



**Concise Review of San Juan
County's Critical Area
Ordinance and Best
Available Science**

Submitted to

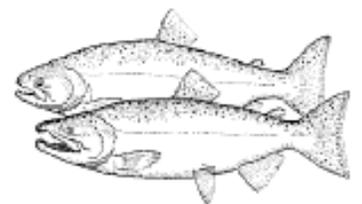
San Juan County

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by

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Executive Summary

Washington State's Growth Management Act (GMA) requires that cities and counties protect the "functions and values" of "critical areas," which include wetlands, fish and wildlife habitat conservation areas, geologically hazardous areas, critical aquifer recharge areas and frequently flooded areas. Jurisdictions must "include best available science" in their process of designating and protecting critical areas, giving "special consideration" to effects on anadromous fisheries.

This report reviews the County's current regulations against standards of best available science, drawing from State guidance where available. It is not intended to make final recommendations, but identifies a variety of policy issues for the County and interested stakeholders to consider. In many cases, it recommends further technical review before final recommendations can be made. In some cases, technical issues may largely be settled but there remain policy choices regarding how they are best addressed. Because a number of the recommendations and choices identified in this report are likely to be controversial, final action by the County should follow substantial public outreach and involvement. One purpose of this report is to stimulate public interest in this process.

Highlights of this report include:

- **General Provisions**: The County currently provides a variety of exemptions from all or part of critical area regulations, many of which will likely need to be modified. Examples include exemptions for single family residences to establish lawns or landscaping in critical areas and for expanding existing uses within critical areas or their buffers. The County also defines "reasonable use" exceptions to allow development of up to 21,780 square feet or 80% of a parcel, even where this may have substantial impacts on critical areas.
- **Fish and Wildlife Habitat Conservation Areas**: Most if not all of the County's marine shoreline likely qualifies as a critical area. The County's existing buffers for marine shorelines may be inadequate for some key ecological functions, particularly bird and wildlife habitat. Concerns with these buffers should be addressed in a broader approach that integrates other ecological considerations for shoreline development beside just buffers. Ideally, this approach should consider other conservation strategies in addition to regulation, as is true for the recently begun "San Juan Initiative." Freshwater and terrestrial habitats also need improved protections, including larger buffers for most lakes and streams.
- **Wetlands**: The County should generally follow the latest guidance from the Washington Department of Ecology regarding wetland ratings, delineation, buffers, mitigation ratios, and exemptions. This guidance is more sensitive to the actual functions provided by specific wetlands as well as the likely success of different forms of mitigation than the County's existing regulations, which are based on earlier Ecology guidance.
- **Critical Aquifer Recharge Areas**: The entire County should probably be designated as a critical aquifer recharge area. This would most significantly impact on-site wastewater systems in densely developed areas, where even well-maintained systems may be unable to adequately protect aquifers from nitrates and certain other pollutants.
- **Geologically Hazardous Areas**: The County may need to revise its criteria for identifying unstable slopes and areas of potential liquefaction. The County should strengthen its standards for geotechnical reports required for development that may affect these areas.
- **Frequently Flooded Areas**: Little change is needed.



Introduction

San Juan County has hired Steward and Associates to help the County update its regulations to protect critical areas. As defined by the Washington Growth Management Act (GMA), RCW 36.70A, critical areas include the following:

- Fish and wildlife habitat conservation areas;
- Wetlands;
- Critical aquifer recharge areas;
- Geologically hazardous areas; and
- Frequently flooded areas.

The GMA mandates that cities and counties “protect the functions and values” of critical areas, including “best available science” in the process they use to designate and protect them, giving “special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.” (RCW 36.70A.172) “Functions” refers to ecological functions—e.g., wetlands detain and clean stormwater and provide fish and wildlife habitat. “Values” refers to human benefits, such as aesthetic or recreational values provided by critical areas, in addition to these functions. Hearings Boards have interpreted the GMA’s “functions and values” requirement to mean that local governments must avoid net losses in the functions and values of critical areas. Localized losses are allowable only “sparingly and carefully for good cause” and should be mitigated at larger scales, such as whole stream basins or watersheds.¹ In meeting this standard, a local government “cannot ignore the best available science in favor of the science it prefers simply because the latter supports the decision it wants to make.”²

