278

From: Bob Zych
To: Andrew Deffobis
Subject: SMP Public Hearing Comment
Date: Friday, October 22, 2021 11:05:30 AM

Please change the Shoreline Environmental Designation (SED) for Carpenter's Park on Long Lake from Shoreline Residential to either Rural Conservancy or Natural.

I've lived across the channel directly west of Carpenters Park for more than 33 years. Each day we watch eagles nest and rest in the trees along the mature, natural shoreline. The SMP designation change allows the parcel to remain as "natural" as it has been for years. The change is consistent with the net zero environmental impact goal of the SMP. The parcel is one of the largest remaining natural shorelines on Long Lake. As such, the relative impact of the parcel designation is very significant.

Act now to protect this valuable and unique natural shoreline parcel from residential development. Thank you for memorializing my comments in the SMP Public Hearing.
--
Bob Zych
3240 Long Lake Drive SE
Olympia, WA 98503
360.259.1293

From: Bob Zych
To: Andrew Deffobis
Subject: Re: SMP Public Hearing Comment
Date: Friday, October 22, 2021 11:15:16 AM
Attachments: image.png

Please include the winter picture below of the Carpenters Park parcel with my comments. Thank you.

On Fri, Oct 22, 2021 at 11:05 AM Bob Zych <razych21@gmail.com> wrote:

> Please change the Shoreline Environmental Designation (SED) for Carpenter's Park on Long Lake from Shoreline Residential to either Rural Conservancy or Natural.
>
> I've lived across the channel directly west of Carpenters Park for more than 33 years. Each day we watch eagles nest and rest in the trees along the mature, natural shoreline. The SMP designation change allows the parcel to remain as "natural" as it has been for years. The change is consistent with the net zero environmental impact goal of the SMP. The parcel is one of the largest remaining natural shorelines on Long Lake. As such, the relative impact of the parcel designation is very significant.
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> Act now to protect this valuable and unique natural shoreline parcel from residential development. Thank you for memorializing my comments in the SMP Public Hearing.
> --
> Bob Zych
> 3240 Long Lake Drive SE
> Olympia, WA 98503
> 360.259.1293

--
Bob Zych
360.259.1293

279

From:	johnjaneob@aol.com
To:	Andrew Deffobis
Subject:	Carpenter Park SED
Date:	Friday, October 22, 2021 11:42:33 AM

Hello Andrew,

I am a resident on Long Lake and am hoping that the SED for Carpenter Park will be changed from Shoreline Residential to either Rural Conservancy or Natural. For the sake of all who enjoy this park throughout each year, the change seems to be best to protect the park for the citizens of our county, state and visitors from outside our area.

Thank you for your consideration and for the thoughtful and thorough time and effort given to the Shoreline Master Program. The decisions made are very important to all of us.

Jane O'Brien
4143 Lorna Court SE
Lacey,WA 98503

280

From:	Adam Hagestedt
To:	Andrew Deffobis
Subject:	SMP Input and permitting question
Date:	Friday, October 22, 2021 12:46:07 PM

Hi Andrew,

I live on Long Lake and wanted to cast my input on a few points and ask you a question on permitting:

I live at 8027 Lakeridge Dr SE, Olympia, WA 98503, I am looking at putting in boat launch rails and a boat house given the increasing variation in the lake height that makes a boat lift not a viable option. I want to understand if this will be easier/harder/possible with the SMP new updates. Looking forward to your insights!

Below are the input points I wanted to send you:
1) Ch 19.400.100. The labeling of all existing legally built homes and/or accessory structures already located within the buffer should be "conforming," not "legally non-conforming." State law recognizes these structures as "conforming." So should Thurston County. This is an important issue to me given the buffer zone and my house is within 75 ft of the lake.

2) Ch 19.400.120. Buffer widths should stay as presented in this July 28, 2021, draft SMP. Shoreline Residential buffer widths should be 50-feet for both marine and lake properties…as they have been since the 1990 SMP, and longer. Not the 75-feet under consideration since this impacts as I said if my house is in or outside the buffer zone.

3) Ch 19.400.120.D.1.b. and Appendix B, Section B.2.c. Decks and Viewing Platforms properly constructed to be pervious should not be required to be "…adjacent to residential structures…" There should be no limit on size or location and there should be no requirement for a shoreline variance to build such a deck.

5) Ch 19.500.075 and 19.500.100.B.2. I strongly agree with the Options: Substantial Developments Permits, Conditional Use Permits and Variances should be processed administratively rather than having to undergo a public hearing before the Hearing Examiner.

6) Ch 19.600.160.C.1.r., Ch 19.600.160.C.4.f. and Ch 19.600.160.C.5. I agree with each of these Options. Strike the requirement for pier, dock, float or ramp grating on lakes that do not contain salmon.

7) Ch 19.600.160.C.3.b. We agree with this Public Hearing Option, "Consider a shorter distance (than the specified 20-foot spacing) for spacing of residential pilings (supporting piers and/or docks) in lakes…" 8-foot spacing is a move in the right direction; we would like to see 6-foot.

Best regards,

Adam Hagestedt
503-869-2323

281

From: wablackknight
To: Andrew Deffobis
Subject: Carpenter Park conservation
Date: Friday, October 22, 2021 1:29:57 PM

Mr. Deffogis -

When I moved to Lacey and bought my property at 3209 Long Lake DR SE over 20 years ago, a major attraction for my purchase was a natural beauty and rural feeling for this area.

My property was commonly used as a resting spot by single deer and small herds of deer as they passed back and forth to the lake.

Listening to the nesting pairs of eagles, and owls has been common over the years.

Sadly, as the local area has increasingly developed, these experiences have significantly diminished.

Please consider revising and changing the Shoreline Environmental Designation (SED) for Carpenter's Park on Long Lake from Shoreline Residential to either Rural Conservancy or Natural. This change is small, but has outsized impact on the quality of life for both residents and our animal occupants.

As has been pointed out by others, the SMP designation change allows the parcel to remain as "natural" as it has been for years. The change is consistent with the net zero environmental impact goal of the SMP. The parcel is one of the largest remaining natural shorelines on Long Lake, and it deserves the preservation and protection to help retain the natural beauty in our immediate area.

I am a military veteran, and I have traveled all over the world. There are few places where the natural world remains relatively undisturbed. I stand in awe of the natural wonders preserved for us by forward thinkers such as Gifford Pinchot. John Muir, and Teddy Roosevelt.

