

Michelle McConnell

From: Patricia Farmer [pjfarmer@olympen.com]
Sent: Wednesday, April 01, 2009 12:20 PM
To: Peter Downey
Cc: Jeanie Orr; Michelle McConnell
Subject: Fw: Research Request

Hi Peter,

I just received this email on my research request and will try to work through some of it before tonight's meeting but I think it would be very worthwhile to share with other PC members. Please pass it on.

Thanks,
Patricia

----- Original Message -----

From: Sue Enger
To: pjfarmer@olympen.com
Sent: Wednesday, April 01, 2009 11:49 AM
Subject: RE: Research Request

I am responding to your request for any material helpful in evaluating whether the city should employ a 150" shoreline buffer in its shoreline master program. This is not an easy question (which is why you are asking, of course!) There is no consensus on a single best buffer width in the literature since some buffer functions, such as sediment removal, pollution removal, bank stabilization or wildlife habitat protection require greater widths than others. Syntheses of studies indicate that buffers narrower than 150 ft. may largely accomplish some functions, such as bank stabilization and water temperature control, depending on local conditions. Protecting wildlife habitat and removal of some types of pollutants or nutrients often requires buffers of 150 ft, or much more. Also, existing conditions and specific site conditions, such as soils, vegetative cover, natural features that serve as buffers such as cliffs, all enter into the calculation. Urban areas may require some combination of approaches, rather than relying exclusively on buffers, while buffers may be more effective in more natural areas. Other mitigation, such as providing adequate wildlife corridors, may enable reduction in buffer. On the other hand, the presence of endanger or threatened species may call for greater buffering. Ultimately, it is important that the county's decision is based on the best available science and consideration of local conditions, as the court and hearing boards cases cited below indicate.

Washington State Agencies

The guidance documents from DOE and other agencies include summaries of recommendations from the science literature and other rationale for the state's guidelines, for various types of buffers. I am including information on wetland and riparian buffers in addition to marine buffers, since different types of buffers may be required for critical areas within areas covered by shoreline master programs.

- Shoreline Master Program Guidelines, Department of Ecology - <http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html>, Shoreline Management Home - <http://www.ecy.wa.gov/programs/sea/sma/index.html>, and Shoreland Publications - <http://www.ecy.wa.gov/programs/sea/publications.htm#property>
- Best Available Science for Wetlands, *Wetlands in Washington - Volume 1: A Synthesis of the Science* (March 2005, Publication #05-06-006) and *Volume 2: Guidance for Protecting and Managing Wetlands* (April 2005, Publication #05-06-008) Washington Department of Ecology, pp. 5-23 through 5-56 (See especially Tables 5-7 & 5-8 which summarize buffer dimension recommendations from the literature for different wetland functions) - <http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html>

- Interagency Guidance on Wetland Mitigation in Washington State, *Wetland Mitigation in Washington State: Part 1 - Agency Policies and Guidance* (Version 1, March 2006, Publication #06-06-011a) pp. 70 – 95, and *Wetland Mitigation in Washington State: Part 2 - Developing Mitigation Plans* (Version 1, March 2006, Publication #06-06-011b). - <http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/guidance/index.html>
- Appendix 8-E Rationale for Draft Guidance on Buffers and Other Protection for Wetlands, *Wetlands in Washington State, Volume 2 – Protecting and Managing Wetlands*, April 2005 - http://www.ecy.wa.gov/programs/sea/wetlands/bas/vol2final/Appendix%208-E_Volume%202_.pdf
- Appendix 8-C Guidance on Widths of Buffers and Ratios for Compensatory Mitigation for Use with the Western Washington Wetland Rating System - *Volume 2 – Protecting and Managing Wetlands*, April 2005 - http://www.ecy.wa.gov/programs/sea/wetlands/bas/vol2final/Appendix%208-C_Volume%202_.pdf
- Appendix 8-G Widths of Buffers Needed to Protect Some Threatened/Endangered/Sensitive Wildlife Species Associated with Wetlands, *Volume 2 – Protecting and Managing Wetlands*, April 2005 - http://www.ecy.wa.gov/programs/sea/wetlands/bas/vol2final/Appendix%208-G_Volume%202_.pdf
- Priority Habitats and Species: Species and Habitat Management Recommendations, Washington Department of Fish and Wildlife - <http://wdfw.wa.gov/hab/phsrecs.htm>
- Priority Habitats and Species: Management Recommendations for Washington's Priority Habitats: Riparian, Washington Department of Fish and Wildlife - Management Recommendations for Washington's Priority Habitats: Riparian, Knutson K. L., and V. L. Naef, Washington Department of Fish and Wildlife pp. 81 - 92 (1997). - In Washington, buffers 46m-76m wide are recommended on each side of the river in lush areas - <http://wdfw.wa.gov/hab/ripsum.htm>
- Integrated Streambank Protection Guidelines, Washington Department of Fish and Wildlife, April, 2003 Ch. 6: pp. 6-201 through 6-203 - <http://wdfw.wa.gov/hab/ahg/ispgdoc.htm>
- Criteria for Assessing Wildlife Potential of an Urban Area - <http://wdfw.wa.gov/hab/openspac.pdf>
- Department of Community Trade and Economic Development (DCTED) – Critical Areas Assistance Handbook, November 2003 - http://www.cted.wa.gov/uploads/CA_Handbook.pdf (see section on “Wetland Buffers,” p. 61+) and Appendix A – Example Code Provisions for Designating and Protecting Critical Areas - http://www.cted.wa.gov/uploads/Appendix_A.pdf
- Aquatic Buffers, U.S. EPA Model Ordinances to Protect Resources - <http://www.epa.gov/owow/nps/ordinance/buffers.htm>
- National Management Measures to Control Nonpoint Source Pollution from Urban Areas Recent Studies and Papers on Buffers - Management Measure 3 Watershed Protection, U.S. Environmental Protection Agency, November 2005 pp. 3-16