However, courts have ruled that local governments must also balance multiple goals in the GMA, such as meeting targeted allocations for growth, protecting property rights, and promoting economic development and affordable housing, in addition to protecting the environment. In some cases, it may not be possible to avoid a net loss in some ecological functions when areas near critical areas develop, even with strict regulations governing buffers and other issues that may affect critical areas, such as stormwater management. If a local government departs from “best available science” in a way that may result in a net loss of functions and values for a critical area, it “must provide findings explaining the reasons for its departure” and identify “the other goals of GMA which it is implementing by making such a choice.”³ The “special consideration” required for anadromous fisheries means that “the scientific evidence...must be more heavily weighted against issues of practicality and economics...when dealing with anadromous fish. The ‘special consideration’ language directs that

¹ Tulalip Tribes of Washington v. Snohomish County, Central Puget Sound Growth Management Hearings Board Case 96-3-0029, Final Decision and Order, January 8, 1997.

² Honesty in Environmental Analysis and Legislation v. Central Puget Sound Growth Management Hearings Board, 96 Wn. App.522; also 979 P.2d 864.

³ Whidbey Environmental Action Network v. Island County, Washington Court of Appeals Division I, Case 50736-2-1, June 7, 2004.



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local governments must go beyond what might otherwise be done in designating and protecting other kinds of critical areas.”⁴

State agencies have issued guidance on many issues related to designating and protecting critical areas. Hearings Boards have consistently found these guidelines to be only advisory, and not binding. Nevertheless, the boards have consulted the guidelines and, at least in some cases, have required that local governments justify deviations from them.⁵

San Juan County is in a group of Western Washington jurisdictions that has a deadline of December 1, 2006, to update its critical area regulations to meet these standards. If the County fails to meet this deadline, it will be ineligible for State financial assistance from the Public Works Trust Fund and Centennial Clean Water Fund until it has adopted updated regulations. However, the next application deadline for these funds is not until May 2007. Moreover, this concern is currently moot because the County is already ineligible for these funds due to other compliance issues, which may not be resolved before next May. Beside ineligibility for certain state funding, the other most significant consequence of failure to meet the deadline is vulnerability to a petition to the Western Washington Growth Management Hearings Board for the County’s failure to act. If the County is diligently working in good faith to update its regulations, though, the Board would not likely impose significant penalties for the delay. In short, while there would be some benefit for the County to complete its update by this December 1, there likely will be no practical penalty if it is unable to take final action until the first part of 2007.

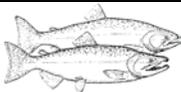
General Provisions

The Growth Management Services Section of the Washington Department of Community, Trade and Economic Development (CTED) has developed an “Example Code” for designating and protecting critical areas, as well as a checklist for key issues that CTED will use in reviewing proposed critical area ordinance (CAO) updates. The checklist and Example Code raise a number of fundamental issues requiring amendments to San Juan County’s existing code, including:

- Adding a purpose statement that is consistent with the GMA, emphasizing the goal of protecting the functions and values of critical areas;
- Clarifying and strengthening criteria for technical reports that applicants must submit in support of development proposals that may affect critical areas;
- Clarifying and strengthening criteria for the “qualified professionals” responsible for these technical reports;
- Limiting exemptions from critical area requirements to those necessary to meet legal obligations or practical necessities, with a goal of minimizing impacts on critical areas (this conflicts, for example, with SJCC 18.30.110.D.4., which provides exemptions for single family residences to establish lawns or landscaping in critical areas or their buffers);

⁴ Clark County Natural Resources Council v. Clark County, Western Washington Growth Management Hearings Board Case 96-2-0017, Final Decision and Order, December 6, 1996.

⁵ See Diehl v. Mason County, Western Washington Growth Management Hearings Board Case 95-2-0073, Final Decision and Order, January 8, 1996.