Tho' this is a small thing, it is an important local thing that we can do to help preserve our past and our environment.

Thank You for your consideration.

Respectfully -

Bill Martin
3209 Long Lake DR SE

Sent via the Samsung Galaxy S10 Federation Communicator. LLAP.

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From:	Maddy deGive
To:	Andrew Deffobis
Cc:	jwoodford.a1a@gmail.com
Subject:	SED Re-Designation and Carpenter"s Park
Date:	Friday, October 22, 2021 1:42:00 PM

Hello Mr. Defobbis,

I hope that you are getting a lot of feedback on the issue of Carpenter's Park. This parcel is one of the last undeveloped stretches of natural shoreline left on Long Lake. It includes a section of marshland that together with its upland woods has long been maintained in pristine condition as a park for the members of a local Carpenter's Union.

The area provides habitat for a large population of waterfowl and shore birds as well as wood birds and other woodland creatures. We have seen eagles, osprey, various species of heron, loons, river otters and all manner of indigenous birds along the shoreline. In the winter, it serves as protection for a large population of wintering aquatic birds. It provides habitat for fish and is across the lake from a State Fish and Wildlife boat launch and public access area. As such, it is seen and enjoyed by many state residents, not just Long Lake residents.

Importantly, it also provides a buffer for some of the massive amount of pollutants in local storm runoff waters. (Much of which is piped directly into the lake from storm drains all around the area.)

The importance of changing the Shoreline Environmental Designation (SED) for Carpenter's Park from Shoreline Residential to either Rural Conservancy or Natural should be evident from the above description of its impact on Long Lake as a whole. I appreciate consideration of our request.

Sincerely,

Dr. and Mrs. Henry de Give

From: Guttman, Burton
To: Andrew Deffobis
Cc: From: John H Woodford
Subject: Re: SED re-designation and Carpenter's Park
Date: Friday, October 22, 2021 3:29:16 PM

From: John Woodford <jwoodford.aia@gmail.com>
Sent: Thursday, October 21, 2021 6:31 PM
To: John Woodford <jwoodford.aia@gmail.com>
Subject: Fwd: SED re-designation and Carpenter's Park

Long Lake neighbors,

I've just sent this email to Andy Deffobis asking that the Shoreline Environmental Designation (SED) for Carpenter's Park be changed from Shoreline Residential to either Rural Conservancy or Natural. I know that it's a real long shot, but if you agree in principal, please get an email off to Andy ASAP. Don't just say, "I agree with John." Be a little creative and say something about how important a "natural" Carpenter's Park is to the lake as a whole.

Andy has said that any comments received by **midnight tomorrow** will be included in his package of SMP Public Hearing comments. Andy's email address is at the beginning of the attachment below…and send an email with any last comments you have on other matters. This is our last chance! Midnight tomorrow is the deadline for all public communication on the SMP!

Let's do this,
John

Begin forwarded message:

From: John H Woodford <jwoodford.aia@gmail.com>
Subject: SED re-designation and Carpenter's Park
Date: October 21, 2021 at 5:39:26 PM PDT
To: Andrew Deffobis <andrew.deffobis@co.thurston.wa.us>

Hello Andy,

While I've opposed all of the SED re-designations that have come to light so far, there is one missed site that I must bring to the attention of the Planning staff and the Planning Commission. It is Tax Parcel # 11826240100 on the east shoreline of Long Lake, known locally as Carpenter's Park. It was once owned by the Carpenter's Local #470, of Tacoma, and was used as a weekend retreat for the members.

Carpenter's Park from the WDFW boat launch across the lake. The approximate north and south property lines are indicated yellow.

Carpenter's Park, on the east shoreline of Long Lake, from above…approximately at the

midpoint of reach LLO-4 to LLO-5, Parcel # 11826240100, is the 11.60 acres, from the shoreline, up the bluff, to the former campsite. Parcel # 11826130100 is the 4.65 acre, narrow rectangle that connects the larger parcel to Walthew St SE, which run north/south on the right hand side of this image. This smaller parcel falls outside the SMP jurisdiction. The existing SED of the larger Parcel # 11826240100 is **Rural**; the proposed is **Shoreline Residential**. You've got this one wrong. The **SED should be**, if not **Natural**, at least **Rural Conservancy.** Please give serious consideration to this SED re-designation.

The small circled island is Kirby Island, reach LLO-16, and it has an existing SED of Rural and proposed of Natural. You've got this one right; do the same for Carpenter's Park.

Respectfully submitted,

John H Woodford, AIA
Emeritus Architect

From: Maya Teeple
To: Andrew Deffobis
Subject: FW: Incoming Comp Plan OR Dev Code Comment
Date: Friday, October 22, 2021 3:37:58 PM

Maya Teeple | Senior Planner
Thurston County Community Planning & Economic Development
Community Planning Division
2000 Lakeridge Dr SW, Bldg 1, Olympia, Washington 98502
Cell (Primary): (360) 545-2593
Maya.Teeple@co.thurston.wa.us | www.thurstonplanning.org

From: Carole Mathews <donotreply@wordpress.com>
Sent: Friday, October 22, 2021 3:10 PM
To: Maya Teeple <maya.teeple@co.thurston.wa.us>
Subject: Incoming Comp Plan OR Dev Code Comment

Name: Carole Mathews

Email: kokithecat@comcast.net

Which DOCKET are you commenting on?: My comment is about both dockets.

Which docket ITEM? (okay to use the project's docket # or name): A-6 Shoreline Master Program

Message: In Chapter 19.400, General Regulations, 19.400.100, B. Existing Structures
c. change height restriction to up to 25 feet
This change might allow for residences behind existing structures when "remodeled" to have at least a limited view instead of the view of a three story building.

Time: October 22, 2021 at 10:10 pm
IP Address: 76.121.128.143
Contact Form URL: https://thurstoncomments.org/comment-comp-plan-or-dev-code/

Sent by an unverified visitor to your site.