through 3-20- http://www.epa.gov/owow/nps/urbanmm/pdf/urban_ch03.pdf. Whole report at <http://www.epa.gov/owow/nps/urbanmm/index.html#08>

Recent Studies or Reports on Buffers

I've enclosed a number of reports and studies on the functions and benefits of buffers. The first several reports and the Everett and King County materials, may provide particularly useful summaries. The reports that provide a synthesis and review of the science on buffer widths should also provide much useful information for making decisions about appropriate buffer widths.

- *Protecting Nearshore Habitat and Functions in Puget Sound: An Interim Guide*, EnviroVision, Herrera Environmental, and the Aquatic Habitat Guidelines Working Group, October 2007, pp. III-37 – III-42 (See especially Tables III.7, III.8 & III.9) - http://wdfw.wa.gov/hab/ahg/nearshore_interim_guide_october_2007_final_draft.pdf
- *Marine Riparian: An Assessment of Riparian Functions in Marine Ecosystems*, Brennan, J.S., and H. Culverwell, Published by Washington Sea Grant Program Copyright 2005, UW Board of Regents, Seattle, WA - <http://www.wsg.washington.edu/research/pdfs/brennan.pdf>
- *Use of Best Available Science in City of Everett Buffer Regulations*. Pentec Environment for City of Everett, WA, March 2001 - http://www.everettwa.org/cityhall/upload_directory/COMP_PLAN/City%20of%20Everett%20BAS%20Buffer%20Regs%20Report.pdf
- Stephanie Brown, Terry Butler, Robert Fuerstenberg, Ph.D, Priscilla Kaufmann, Gino Lucchetti, Klaus Richter, Ph.D., Jeanne Stypula, P.E. Jennifer Vanderhoof, & James Hatch. *Best Available Science: Volume I: A Review of Science Literature* p. 7-24 (Seattle, Washington: King County Executive Report, February 2004), Ch. 7 – Aquatic Areas, pp. 7-20 through 7-23). - <http://your.kingcounty.gov/ddes/cao/PDFs04ExecProp/BAS-Chap7-04.pdf>, and ch. 9 – Wetlands, pp. 9-5 through 9-8 - <http://your.kingcounty.gov/ddes/cao/PDFs04ExecProp/BAS-Chap9-04.pdf>. Full document at <http://www.kingcounty.gov/property/permits/codes/CAO.aspx>
- *Management Recommendations for City of Bellingham Pocket Estuaries*, Prepared for: City Of Bellingham by: Northwest Ecological Services, LLC, Revised September 2006 - <http://www.cob.org/documents/planning/2006-09-18-pocket-estuaries.pdf>
- *Marine Critical Area Protection In Recently Completed Critical Areas Ordinances (or shoreline master programs) – Comparison chart prepared by city of Bainbridge Island* - http://www.ci.bainbridge-isl.wa.us/documents/pln/pcd_cao_marine_critical_area_protection_041908.pdf
- *Practice of Watershed Protection Articles*, excerpted from *The Practice of Watershed Protection: Techniques for Protecting our Nation's Streams, Lakes, Rivers, and Estuaries*
Editors: T. Schueler, H. Holland Center for Watershed Protection, Released: 2000 (Section 5 has some particularly useful articles for considering urban buffers – see particularly “The Architecture of Urban Stream Buffers,”) - http://www.cwp.org/Resource_Library/pwp.htm