- While the County properly provides exceptions to standard critical area requirements to allow “reasonable use” of property, which avoids an unconstitutional taking, the County’s existing allowance for development of up to 21,780 square feet or 80% of a parcel, whichever is less [SJCC 18.30.110.E.], appears to be unnecessarily extreme (it is far greater than the allowance offered by any other government that we are aware of);
- Providing exceptions to standard requirements for public agencies and utilities for projects like roads or utility lines that sometimes cannot reasonably be moved to avoid critical areas;
- Providing a process for variances from standard code provisions where they would lead to unreasonable or unfair results for particular properties;
- Establishing a standard building setback from critical area buffers (e.g., stream, wetland or shoreline riparian areas), to protect buffer functions;
- Clarifying whether parcels may be subdivided based on the size of an entire parcel or, for parcels restricted by critical areas, just the developable portion of the parcels (this is a policy choice that the GMA leaves open to local governments).

The remainder of this report reviews provisions for specific types of critical areas, in our judgement of their approximate order of importance for San Juan County (fish and wildlife habitat conservation areas, wetlands, critical aquifer recharge areas, geologically hazardous areas, and frequently flooded areas).

Fish and Wildlife Habitat Conservation Areas

This is the broadest and most flexible type of critical area identified in the Growth Management Act. It includes shellfish areas, kelp and eelgrass beds, forage fish spawning areas, other marine areas, streams, lakes, areas of rare plant species, priority habitats designated by the state, habitats used by priority species designated by the state (including all species listed by the state or federal governments as endangered or threatened), and “habitats and species of local importance,” which the County may designate. State priority habitats and species that appear to be found within San Juan County are listed in Appendices A and B. San Juan County has an unusually large number of priority habitats and species for its size, primarily because of its large marine area, lengthy shoreline, and ecologically important location at the intersection of Puget Sound, the Strait of Georgia and the Strait of Juan de Fuca.

Marine Shoreline

The most important and potentially controversial amendments to the County’s regulations for fish and wildlife habitat conservation areas (FWHCAs) concern the marine shoreline, including lands adjacent to shellfish areas, kelp and eelgrass beds, forage fish spawning areas and other marine FWHCAs. Because the County’s Shoreline Master Program (SMP) addresses many related issues, it is important to clarify the relationship of the SMP with critical area regulations. Most, but not necessarily all, of the County’s marine shoreline is a critical area by definition, because it includes or influences one or more of the FWHCA types just listed. The County has a responsibility under the GMA to designate and protect all of its critical areas. In 2003, the legislature clarified that until SMPs are updated under the latest Washington Department of Ecology guidelines, critical areas along the shoreline are subject to GMA requirements. When the County updates its SMP (scheduled for 2012), critical areas within 200 feet of the shoreline and their buffers are to be governed under the new shoreline program, providing protection “at least equal” to that provided by critical area regulations. The updated SMP must also include plans for restoring impaired ecological functions.



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Upland areas along the marine shoreline have similar functions to riparian areas along streams, which have been studied much more intensively. These functions include contributing wood for habitat structure, insects and leaf litter to support the food web, and shade to limit temperatures on the beach and the intertidal zone; stabilizing soils to maintain natural rates of erosion; filtering pollutants from stormwater; and providing important habitat for birds and wildlife. San Juan County is ahead of many other counties in the Puget Sound area by already requiring a riparian buffer along its marine shoreline. SJCC 18.50.330.D.2 requires a setback for residential structures of at least 50 feet where there is existing shoreline vegetation, or at least 100 feet where there is not. This is a good start, and generally may be adequate to protect most of the functions listed above.

There is almost no clear, widely accepted scientific guidance available regarding the widths necessary for marine riparian buffers to provide their ecological functions. The most significant area where the County's existing buffer requirement may be inadequate is habitat for birds and wildlife, which is typically the function that requires the greatest width. Wildlife habitat also typically involves the greatest policy judgment, both because it tends to be the decisive factor for the final amount chosen (since it usually requires the most area) and because almost any reasonable width is likely to involve some loss of habitat value. Even widths of 300 feet or more are typically less than optimal for some species.