From: Guttman, Burton
To: Andrew Deffobis
Subject: Re: SED re-designation and Carpenter's Park
Date: Friday, October 22, 2021 3:54:37 PM

Mr. Deffobis, I'm sorry you only received a part of what I wanted to send you--I don't know how to operate these e-mail systems very well. The main point I want to make is about the importance of the multifaceted beauty of such areas as Carpenter's Park in our living space, and the spaces of all the residents around this lake. In principle, I suppose the people, like you, who oversee our living spaces could have every tree and bush torn down and could force more construction, so we are crowded into tiny spaces. And we could our lives pounding on computers and watching stupid TV programs, no longer enjoying the natural world that we love. And then when we got tired of trying to live like some kinds of heartless robots we could kill ourselves and let someone else move into our houses. A lot of people, I'm sure, would benefit financially. But my wife and I (a retired public-school teacher and a retired professor) have a more realistic and perhaps old-fashioned view of what life is all about, and if the beauty of the natural world that surrounds on us on this lake were somehow taken from us, I think we would find life no longer worth living. But this is what has been done in a much smaller way when the people of Carpenter's Park have been allowed to destroy their natural area, motivated by nothing but greed and stupidity. We--and I'm sure many other residents of this area--beg you impose proper restrictions on building and the destruction of this area's natural beauty.
Sincerely
Burton S. Guttman
cc: Lois L. Wofford

From: Andrew Deffobis <andrew.deffobis@co.thurston.wa.us>
Sent: Friday, October 22, 2021 3:29 PM
To: Guttman, Burton <GuttmanB@evergreen.edu>
Subject: Automatic reply: SED re-designation and Carpenter's Park

Hello,

Thank you for your email. I am out of the office until Monday, October 25. I will respond to your message when I am back.

Thank you,

Andrew Deffobis, Interim Senior Planner

Thurston County Community Planning & Economic Development Department

2000 Lakeridge Drive SW

Olympia, WA 98502
Phone: (360) 786-5467
Fax: (360) 754-2939

286

From: Tom Solberg
To: Andrew Deffobis
Subject: Shoreline Management Plan - Comment
Date: Friday, October 22, 2021 4:02:05 PM

For over four years now, I've been trying to follow and keep abreast of the proposed updates to the Thurston County Shorelines Management Plan. While many of the features of the plan don't affect me, there are still a number of things that tend to give me heartburn. After many meetings which were attended by me and other interested stakeholders – the lakeside property owners – too many of these issues keep rearing their ugly heads as if they had never been addressed at all by those of us who have the greatest interest in its impact.

Probably the biggest issue has to do with shoreline setbacks. My house, which is still on the original Holmes Family homestead on Long Lake and originally built by Albin Holmes son Edwin with a lot of help – I am told-- from Billy Frank Jr. will suddenly find itself "legally non-conforming". The setback will be changed from 50 ft to 75 ft. At the very helpful meeting with Long Lake Management District property owners and Andrew Deffobis of the county planning staff, the question was asked why this is necessary. The old answer "follow the science" was pretty well discredited when there was no available "science" offered. It would seem that this a requirement that can apparently be attributed to pure inertia. At any rate, it seems to make no ecological sense. At the very least, the existing homes should not have their designation changed to anything but "conforming" and there is no need to increase the buffer to the lake by 50%.

Another area which gives me heartburn has to do with docks. As nearly as I can figure by reading the preliminary document, virtually all future docks shall effectively be constructed like piers – This will make any construction so prohibitably expensive that those docks that are currently on the lakes will ultimately decay to the point that they will be dangerous, ugly, and essentially nonfunctional. Ultimately, only VERY well-to-do residents will be able to afford one. This I don't believe is consistent with the idea that lakeside property will be protected for recreational use.

While there are other issues that I'm not terribly happy about, I have attempted to summarize my two main concerns since I don't want them to get lost in a whole bunch of "static".

Tom Solberg
7525 Holmes Island Rd SE
Lacey, WA 98503

From: Donovan & Meredith Rafferty
To: Andrew Deffobis
Subject: SMP Hearing Testimony - Related prior comments
Date: Friday, October 22, 2021 4:12:05 PM
Attachments: Rafferty Eliminate Daily Reporting PDF.pdf
Rafferty Standardize SED Criteria PDF.pdf

I provided comment at the SMP Hearing on October 20, 2021. We wanted to clarify that the attached comments submitted earlier on October 19th by email are in support of my testimony. When providing my comments to the Planning Commission, please include the attached comments.
I did find the Zoom format intimidating, facing only a looming view of a time counter ticking away in red and no view on the screen of the Planning Commission whom I was addressing.

Thank you,
Meredith Rafferty

October 19, 2021

TO: Thurston County Planning Commission

Andrew Deffobis
Interim Senior Planner, Thurston County

FROM: Meredith & Donovan Rafferty
618 77th Ave NE
Olympia, WA 98506

RE: Over-regulating daily activities in using our properties

For shoreline property owners, daily use of their properties is comprehensively regulated by the Substantial Shoreline Permit. This expensive and complex process involving a hearing examiner is triggered by any disturbance of the property at an astonishingly low threshold of $7,047 in project value. Yet the draft SMP intends to cover 100% of any activity, regardless of value. Even when a Substantial Development Permit is not required, any disturbance must be reported in advance to, in essence, "get a permit to not get a permit".

We object. Clearly state in this SMP document that activities valued less than the substantial development permit threshold do not require any action, no daily reporting and no validating.

Meredith & Donovan Rafferty
618 77th Ave NE
Olympia, WA 98506

October 19, 2021

TO: Thurston County Planning Commission

Andrew Deffobis
Interim Senior Planner, Thurston County

FROM: Meredith & Donovan Rafferty
618 77th Ave NE
Olympia, WA 98506

RE: Standardize evaluation of "environmental limitations", a broad criteria for Rural Conservancy

Our property's saltwater shoreline lies in a dense development that is now identified as a half-mile-long "reach", MBU-16. The draft SMP embraces totally new criteria for designating shoreline categories that are not directly based on the ecological intactness of the shoreline. One of the broadest is the all-encompassing "environmental limitations" criteria for the Rural Conservancy designation (pg. 29).

Now counted is the presence of "steep slopes" and/or "flood-prone" areas with no definitions, just a broad pass. The issue is the breadth of the characteristics and the variability in the interpretation.

We note that there are definitions in the Critical Areas act which already regulates us. The act provides a publicly established process for specifying such characteristics and there are standards for regulating them. In this increasingly regulated world, we question creating a new layer of regulation for an undefined purpose.

Currently, the Rural Conservancy's "**environmental limitations**" broadly includes ***"steep banks*, feeder bluffs, or flood plains or other *flood-prone areas*"** (pg. 29). We note that "flood-prone" is similarly undefined in this document.

We have no idea what the designation purpose is for so broadly including "steep banks" and "other flood-prone areas". We do know that this phrase can result in our property being characterized as hazardous. It also results in increased restrictions under the SMP. We are deeply concerned.