- Vegetated buffers in the coastal zone—a summary review and bibliography. Coastal Resources Center Technical Report No. 2064, DesBonnet, A., P. Pogue, V. Lee, and N. Wolff, University of Rhode Island Graduate School of Oceanography, Narragansett, Rhode Island, 1994 - [http://www.co.san-juan.wa.us/cdp/docs/CAO/MarineBuffers\(Desbonnet_et_al1994\).pdf](http://www.co.san-juan.wa.us/cdp/docs/CAO/MarineBuffers(Desbonnet_et_al1994).pdf)
- Wetland and Stream Buffers: A Review of the Science and Regulatory Approaches to Protection, Developed by: City of Boulder Planning and Development Services and Biohabitats, Inc, April 2007 - http://www.bouldercolorado.gov/files/PDS/wetlands/bjwetlandbuffers_report.pdf
- Baseline Development and Estimation of Carbon Benefits for Extending Forested Riparian Buffer Zones In Two Regions In California: Blodgett Forest Research Station and Jackson State Demonstration Forest , California Energy Commission, 2004 - http://www.energy.ca.gov/pier/project_reports/500-04-071.html
- Stream-Riparian Ecosystems In the Puget Sound Lowland Eco-Region: A Review of Best Available Science, Christopher W. May, Watershed Ecology LLC, 2003 - [http://www.sanjuanco.com/cdp/docs/CAO/RiparianBAS\(May2003\).pdf](http://www.sanjuanco.com/cdp/docs/CAO/RiparianBAS(May2003).pdf)
- Riparian Buffer Zones: Functions and Recommended Widths, Prepared by Ellen Hawes and Markelle Smith Yale School of Forestry and Environmental Studies For the Eightmile River Wild and Scenic Study Committee, April 2005 - <http://www.durhamnc.gov/departments/planning/pdf/wqattachment3.pdf>
- Improving Riparian Buffer Strips and Corridors for Water Quality and Wildlife, Richard A. Fischer, Chester O. Martin, and J. Craig Fischenich, International Conference on Riparian Ecology And Management In Multi-Land Use Watersheds American Water Resources Association, August 2000 - <http://www.swf.usace.army.mil/pubdata/environ/regulatory/other/links/stream/improvingriparianbufferstrips.pdf>
- A Guide to Aquatic Buffer s, Westchester County (NY) - <http://www.westchestergov.com/planning/environmental/Reports/WaterResourceBufferBroch.pdf>
- *Where the Land and Water Meet: A Guide for Protection and Restoration of Riparian Areas First Edition.* USDA Natural Resources Conservation Service (NRCS) September 2003 (See Ch. 5) - <ftp://ftp-fc.sc.egov.usda.gov/CT/water/complete-bufferbook.pdf>
- Maryland Riparian Buffer Systems Manual, University of Maryland Wye Research and Education Center web page – shows contents of manual which offers a comprehensive collection of reports resources and studies (addressing various buffer functions) available on the Internet - <http://www.riparianbuffers.umd.edu/manual.html>
- Best Available Science Issue Paper: Snoqualmie Watershed Near Term Action Agenda Implementation Project, Prepared by Adolfson and Associates, for the Cities of Carnation, Duvall, North Bend and Snoqualmie of the Snoqualmie Watershed, March 2004, pp. 21 - 23 - http://www.govlink.org/watersheds/7/pdf/FINALBAS_IssuePaper0304.pdf
- Critical Areas and Big Buffers. *six questions your local officials must answer before adopting a buffer-based critical area program* By: Alexander W. (Sandy) Mackie – (This article doesn't particularly provide evidence, but may provide a useful overview of the arguments against big buffers, particularly in urban areas - <http://warealtor.org/government/localGA/news/CAOBB.pdf>

Growth Management Hearings Boards and Court Cases

Washington courts and hearings boards have found buffers of less than 150 feet to be compliant when supported by best available science.