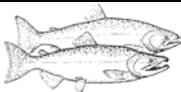
Given these circumstances, Steward and Associates proposes to work with the San Juan County Marine Resources Committee and the Washington Department of Fish and Wildlife to research more closely the habitat needs of priority species found regularly along the County's marine shorelines. We anticipate that this will provide valuable information for the County's ultimate decision to maintain or alter its existing marine buffer widths. This information may lead to a proposal to vary the recommended width depending on species use and habitat types, both in the immediately adjacent marine waters and in upland areas along the shoreline. The information may also lead to a proposal that offers alternatives to a large, "no touch" buffer, but instead takes into account how the rest of a shoreline property is developed. Maintenance of a substantial tree canopy, restoration of native plant communities, "low-impact" approaches to stormwater management and other features of a development may be more important than strict buffer size in maintaining or even enhancing the ecological functions of riparian areas.

How or whether a development proposes to construct docks or stabilize shoreline areas are also crucial issues for shoreline functions. The CAO Update should address these issues regardless of final action on buffers. Existing requirements for shoreline stabilization in SJCC 18.50.360 and 18.50.330.B.2. are good starts, but could use additional detail. Our review of the existing code did not identify specific regulations regarding docks.

Lastly, we should note that the County and the Shared Strategy for Puget Sound Salmon (the lead regional group overseeing salmon recovery efforts in the region) are currently beginning "The San Juan Initiative," which proposes to work with the community and technical experts to develop an integrated package of voluntary, regulatory, educational and incentive-based actions to conserve the key ecosystems of the San Juans in the face of continued population growth. The Initiative is scheduled to complete its major work by the end of next year. Given the overlap of issues addressed by the CAO Update and the Initiative, the County may wish to make only provisional changes to its CAO (particularly though not exclusively for marine areas) during the Update process, with the intent of finalizing changes through the Initiative.

Streams and Lakes

Freshwater habitats are also an important type of FWHCA that should be addressed through the CAO Update. SJCC 18.30.160.A.4. currently provides buffers of 50 feet for Type 2 Waters (which include



lakes and ponds one acre or larger, as well as streams at least 20-feet wide; the latter are not found in San Juan County) and buffers of 25 feet for Type 3-5 Waters (which include all other streams, lakes and ponds). These buffers do not meet current standards of best available science to protect ecological functions, even for intermittent streams that do not support fish (Type 5 streams). Courts and the Western Washington Growth Management Hearings Board have accepted buffers of at least 50 feet for intermittent streams without fish. Buffers for streams that support fish should generally be at least 100 feet. Both of these buffer widths are smaller than best available science would generally recommend, especially for wildlife habitat, but the County may be able to justify them by reviewing on the record how they relate to the functions played by these streams in the island environment (where small streams are not typically tributaries to larger streams but instead flow directly to Puget Sound) and by balancing these considerations with other growth management goals the County must also take into account. Streams that support pocket estuaries used by salmon may deserve larger buffers or other special protections (e.g., stricter stormwater requirements).

Priority Habitats and Species

As noted above, for its size San Juan County has an unusually large number of priority habitats and species designated by the state. These generally also include areas of rare plant species (such as some species found in prairie habitats). The existing County code (SJCC 18.30.160.B.2.c. and SJCC 18.30.160.D.b.iv.) defers to state guidance for management recommendations for these habitats and species. While we agree with that general deference, this provides minimal guidance either to applicants or to County permitting staff as to when these recommendations should be triggered and how they are likely to affect a given development proposal. We propose to work with the Washington Department of Fish and Wildlife to develop some general guidelines that can be added to the code, which would be linked to state maps of priority habitats and areas where priority species are found. Some of the actions discussed above regarding the marine shoreline and freshwater areas may go far to address some of the state's most important recommendations for priority species.

In addition, while SJCC 18.30.160.C. provides a process for nominating species of local concern that may be protected under FWHCA regulations, it appears that no such species have actually been approved for these protections. During the CAO Update, the County may wish to consider whether there are any species beside those already protected through state designations that it would like to protect under the CAO.