Meredith & Donovan Rafferty
618 77th Ave NE
Olympia, WA 98506

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From: carol porter
To: Andrew Deffobis
Subject: Carpenter Park SED re-designation
Date: Friday, October 22, 2021 4:21:44 PM

Maintain Carpenter Park on Long Lake designated as RUAL not residential.

I have lived directly across from Carpenter Part for 32 years. I have witnessed the wildlife that live in and amongst the trees of this natural habitat. How can this gem be taken from the wildlife that lives there? Last year when the tree removal process began to clear the property at Carpenter Park, four Bald Eagles flew around the park and my home for weeks. It was clear the Eagles were in distress. How can the County consider extending a setback buffer on lake front property in the name of conservation yet allow Carpenter Park to be designated Residential and destroy an existing natural habitat? Do not re-designate Carpenter Park.

It is up to you to protect the wildlife that live in Carpenter Park and maintain this natural habitat.

Carol Porter
3210 Long Lake Dr. S.E.
Olympia WA.

From: Esther Grace Kronenberg
To: Andrew Deffobis
Subject: SMP Comments by Citizens for a Clean Black Lake
Date: Friday, October 22, 2021 6:35:04 PM
Attachments: CCBL comments on draft SMP 102021.docx

Hello,
Please include the following in the public comments on the draft SMP.
Thank you.
Esther Kronenberg

Esther Kronenberg and Suzanne Kline for Citizens for a Clean Black Lake

When you go to your Grandmother's house and she offers you food, you say yes, thank you, not only because you want to eat, but because you know it will make your Grandmother happy. But if you went to her house and raided the refrigerator without asking, you would be acting badly and hurting your Grandmother too. You would be taking without giving anything back.

That's what our policy of "no net loss" is doing to our common Grandmother who provides everything we need to sustain ourselves - our land, our water and its abundance. We take whatever we can get but we forget to give back. What has been the result?

There are 500 species in danger in Washington State. In Budd Inlet, the shorebird population has been reduced by 95% of what it was just 20 years ago when you could see 100's of them. Now you see almost none. Chinook, coho and steelhead populations in Puget Sound have declined by up to 90% over the past 40 years. LOTT is finding dangerous cancer-causing chemicals and medications in ground and surface waters and even in its highly treated reclaimed water, including x-ray contrast agents, 1,4-dioxane, and flame retardants which persist after treatment. We can't get rid of them. Every day they're going into the water we and our children drink. The reclaimed water still has 63 chemicals in it, 22 residual chemicals left in surface waters and 16 in the groundwater. And though there are thousands of these chemicals in use, many of which are toxic in tiny amounts of parts per billion, we have only tested for 127, so we know there are many more dangerous chemicals getting into our water supply. The Black Lake Special District annually applies diquat, a chemical similar to paraquat that causes Parkinson's disease, and other herbicides into the strategic groundwater reservation for the State Capital and no one is testing for them.

This is in addition to the low dissolved oxygen, high temperatures, high coliform bacteria and algae blooms that are becoming more and more the new normal in our natural water bodies. . A whole section of southern Budd Inlet is already a dead zone where only jellyfish can survive. In response to this emergency, the Department of Ecology is in the midst of issuing a new permit to control excess nitrogen from stormwater runoff and wastewater treatment plants in the Sound that are causing algae blooms and low dissolved oxygen that kill off all marine life.

Add to this shoreline erosion caused by the construction of bulkheads that decreases habitat, the increase of impervious surfaces, and the projected calamitous effects of climate change, and we are putting more of our marine, estuarine and nearshore ecosystems at risk. We are poisoning the bloodstream of our collective body. This is urgent.

How much more proof do we need that No net loss is really a HUGE loss and that we can't continue to take without giving back? When will we stop acting on the made up belief that we can do whatever we want with land because we own it and face up to the fundamental reality of nature that clearly shows that if we fail to take care of and give back to the land, it won't be able to take care of us.

I urge you to adopt Net Ecological Gain to replace no net loss and begin the healing we desperately need to preserve our common heritage and source of prosperity. Without clean water, what will your property be worth? Please consider the facts, and resolve to act with courage and conviction to stop the accelerating descent into this environmental degradation that is threatening the habitats and lives of all beings, including us.

Thank you for your consideration.

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From: Kelly Putscher
To: Andrew Deffobis
Date: Friday, October 22, 2021 7:09:46 PM

Hi Andy. This is Kelly from Long Lake. I am interested in supporting all who would be interested in keeping carpenter Union Park a wildlife conservation and natural area as has been all along . There are eagles nest over there which are finally becoming a bit more bountiful.. The deer have lived there for all these years and have been chased out of everywhere else.

IF it becomes residential . Not only would it be destroying the natural habitat for the turtles and the fish ducks nutria edt.. with the extra activity the beautiful and purposeful trees would be gone and the water quality will decline again .

I hope my thoughts are considered.. thank you for your time,

sincerely Kelly Putscher

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From: Melanie Bissey
To: Andrew Deffobis
Subject: SED Re-Designation and Carpenter Park
Date: Friday, October 22, 2021 7:18:26 PM

As a long term resident of Long Lake, I ask that you please change the Shoreline Environmental Designation (SED) for Carpenter's Park on Long Lake from Shoreline Residential to either Rural Conservancy or Natural.

I daily observe wildlife using the area for food, refuge and safety. I've seen Eagles and Osprey as well as other birds landing in the trees and hunting in the water along the channel. The shoreline with all the trees is an important location for small fish and other wildlife to have refuge. I've watched many hours of multiple different species of ducks, canadian geese and trumpeter swans hunt in the area. The forested area also supports a large number of deer as well as other wildlife. It would be a great loss to the wildlife in the Long Lake area if this valuable parcel of shoreline was cleared. As well as the value to the environment and the humans that use the lake.

Please protect this valuable and one of the last natural shoreline parcels. Protect it by designating it a natural or rural conservancy. This is important for the future of the area.