- *Tahoma Audubon Society, People for Puget Sound, and Citizens for a Healthy Bay, v. Pierce County (Tahoma-Puget Sound)*, CPSGMHB Case No. 05-3-0004c Final Decision and Order (July 12, 2005). Pierce County failed to use best available science to designate and protect fish and wildlife habitat conservation areas in marine shorelines and to apply a 150-foot landward vegetative buffer - http://www.gmhb.wa.gov/central/decisions/2005/05304c_TahomaFDO2050712.pdf
- *Tahoma Audubon Society, People for Puget Sound, and Citizens for a Healthy Bay, v. Pierce County (Tahoma-Puget Sound)*, CPSGMHB Case No. 05-3-0004c Order Finding Compliance - On remand from the Board's FDO, Pierce County reviewed the studies already in its record, supplemented by additional scientific commentary established a 100 foot vegetative marine shoreline buffer requirement on those lands being developed in areas identified as high value salmon habitat, and the Board entered a filing of compliance (January 12, 2006) <http://www.gmhb.wa.gov/central/decisions/2006/05-3-0004cTAS-PPSComplianceOrder20060112.pdf>
- *Tahoma Audubon Society, People for Puget Sound, Citizens for a Healthy Bay and Futurewise v. the City of Tacoma*, CPSGMHB Case No. 06-3-0001 Order of Compliance, August 7, 2008). The City of Tacoma, on remand, updated and revised its critical areas ordinance to include marine buffer zones and protections for its 44 miles of marine shorelines. The Board found the City's action compliant with the GMA.] The Board notes that the detailed and site specific analysis undertaken by the City of Tacoma in enacting the shoreline protections in Ordinance No. 27728. While this case was reviewed under the GMA standard of best available science – RCW 36.70A.172, the adopted regulations provide a strong foundation for shoreline master program provisions. [CHB, 06-3-0001, 8/7/08 – <http://www.gmhb.wa.gov/central/decisions/2008/06-3-0001CHBOrderofCompliance8-7-08.pdf>
- *Tahoma Audubon Society, People for Puget Sound, Citizens for a Healthy Bay and Futurewise v. the City of Tacoma*, CPSGMHB Case No. 06-3-0001, Final Decision and Order (November 1, 2007) <http://www.gmhb.wa.gov/central/decisions/2007/06-3-0001HealthyBayFDO20071101.pdf>
- *Pilchuck VII v. Snohomish County*, CPSGMHB # 07-3-0033, FDO, (April 1, 2008). The Petitioners did not demonstrate, through best available science, that the County's allowance for buffer reductions based on fencing, separate tracts and enhancements failed to protect the function and values of the critical areas or yielded buffer widths which were not supported by the science contained in the County's record- <http://www.gmhb.wa.gov/central/decisions/2008/07-3-0033PilchuckFDO20080401.pdf>
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- *Hood Canal Environmental Council et al v. Kitsap County*, CPSGMHB # 06-3-0012c, Order Finding Compliance (April 30, 2007) - On remand, Kitsap County increased all the marine buffer widths and has identified from science in its record that the chosen widths are within the buffer ranges to protect marine shoreline habitat functions and values. The County chose to differentiate between its urban designated shorelines and its rural and semi-rural shorelines, modifying its rural and semi-rural shoreline to a buffer width of 100 feet, and its urban shorelines to a buffer width of 50 feet. The Board entered a finding of compliance - <http://www.gmhb.wa.gov/central/decisions/2007/06-3-0012cHoodCanalOrderFindingCompliance20070430.pdf>
- (Appealed to Kitsap Superior Court Case # 06-2-02271-0 – Board affirmed)