Wetlands

Scientific and policy guidance from the Washington Department of Ecology regarding major aspects of regulating wetlands—including how wetlands are rated, recommended buffers, and mitigation—has been updated over the last few years. These recommendations are substantially different than the current County code. While the County need not follow Ecology's recommendations precisely, we believe the recommendations generally are consistent with best available science and are a good starting point for considering code amendments. Key differences with the current code include:

- **Rating System:** Ecology has updated the wetland rating system that it developed in the early 1990s, which the County currently uses. Both systems include a functional analysis that awards different point scores depending on how well a wetland provides water quality, hydrologic and habitat functions. Both systems also use a categorical process that assigns high ranks to certain types of wetlands (such as mature forested wetlands and wetlands associated with coastal lagoons or estuaries), which by their nature both provide important functions and are difficult or impossible to replace. The updated system incorporates the results of more recent research. It is also integral to applying Ecology's latest recommendations on other issues. In general, the new



system should not substantially change the proportion of wetlands assigned Category ratings of I, II, III or IV, although it will change the ratings for some individual wetlands. Stream riparian wetlands receive fewer automatic points under the new system, and so tend as a group to score lower than they did under the old system.

- **Delineations**: The County’s current code does not clearly identify the basis for delineating wetlands—i.e., identifying where they exist and where their boundaries are. Ecology has developed a manual for delineating wetlands in Washington State, which is consistent with the federal government’s manual but more useful to conditions here. The code should be amended to direct the use of Ecology’s Washington State Wetland Identification and Delineation Manual, Publication #96-94, 1997.
- **Exemptions**: The County’s current code provides an exemption from wetland buffer provisions to “all legal parcels less than one acre in size” when the code was adopted (SJCC 18.30.150.D.2.d.). The code exempts outright, in both wetlands and their buffers, “modification or expansion of existing uses” [our emphasis] (SJCC 18.30.150.D.1.b.). The code explicitly provides no protection for Category IV wetlands that are 10,000 square feet or less, Category III wetlands that are 5,000 square feet or less, and Category II wetlands that are 2,500 square feet or less (SJCC 18.30.150.B.2.). For single family residences, the code also allows the establishment and expansion of lawns and landscaping in buffer areas, if located in the outer 25% of the buffer when “no reasonable alternative is available” (SJCC 18.30.150.D.2a.i.). None of these provisions are consistent with best available science. Because of the administrative challenge and minimal ecological benefit of regulating very small, isolated wetlands, Ecology has supported thresholds that would eliminate protections for isolated Category III and IV wetlands (as determined using Ecology’s latest rating system) under 1,000 square feet. Ecology has also supported allowing the elimination or degradation of such wetlands between 1,000 and 2,500 square feet, with mitigation. We would recommend following this guidance.
- **Buffers**: Ecology suggests three alternative approaches to establishing wetland buffers. The first is based strictly on wetland category, the second on both category and adjacent land uses, and the third, which both we and Ecology recommend, on category, adjacent land uses and the functions or special characteristics of the wetland, as determined through the rating system. Alternative Three is not difficult to apply if Ecology’s recommended rating system is already being used. This alternative best meets the GMA goal of protecting functions and values. In many cases, it also allows for a smaller buffer than the first two alternatives, which take a precautionary approach in the absence of functional information. Despite this, even under Alternative Three, Ecology’s recommended buffers are generally greater than those in the County’s current code, which are 150 feet for Category I wetlands, 75 feet for Category II wetlands, 50 feet for Category III wetlands and 35 feet for Category IV wetlands (SJCC 18.30.150.E.1.). Ecology’s recommended buffers for Category I, II and III wetlands can be as great as 300 feet, where high impact land uses (which include residential uses on lots less than one acre) are adjacent to wetlands with high habitat scores under its rating system. However, it is important to note that few wetlands actually qualify for such high habitat scores.

Steward and Associates proposes to perform a semi-random survey of wetlands in San Juan County and their surrounding land uses, which would provide the County and interested stakeholders a realistic understanding of what typical buffer widths would likely be under Ecology’s recommended system. We also would recommend incorporating incentives to restore wetlands in the CAO Update, including the exchange of reductions in buffer widths for restoration of buffer conditions.



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- Mitigation:** Because mitigation for wetland losses is not always successful and, even in the best circumstances, can take many years to replicate lost functions (e.g., as vegetation matures, etc.), both the County’s current code and Ecology’s recommendations establish “mitigation ratios” when wetlands are lost or degraded, which require that more acreage of wetlands be restored, enhanced or created than was lost. Ecology generally recommends higher ratios than the County’s current code, which range from 6:1 for Category I wetlands to 1.25:1 for Category IV wetlands, with all ratios doubled where “replacement” is in the form of enhancement of existing wetlands (SJCC 18.30.150.H.2.). Ecology recommends different ratios depending on whether mitigation is in the form of creation, re-establishment, rehabilitation, enhancement or preservation, as summarized in the following table.