Thank you so much for memorialising my comments in the SMP Public Hearing,

Melanie Bissey
3239 Long Lake Drive SE
Olympia, WA 98503
melaniedfb@hotmail.com

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From: hawaiianrushrider@gmail.com
To: Andrew Deffobis
Subject: SED Re-Designation and Carpenter Park
Date: Friday, October 22, 2021 7:37:11 PM

As I type this email, I have the good fortune to observe flocks of amazing waterbirds swimming, eating and raising their young in the area of Carpenter Park. I have lived across from this beautiful, natural area for many years. It is one of the last areas of undeveloped land on a lake full of man-made landscapes. I have seen so many varieties of wildlife activity from my windows, that I got a book to try and identify the sheer amount of diversity that depends on this natural, undeveloped section of land for their welfare and survival. This area is critical to maintaining these precious and irreplaceable flora and fauna. The trees lining the shoreline of carpenter park are a sanctuary for osprey, bald eagles and enumerable migratory birds.

The area of natural grass land lining the shores of the park are a favourite area for fishermen. The fish congregate and thrive in the grass and untouched shoreline of the parkland. I've personally seen the big bass and trout that call this natural area..home.

I'll admit that I am a dichotomy. I make my living in construction and land development. I have seen the effects that a bulldozer and excavator have on a pristine forest, waterline, and a natural area. As a person who has been on the "front line" of over-development and encroachment, who better to implore the committee to spend a few minutes reflecting on the human impact of allowing more development on this precious and limited natural area of land. I invite one and all to spend a few minutes to observe the natural environment around them and especially around the lakes of Lacey. Please protect this natural area by designating it as a natural or rural conservancy.

Thank you for your time and consideration,

Andre Bissey
3239 Long Lake Dr. SE
Lacey, WA.

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From: Carol Jo Hargreaves
To: Andrew Deffobis
Cc: John Woodford; Kenny Kanikeberg; Kelly Putscher; Larry Schneider
Subject: "Carpenter"s Park"
Date: Friday, October 22, 2021 8:49:39 PM

Andrew, yesterday I sent you feedback regarding the draft Thurston County SMP a long with several questions and comments. Subsequently, in continuing to look at the SED map, I discovered two more interesting things:

1. My brother's property at 2607 Mayes Road SE, Lacey (Long Lake) is currently designated Rural. The proposed designation is Shoreline Residential. He owns 1.05 acres and 80 feet of waterfront. Our house, located at 2526 Carpenter Road SE, Olympia (Long Lake) is currently designated Rural. The proposed designation is Aquatic and Shoreline Residential. We own 1.27 acres and 50 feet of waterfront. Please help me understand the difference in SED designations for basically similar properties on the same lake.

2. There is a large, wooded bluff area approximately midway on the east side of Long Lake known locally as "Carpenter Park" because it originally was owned by the Carpenters Union and used as a weekend recreation area for union members. It was (and still is) a heavily wooded area with a cleared campground at the top of the bluff, a small house for the caretaker, a small dock, beach and swimming area at the lake shore. The property (Tax Parcel ID # 11826240100) is currently designated Rural. Its proposed designation is Aquatic, Shoreline Residential.
There is no need for a change in the SED designation. The property should continue as Rural (or possibly even be changed to Natural). The approximately 15-acre park area is the largest woodland area left on Long Lake and is home for eagles, osprey, deer, raccoon and many types of water fowl. (By the way, we enjoyed watching an eagle soar over the park's trees on Friday, October 15, while out on the lake in our boat.). No one has lived in the park area, except maybe the caretaker, since the property's purchase by the Carpenters Union in the early 1950s. Recreational use stopped entirely after the Carpenters Union went bankrupt and the park was closed.
I am suspicious the new SED designation is a way to open the door to development of the property. I am concerned that increased human activity would put significant additional pressure on the lake and its shoreline, cause erosion of the bluff, disrupt the riparian and nesting areas, damage the vegetation and adversely impact the overall ecology of Long Lake.

I appreciate your consideration of my input. I hope you and/or the Planning Commissioners will answer my questions and will reconsider keeping the SED designation of Tax Parcel ID # 11826240100 Rural (or change it to Natural).

Sincerely,
Carol Jo Hargreaves
2526 Carpenter Rd SE, Olympia, WA
(209) 988-5831

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From: Kevin Ingley
To: Andrew Deffobis
Subject: SED RE-Designation Long Lake
Date: Friday, October 22, 2021 9:41:18 PM

As a shoreline resident of Long Lake, I take great pride in maintaining my property and have great interest in how other properties on the lake are maintained for the beauty and enjoyment of us all. I also have a financial interest in maintaining and growing my property value, which is also impacted by how others maintain their property around the lake. I understand there is a proposed change of 11.6 acre Parcel #11826240100 to Shoreline Residential. With the recent changes/activity over there and all the recent community concerns about over-building around the lake, devastating algae blooms, and the potential for that much more adverse environmental impacts such as sewage, fertilizers, and other negative impacts on the lake, I suggest this property should be changed to Natural or Rural Conservancy. As much as there are differences of opinion on other SMP items, I'd imagine maintaining this large parcel of land as Natural or Rural Conservancy is something we all can agree to.

From: Mary Lyn Kappert
To: Andrew Deffobis
Subject: Fwd: Suggestions for Testimony
Date: Friday, October 22, 2021 10:33:29 PM
Attachments: Suggested Administratively Approved Docks for Lakes.pdf

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Andrew:

My wife, Mary Lyn, and I have lived on Long Lake since 1976 and love our home and the waterfront environment of all of Washington, but, specifically, Thurston County. Mary Lyn worked a lot with Thurston County Development staff doing permitting work while we had our construction business, and we had good working relationships with many of the permitting staff. It was apparent, however, that there was far more confusion caused by the process than necessary and the ordinary citizen could not navigate the confusing requirements, and the processes were not always consistent from staff member to staff member. It is good to clarify and make the process more user friendly. It should not be a necessity for a property owner to hire a permit professional, at great expense to navigate the system, and the regulations should be clear to all staff so that the process is not as subjective.

