birdwatching, hiking, boating, and swimming.
d. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling soil, planting crops, or changing existing topography, water conditions, or water sources[3].
e. Most existing and ongoing agricultural activities[2].
f. Normal maintenance, but not construction, of drainage ditches.
g. Use of existing nature trails.
h. Installation of navigation aids and boundary markers.
i. Site investigative work necessary for land use application submittal, such as surveys, soil logs, percolation tests, and other related activities. In every case, buffer impacts shall be minimized and disturbed areas shall be immediately restored.
j. Drilling or digging and maintenance of wells; provided, that impacts to streams and their buffers are minimized and disturbed areas are immediately restored.
k. Vegetation-lined swales designed for stormwater management or conveyance when topographic restraints determine there are no other upland alternative locations. Swales used for detention purposes may only be placed in the outer 25 percent of the buffer. Conveyance swales may be placed through the buffer, if necessary.

[3] In addition to or in lieu of some of the measures listed here that apply to *agricultural* activities, is possible that the County may opt to participate in a new (Washington House Bill 1886) *voluntary* stewardship program whose stated purpose is to maintain viable farms while minimizing impacts to critical areas from some agricultural practices.

Appendix C. New activities proposed to be disallowed or regulated in SJC stream buffers (i.e., excluding those listed below where they are currently ongoing)

Note: In addition to or in lieu of some of the measures listed here that apply to *agricultural* activities, is possible that the County may opt to participate in a new (Washington House Bill 1886) *voluntary* stewardship program whose stated purpose is to maintain viable farms while minimizing impacts to critical areas from some agricultural practices.

1. The removal, excavation, grading, or dredging of material of any kind, including the construction of ponds and trails;
2. The dumping, discharging, or filling of any material;
3. The draining, flooding, or disturbing of the stream water level or water table, except as allowed under existing water rights;
4. The driving of pilings;
5. The placing of obstructions;
6. The construction, reconstruction, demolition, or expansion of any structure except in conformance with SJCC 18.40.310 and 18.80.120;
7. The destruction or alteration of vegetation through clearing, harvesting, shading, intentional burning, application of herbicides or pesticides, except for the removal of plant species considered to be noxious weeds by the SJC Weed Control Board;
8. Removal or burning of downed wood in forested stream buffers, except as necessary to reduce fire hazards near buildings.
9. Addition of prolonged (> 2 months/year) use by more than one domestic grazing animal (e.g., cow, horse, or sheep) per acre, in the same place on a stream or within its buffer. Riparian areas (stream buffers) currently used in this manner would be exempt.
10. Creation or expansion within stream buffers of gardens, orchards, or other agricultural activities, or landscaping with plant species not native to SJC, if that would cause them to occupy more than 10% of the buffer, or more than 1000 square feet (whichever is larger). Under those conditions, they would be allowed in the stream buffer only if located in the outer 25% of the buffer, farthest from a stream.
11. Any other activities that have the potential to result in:
    a. A significant change of water temperature from pre-development conditions;
    b. A significant change from pre-development conditions of physical or chemical characteristics of water sources, including quantity; or
    c. The introduction of pollutants.

Appendix D. Options for Protecting State- or Federally-Listed Upland Species

Species or Group	Proposed Protections
Bald Eagle	Require landowners to have a site management plan prepared in collaboration with WDFW, or by a professional wildlife biologist and approved by the WDFW, whenever regulated activities that alter habitat are proposed near a nest or communal roost. This requirement could apply to proposed projects within 800 feet of a nest and to projects that are within 250 ft of the shoreline and are within 0.5 mile of a nest. This is in accordance with WAC 232-12-292 and RCW 77.12.655. The plan could specify, in part, that the landowner maintain 50% of all trees in representative size classes and all trees ≥24 in. dbh within 250 ft of the shoreline for ½ mile on either side of a nest. Monitor compliance with the approved plan. Adopt and enforce buffer regulations for streams, lakes, wetlands, and the marine shoreline that help protect these surface waters from contamination. Identify pollution sources, partly through a countywide monitoring program, and remediate them. Adopt and enforce regulations and policies that protect habitat of salmonids and other fish.
Peregrine Falcon	Restrict or discourage public access to areas within 250 ft of nest cliffs during active nesting periods (generally spring and early summer). Require landowners to have a site management plan prepared in collaboration with WDFW, or by a professional wildlife biologist and approved by the WDFW, whenever regulated activities that alter habitat are proposed near nesting cliffs. Adopt and enforce buffer regulations for streams, lakes, wetlands, and the marine shoreline that help protect these surface waters from contamination. Identify pollution sources, partly through a countywide monitoring program, and remediate them.

Species or Group	Proposed Protections
Marbled Murrelet	Adopt and enforce regulations and policies that support populations of forage fish and swimming marine invertebrates. Protect the oldest coniferous forests having the greatest extent, especially any which currently have trees at least 32" in diameter and cover more than 7 acres. Support efforts of murrelet biologists to determine current nesting status of the species in SJC and identify more accurately locations of potential nesting habitat. If a nest is found, require landowners to have a site management plan prepared in collaboration with WDFW, or by a professional wildlife biologist and approved by the WDFW, whenever regulated activities that alter habitat near the nest are proposed. Adopt and enforce buffer regulations for streams, lakes, wetlands, and the marine shoreline that help protect these surface waters from contamination. Identify pollution sources, partly through a countywide monitoring program, and remediate them. Adopt and enforce regulations intended to keep recreational motorized boats and new docks at least 200 ft from seasonal concentration areas in marine waters.

Fish Salmon Chinook Chum Coho Pink Sockeye Steelhead	Adopt and enforce buffer regulations for streams and the marine shoreline that help protect these surface waters from contamination while supporting vegetation which supplies terrestrial insects to feeding fish. Identify pollution sources, partly through a countywide monitoring program, and remediate them. Adopt and enforce regulations and policies that protect forage fish spawning areas, eelgrass and kelp beds, and the dynamic complexity of nearshore habitat. Disallow construction of ponds that empty to streams and marine waters. Require properly sized culverts for all driveways and roads that cross fish-accessible streams. (For marine waters, see also Chapter 3)
Taylor's Checker-spot butterfly	In privately owned grasslands with potential for this species, actively seek landowner permission for annual surveys by a qualified entomologist. Even in grasslands not known to currently host this species, discourage use of herbicides, insecticides, intensive grazing, and vegetation clearing. This is especially applicable in areas where one of its host plants -- plantain (*Plantago* spp.) -- is common. Require landowners to have a site management plan prepared in collaboration with WDFW, or by a professional entomologist and approved by the WDFW, whenever regulated activities that alter habitat are proposed near a known site.