Category and Type of Wetland	Creation or Re-establishment	Rehabilitation	Enhancement	Preservation
Category I— Estuarine, Bog, Coastal Lagoon, Natural Heritage site	Not considered possible	6:1	Case-by-case	10:1
Category I— Mature Forested	6:1	12:1	24:1	24:1
Category I— Based on functions	4:1	8:1	16:1	20:1
Category II— Estuarine	Case-by-case	4:1	Case-by-case	20:1
Category II—Based on functions	3:1	6:1	12:1	20:1
Category III	2:1	4:1	8:1	15:1
Category IV	1.5:1	3:1	6:1	10:1

Ecology and we also recommend that the CAO Update explicitly support wetland mitigation banks, which provide a means to improve protection of overall wetland values while simplifying regulatory requirements for development. Mitigation banks re-establish or rehabilitate high-value wetlands or wetland complexes in advance of impacts. Performance of the restored wetlands is closely monitored. A successful bank can then sell mitigation “credits” to qualifying projects, which typically impact lower value wetlands in the same watershed (in San Juan County, these wetlands might be required to be on the same island as the restored wetland). This can allow for lower ratios than in the table above (because of greater certainty that the restoration will be effective). It also provides a developer greater certainty regarding the scope, cost and timing of mitigation requirements.



Critical Aquifer Recharge Areas

The County recently improved its mapping of aquifer recharge areas as part of its water resources management plan. The maps use guidance from Ecology, which takes into account soil permeability, surficial geology, groundwater levels and groundwater recharge rates. The new maps dramatically increase the amount of the County identified as having “high” or “moderate” susceptibility to contamination. Many smaller islands in the County are now entirely in one of these two categories. So much of the larger islands is also in one of these categories that, given the imprecision and uncertainties regarding knowledge of exactly where the categories change, for practical purposes it is probably best that the County consider all of the larger islands also to be in one of the two categories. Thus, all of San Juan County qualifies as a critical aquifer recharge area (CARA). Because County residents and businesses rely so heavily on groundwater as their primary or sole source of supply, protection of these CARAs should be a high priority.

To protect CARAs from contamination, the state recommends that certain land uses in these areas be prohibited or strictly required to follow Best Management Practices, with high risk uses requiring a hydrogeologic assessment. SJCC 18.30.140 follows a similar logic, but it does not specifically require BMPs, does not regulate some land uses or activities identified by the state (e.g., dry cleaners, vehicle repair shops, pesticide storage areas), and does not provide sufficient detail regarding what a hydrogeologic assessment should include.

As a practical matter, by far the most common activity in the County that may be affected by CARA protections is the installation and use of on-site wastewater treatment systems. Properly maintained, these systems do an effective job of removing pathogens and other biological pollutants in wastewater, but they are not designed to remove some pollutants that can endanger aquifers, including nitrates, toxic metals and pharmaceuticals. These pollutants are moderately reduced as wastewater passes through septic systems and drainfields, but they are not easily trapped in soils and can seep into aquifers. Especially where many on-site systems are concentrated in areas with higher densities, this creates a potential public health risk.

Increasing nitrate levels have been identified in Eastsound on Orcas Island, the hill above Fisherman Bay on Lopez Island, the Eagle Cove area on San Juan Island and other places in the County. While no aquifers in the County are currently known to violate safe drinking water standards, trends of increasing nitrate levels are worrisome. The County’s water resource plan recommends expanded monitoring where these trends have been identified. The CAO Update could require new developments to support this monitoring, to provide more and better data. The Update should also include contingent actions the County would take depending on monitoring results. In the extreme, this could involve prohibitions or moratoriums on new development in selected areas. It could also involve mandating nitrate removal technology, which currently tends to be expensive with high maintenance needs (this may improve as the market adjusts to the implementation of nitrate standards by a growing number of states). Other contingent actions might include targeted education campaigns to reduce the use of nitrogen fertilizers or the improper disposal of pharmaceuticals and toxic metals, if these are proving to be a significant problem.