I have constructed piers and floats on lakes and marine environments for over 30 years. In reviewing Chapter 600 it is obvious that you did not work with individuals/stakeholders in my industry to develop reasonable standards. Following are my general comments:

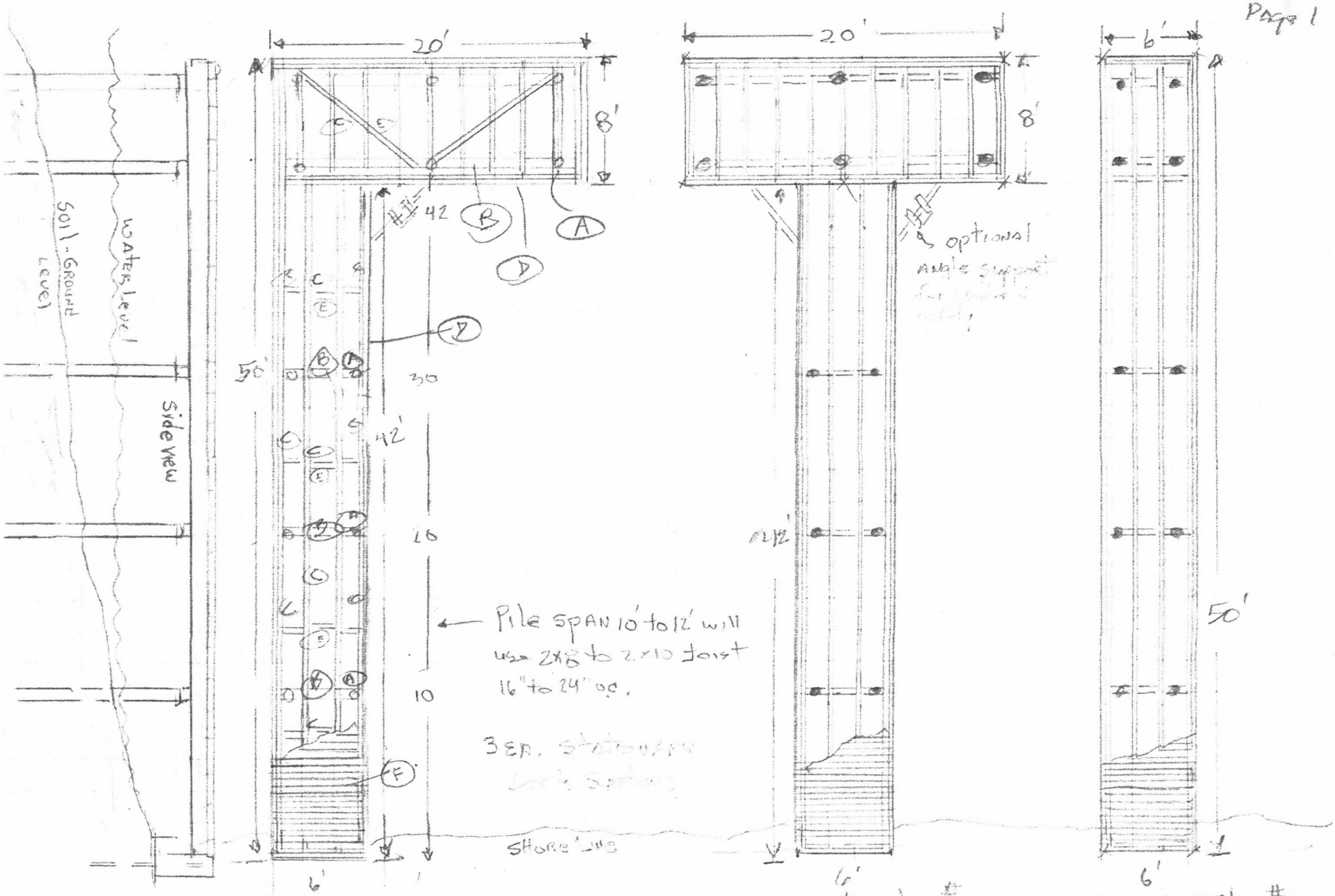
1. A 4 ft float/pier (dock) is unsafe. The minimum width should be 6 ft with an allowance to go to 8 ft. However, it should be 8 ft with an option to go to 6 ft. You never know when a person with mobility issues would be present.
2. There is conflicting evidence on the need for grating on docks. Pick your expert and you will get an answer. Some say it is needed in the marine environment and some say it is not. At the minimum, It shouldn't be required on non-salmonoid lakes.
3. There are basic float/pier (dock) designs that could be incorporated into the SMP via the pamphlet you have promised to produce along side the SMP. Attached are drawings for those basic docks. By including these drawings in the pamphlet you could allow administrative approval if designed and build in accordance with these drawings.
4. Joint docks should not be a requirement or even mentioned in the SMP. I have constructed a number of joint docks and they cause nothing but problems between neighbors.
5. A provision needs to be made to allow for the depth of the water on lakes as it is in the Marine environment. In some of our eutrophic lakes, you may need to go out past the 50 ft limit to get a depth adequate for a boat to be moored. There should be a depth allowance in this chapter in relation to dock length.
6. In the draft SMP 19.500.100 Permit Application Review and Permits, Section C Exemptions from Substantial Development Permits #4 "...shall not require SDPs" subsection h. Construction of a dock...This exemption applies if..., ii. In fresh waters, the fair market value of the dock does not exceed: $22,500 for docks that are constructed to replace existing docks, are of equal or lesser

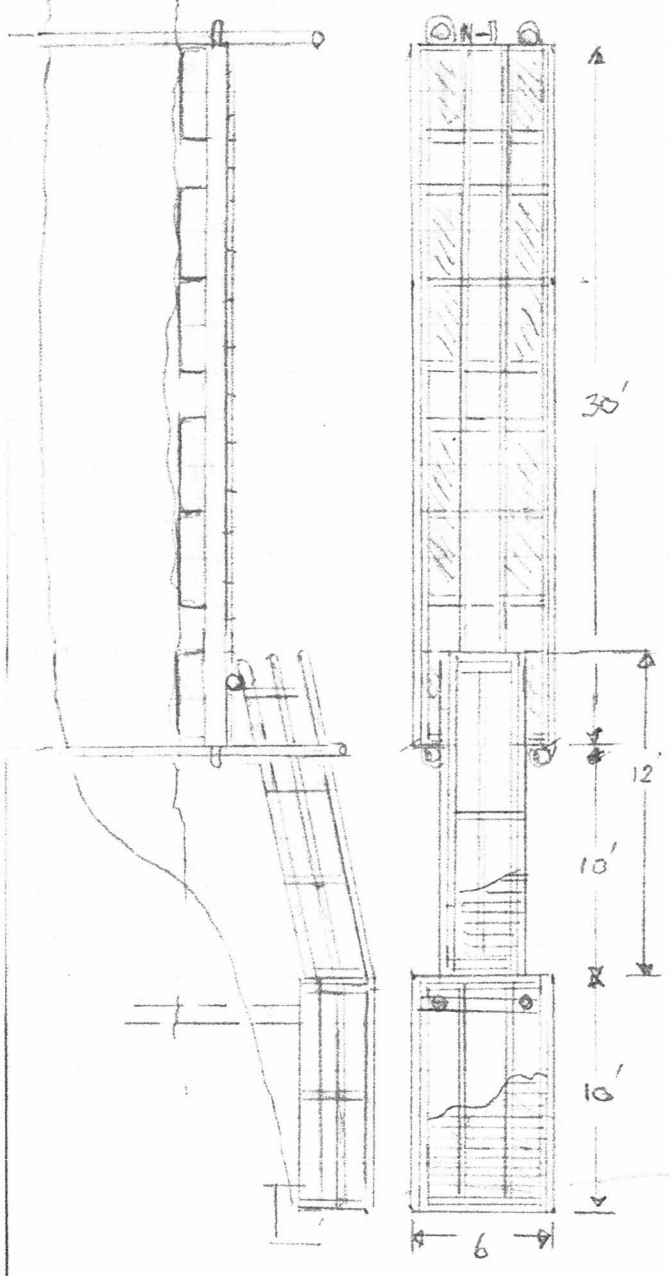
square footage than the existing dock being replaced; or (A) $11,200 for all other docks constructed in fresh water." The question is, why should not all freshwater docks be exempt to the $22,500 valuation to encourage construction using the highest quality materials and be judged by the size of the project and NOT the dollar value of the project. It is a given that materials increase in cost, hence the size of a project, not the dollar cost, should be the determining factor in the permit process.