- *Seattle Audubon Society v. City of Seattle*, CPSGMHB Case No. 06-3-0024, Final Decision and Order, (Dec. 11, 2006), at 34-35. – Included finding that 100' marine shoreline buffer requirement was supported by science in Seattle's record, and that Seattle's use of alternative protection mechanisms (rather than buffers) for limited cases of small, isolated, low-functioning wetlands was not clearly erroneous – <http://www.gmhb.wa.gov/central/decisions/2006/06-3-0024SeattleAudubonFDO20061211.pdf>
- *Diehl, et al v. Mason County*, WWGMHB # No. 95-2-0073, Order of Invalidity, December 1, 2000 – The County's development standards for saltwater shorelines and lakes 20 acres or greater, contained buffers which were below the ranges indicated by BAS. The adequacy of these buffers must be addressed within 180 days of this order regardless of the status of the WSDOE shorelines guidelines. - http://www.gmhb.wa.gov/western/decisions/1995/95-73_hcavorderr.htm
- *Swinomish Indian Tribal Community. v. W. Washington Growth Management. Hearings Board*, 161 Wn. 2d 415 (9/13/2007) [Growth Management] This is a challenge to Skagit County's critical areas ordinance. The Tribe challenged the ordinance alleging, among other things, that while a "no harm" provision protected the areas, it did not enhance them. The court concluded that the requirement to "protect" did not require enhancement. The court also concluded that while best available science needed to be considered and included in its record, it did not need to follow it. The court concluded that the county did not need to require buffers near rivers, where previously existing buffers had long since been removed (there is no requirement to enhance). The court found the county's monitoring system inadequate, as it included no benchmarks. - <http://www.mrsc.org/mc/courts/slip/763399MAJ.htm>
- *Futurewise v. W. Wash. Growth Mgmt. Hearings Bd.* 164 Wn. 2d 242 (7/31/2008) [GMA and Shorelines Management Act] Does the Growth Management Act apply to critical areas located in a city's shoreline master plan until the city updates its master plan under the Shorelines Management Act? No. The state legislature made it clear that critical areas within the jurisdiction of the Shorelines Management Act (SMA) shall be governed only by the SMA - <http://www.mrsc.org/mc/courts/slip/801151MAJ.htm>
- *Ferry County v. Concerned Friends of Ferry County*, 155 Wn.2d 824, 123 P.3d 102 (11/17/05) – County's listing of endangered, threatened, or sensitive species did not comply with the Growth Management Act because it failed to use best available science. An expert's report based entirely on a general treatise and a conversation with a state biologist, unsupported by field observations, consultations with interested experts and other reasoned analysis is not "best available science." The Court, in upholding the court of appeals and the hearings board, found that the county's listing of endangered species lacked scientific basis and thus was not consistent with best available science, regardless how that term was then defined. - <http://www.mrsc.org/mc/supreme/current/155wn2d/155wn2d0824.htm>
- *Hunt v. Anderson*, 30 Wn. App. 437 (1981)
Under the SMA, a home may be required to conform to a voluntary setback line established by adjacent homes if a location closer to the shore would detrimentally affect the aesthetics of the neighborhood and obstruct the view and reduce the value of the adjacent homes. The placing of a mobile home, the addition of a septic tank and drain field, and the construction of a deck within the 200-foot jurisdictional boundary of the SMA constituted a "development" under RCW 90.58.140(1). The prior location of plaintiff's homes on either side of defendant's lot created a voluntary setback to which defendant's development was required to conform. - <http://www.mrsc.org/mc/appellate/archive/030wnapp/030wnapp0437.htm>

Additional Impetus for Buffers in Floodplain Areas

Although initially affecting primarily Puget Sound jurisdictions, a National Marine Fisheries Service (NMFS) Biological Opinion (and associated Reasonable and Prudent Alternatives) related to the National Flood Insurance Program may ultimately affect many jurisdictions in Washington. This Opinion, which finds that flood management programs may not be adequately considering protection of endangered and threatened species, may require changes to local floodplain management programs in the near future. It may provide one more incentive for reducing development and assuring adequate buffers to avoid the consequences of not adequately protecting endangered species. I am enclosing several articles that summarize the situation, in case this is of interest.

- Biological Opinion Under ESA May Spell End of Floodplain Development in Washington State, by Jessica Ferrell, Environmental News, Martin Law Group, November 20, 2008 - <http://www.martenlaw.com/news/?20081120-wash-floodplain-development>
- "National Flood Insurance and Puget Sound Threatened Species — Responding to the NMFS September 2008 Biological Opinion," Environmental Solutions E-Newsletter, ESA Adolfson, Fall 2008 - <http://www.adolfson.com/latestnews/e-newsletter.htm#1>
- Biological Opinion on FEMA Flood Insurance Program in Puget Sound - <http://www.nwr.noaa.gov/Salmon-Habitat/ESA-Consultations/FEMA-BO.cfm>

Hopefully, this information is helpful!

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-----Original Message-----

Name: Patricia Farmer
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Phone: 360 385-2443
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Any supporting material for or against a 150' shoreline SMP buffer. Thank you !!! I appreciate any help on this controversial aspect of the SMP that the Jefferson Planning Commission is working on.

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