Whatever action is taken regarding on-site wastewater treatment systems in the CAO Update should be coordinated with the County Health Department’s development of new regulations to meet state requirements for the inspection and maintenance of these systems, which will go into effect July 2007.



Geologically Hazardous Areas

Geologically hazardous areas include areas susceptible to landslides, erosion, earthquakes or other geologic hazards such as historic mines, volcanoes, and tsunamis. Related regulations should protect both the public and other critical areas from the effects of development that does not properly account for these hazards by: 1) identifying criteria for locating geologic hazards; 2) describing requirements for geotechnical reports that would be required for development that might affect these areas; and 3) establishing general standards for development within or adjacent to hazardous areas. In San Juan County, the CAO Update should focus on unstable slopes and areas of potential liquefaction. Tsunami hazards are also a concern for low-lying shorelines, especially at the end of narrow inlets. (Tsunami evacuation plans, however, would not be part of the CAO Update.) Because the County is not significantly impacted by mine or volcanic hazards, additional regulations for these areas are not needed.

The prominence of bedrock in San Juan County means that general criteria used elsewhere to identify unstable slopes and restrict related development may not be applicable in the County. This heightens the importance of site-specific geotechnical reports in those areas that are believed to have the potential for landslides or significant erosion (such as the Cattle Point Road area on San Juan Island, or the coast of Lopez south and north of Fishermen's Bay). The current code (SJCC 18.30.120.C.) provides minimal guidance regarding the content of geotechnical reports or the qualifications of those responsible for preparing them. The reports should include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, to determine the appropriateness of building at a particular location. The reports should make recommendations on building envelopes, site limitations, structural foundation requirements, grading plans, erosion control, revegetation plans, and (where necessary) building setbacks from slopes. The reports should also review the site history regarding landslides, erosion, and prior grading.

A full geotechnical report is not necessary in all cases. A summary geotechnical letter may be more appropriate for landowners who are planning small additions. A geotechnical letter should include an assessment of the existing site conditions, including surface water runoff, ground water, soil types, erosion, and slope stability, as well as recommendations for protection.

Steward and Associates proposes to work with County staff and interested citizens with expertise to clarify the location and extent of slope, seismic and tsunami hazards in the County, and the relevant development standards that should apply to them.

Frequently Flooded Areas

The primary concern for frequently flooded areas in the CAO Update is public safety, since habitat aspects of these areas should be covered adequately through regulations for FWHCAs and wetlands. Because San Juan County has no major rivers or streams with the potential to create significant safety hazards, frequently flooded areas should not be a major focus of the Update. The County should ensure that its maps of frequently flooded areas use the latest information from FEMA. Most of these areas are likely to relate to wetlands or portions of the marine shoreline, which will likely be regulated more strictly for habitat values than would be strictly necessary to protect public safety.



Appendix A

Priority Habitats Designated by the Washington Department of Fish and Wildlife that Are Likely Found In San Juan County

Aspen stands*

Caves

Cliffs/bluffs*

Estuarine Zones*

Freshwater wetlands

Instream habitat

Lagoons*

Marine/estuarine shorelines

Mature forests

Oregon White Oak woodlands

Prairies

Riparian

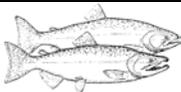
Rural natural open spaces

Snags/logs

Urban natural open spaces*

Vegetated marine/estuarine

* GIS datasets are available.



Appendix B

Priority Species Designated by the Washington Department of Fish and Wildlife that Are Likely Found in San Juan County

VERTEBRATES

BIRDS

<u>Common Name</u>	<u>State Status</u> ⁺	<u>Federal Status</u> ⁺
Golden Eagle	SC	
Osprey*	SM	
Turkey Vulture*	SM	
Purple Martin*	SC	
Black Oystercatcher*	SM	
Great Blue Heron*	SM	
Black-crowned Night Heron	SM	
Oregon Vesper Sparrow	SC	FCo
Streaked, Horned Lark	SC	FC
Merlin	SC	
Brandt's Cormorant	SC	
Marbled Murrelet	ST	FT
Tufted Puffin	SC	
Bald Eagle*	ST	FT
Northern Goshawk	SC	FCo
Peregrine Falcon	SS	FCo
Spotted Owl	SE	FT
Pileated Woodpecker	SC	
Band-tailed Pigeon	GAME	
Brant	GAME	
Snow Goose	GAME	
Trumpeter Swan	GAME	
Tundra Swan	GAME	
Harlequin Duck	GAME	
Wood Duck	GAME	
Barrow's Goldeneye	GAME	
Blue Grouse	GAME	
Wild Turkey*	GAME	
Eastern Wild Turkey*	GAME	
Golden Turkey*	GAME	