I could have provided additional expert input had the industry leaders been given the opportunity to participate in the development of the standards.

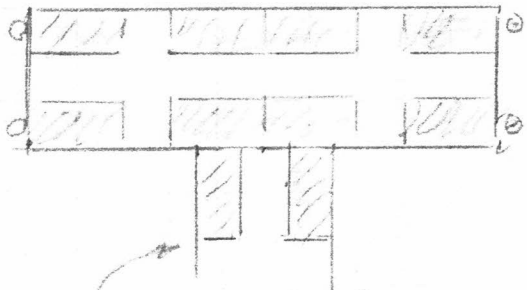
Thank you,

Henry Kappert
4214 Kyro RdSE
Olympia, WA 98503

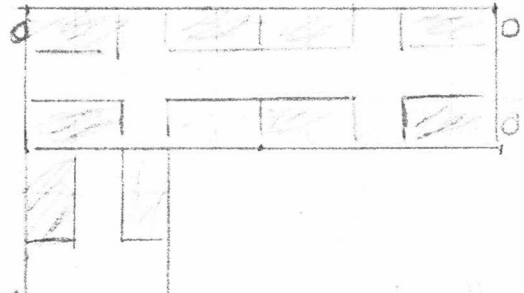

20'
8'
42"
A
B
D
C
E
F
50'
30
42'
10
10
Pile SPAN 10' to 12' will
use 2x8 to 2x10 joist
16" to 24" oc.
SEE STRUCTURAL
Dock Section
SHORELINE
6'
* DOCK
option #1
50' "L" shape DOCK
Side View
WATER LEVEL
SOIL - GROUND
LEVEL
20'
8'
optional
Angle support
for
safety
42'
6'
* DOCK-OPTION #2
50' "T" shape Dock
6'
50'
* DOCK-OPTION #3
50'
straight Dock
* SCALE 1/4" = 2 ft.



Dock Option #1

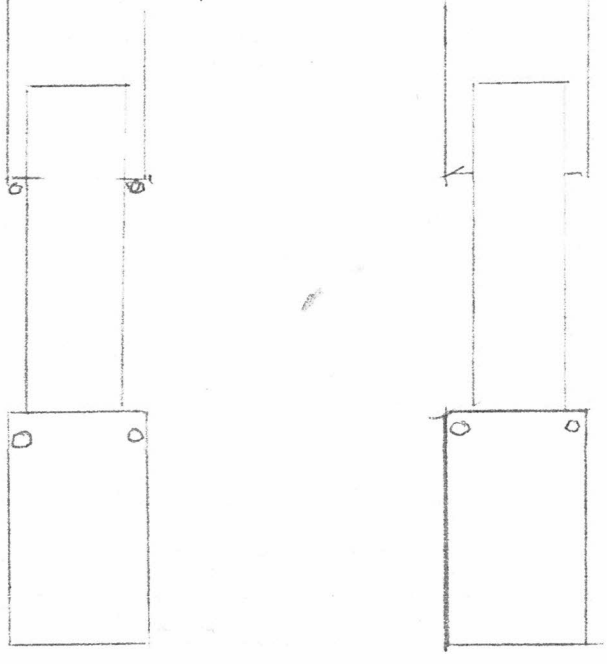


Dock option #2
"T" configuration



Dock option #3
L configuration

* both Float 2 & 3 are the same configuration landward from visual arrows,



* Scale 1/4" = 2'

A) 10" DF untreated Pile or 3" to 6" Galv. steel

B) 6x6 ft Beam that Anchor the Pile And Deck As one unit

C.) 2"x8" AND 2x10" in AND outside Joist

D.) 2 x 10 AND or 2x12 SW - out Door appearance grade fascia wood - that are used Around The entire Dock
Note: Both Joist And fascia give the dock internal And external as well as Horizontal & vertical stability and strength for when individual and water craft are using the dock - Adverse weather conditions - High water, wave action are other concerns

E) Compression blocking And Angle bracing help stiffen The movement of the dock when in use

F.) Decking - 2x6 SW decking
2x6 Composit decking

G.) Suggested Add on:
Angled section on T or L shape Docks As A Safety plateform between the main walk-way to the 6x20 Activity Area -
* Note: The outside Activity Area should be a Area no less 8x20 - for safety - for All participant - with emphasis with The Home Owner Disable or Any disable visitor
note; Joint Use Dock Are problematic and should be Illuminated as a choice between two property ownership - difference of property usage - Personality difference - upkeep - etc.
* Its a poor - control choice by the state that causes property owners that make a choice that later becomes Conflict & dock Removal.

H.) All Docks should have a designated Ladder Area for safety

FRESH WATER, Dock.

OTHER:

Recommendation for a functional & SAFE Fixed or Floating Dock system

- 6' x 42' walkway
- 8' x 20' Activity or gathering area

focusing on safety, usability, functional meet environmental conditions, HANDICAP Accessable for property owners & guests) VISITORS

- need to provide orientation for property owners who have no use/safe dock that might be used by unknown users.