FISH

River Lamprey	SC	
Green Sturgeon	FOOD	
White Sturgeon	FOOD	
Surfsmelt	FOOD	
Pacific Herring	SC; FOOD	FC
Chinook Salmon	SC; FOOD	FT
Chum Salmon	SC; FOOD	FT
Coastal Resident/Searun Cutthroat	GAME	



San Juan County Critical Area Update

FISH (cont.)

<u>Common Name</u>	<u>State Status⁺</u>	<u>Federal Status⁺</u>
Coho Salmon	FOOD	FC
Kokanee Salmon	GAME	
Pink Salmon	FOOD	
Pygmy Whitefish	SS	
Sockeye Salmon	SC	FE
Pacific Cod	SC; FOOD	FCo
Pacific Hake	SC; FOOD	
Black Rockfish	SC; FOOD	
Bocaccio Rockfish	SC; FOOD	
Canary Rockfish	SC; FOOD	
China Rockfish	SC; FOOD	
Copper Rockfish	SC; FOOD	FCo
Greenstriped Rockfish	SC; FOOD	
Quillback Rockfish	SC; FOOD	FCo
Redstripe Rockfish	SC; FOOD	
Tiger Rockfish	SC; FOOD	
Widow Rockfish	SC; FOOD	
Yelloweye Rockfish	SC; FOOD	
Yellowtail Rockfish	SC; FOOD	
Lingcod	FOOD	
Largemouth Bass	GAME	
Pacific Sand Lance	FOOD	
English Sole	FOOD	
Rock Sole	FOOD	
Bull Trout	SC; GAME	FT
Rainbow/Steelhead Trout	SC; GAME	FT

MAMMALS

Townsend's Big-Eared Bat	SC	
Long-Eared Myotis*	SC	FCo
Long-Legged Myotis*	SC	FCo
Yuma Myotis*	SC	
Marten	GAME	
Dall's Porpoise	SC	
Gray Whale	SS	
Harbor Seal*	SC	
Killer Whale	SE	
Pacific Harbor Porpoise	SC	
Sea Lion, California*	SC	
Sea Lion, Steller (Northern)*	ST	
Columbian Black-Tailed Deer	SE	

AMPHIBIANS

Western Toad	SC	FCo
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REPTILES

Northwestern Pond Turtle	SC	
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INVERTEBRATES



MOLLUSKS

Gastropods

<u>Common Name</u>	<u>State Status</u> ⁺	<u>Federal Status</u> ⁺
Pinto (Northern) Abalone*	SC	

Bivalves

<u>Common Name</u>	
Butter Clam*	SHELLFISH
Goeduck Clam*	SHELLFISH
Japanese Littleneck Clam*	SHELLFISH
Littleneck Clam*	SHELLFISH
Pacific Oyster*	SHELLFISH

ARTHROPODS

Crustaceans

<u>Common Name</u>	
Dungeness Crab*	SC
Pandalid (Pandalidae) Shrimp*	SC

Butterflies

<u>Common Name</u>	<u>State Status</u>	<u>Federal Status</u>
Great Arctic	SC	
Island Marble	SC	FCo
Valley Silverspot	SC	FCo
Whulge Checkerspot	SC	

ECHINODERMS

<u>Common Name</u>	
Red Sea Urchin*	SHELLFISH

⁺ STATUS KEY

SE: State Endangered	FE: Federal Endangered
ST: State Threatened	FT: Federal Threatened
SC: State Candidate	FC: Federal Candidate
SS: State Sensitive	FCo: Federal Species of Concern
SM: State Monitor	
GAME: Game species	
FOOD: Food fish	

* Noted on GIS Data Files