Other:

I spoke to Mike Sczermik at McSquare Engineering 1-20-2020 - 9:30 AM - 10:00 AM

Question asked - size of Beam/Glue lam to span 20' - from pile to pile

Answer: -

$5\frac{1}{2}$ x $10\frac{1}{2}$ - 16" OC Cost = ?

or $5\frac{1}{8}$ x $13\frac{1}{2}$ - 13" OC " =

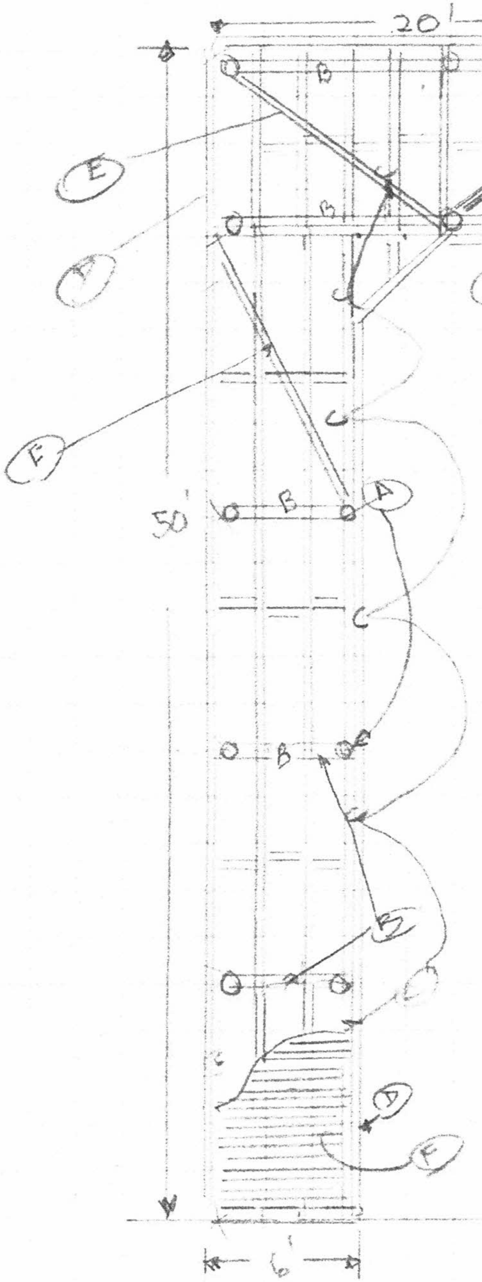
<u>Only Product use</u>: Alaska Cedar glue lam

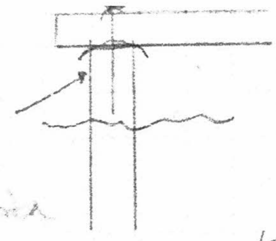
Note: Not fir glue lams - the rot/rot [illegible]

- He said that they do work for contractors on Lake Washington - Lake Sammamish - etc. And that the building dept. are strict/like Gods they don't care about the cost or installation or [illegible]

- Live load 60# Per Engineering Spec.
  Dead load 10# to 20# " "

- Need Engineer stamp

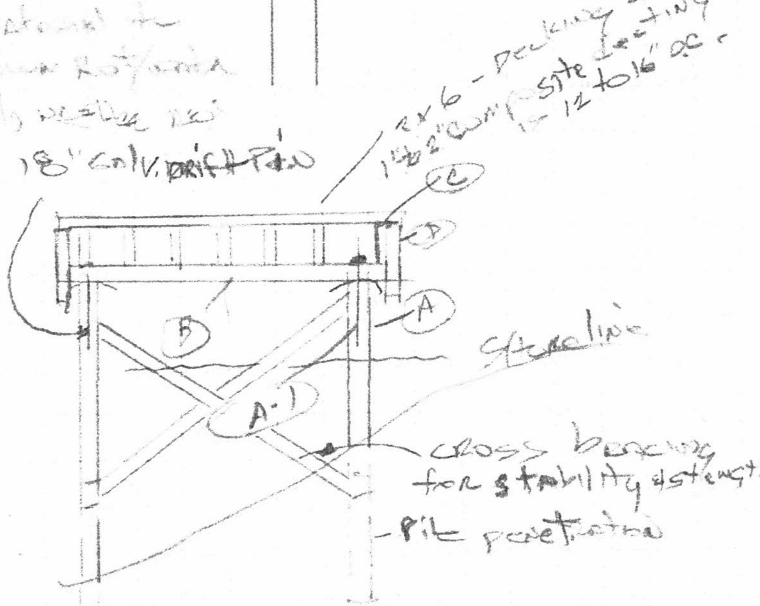




Other

1 - Piling - [illegible] treatment
A [illegible] material [illegible]
[illegible] from Rot/[illegible]
and a 5/8 Galv [illegible]

18" Galv. Drift Pin



Note: Fresh Water Docks

(A) 10' DF untreated Pile or
3" to 6" Galv. Steel Pipe Pile - Driven
Hand or Hydraulic Hammer

(B) 6x6 PT Beam 4/6' 2/20'

(C) 2x8 PT 1N & outside Joist

(D) 2x10 or 2x12 S4S outside
Appearance Grade Fascia,
Around entire dock - the
internal & external joist and
fascia give the dock internal -
external - Horizontal & Vertical
stability & strength - for when
individuals and watercraft are
using the dock and during adverse
weather condition - High water
wave action, etc.

(E) - Angle 2x4 PT Cross Bracing

(F) Decking - 2x6 S4S Decking
2x6 Composite Decking

(G) Grating if required?

8' wide
50' Length that
includes A 8x[illegible] main activity area

Note - Piling work best at 10' spans
in fresh water unless you upsize the pile.

Doug Carman
360 - 413 - 9173

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From: Mary Lyn Kappert
To: Andrew Deffobis
Subject: SED for Carpenter Park
Date: Friday, October 22, 2021 11:10:00 PM

Andrew,

In reviewing the issues related to Long Lake, I became alarmed when I learned of the SED of the former Carpenter Park, parcel #11826240100. It is presently designated as Rural, but proposed as Shoreline Residential. I disagree with the change and would think it should be Natural, as is proposed for the close-by Kirby Island. We have lived on Long Lake since 1976 and have watched the continuing development along the lake...the removal of trees following the big ice storm many years ago and the construction of huge homes on the shoreline. Carpenter Park is a reminder of the historic rural atmosphere of the area and the last natural environment for many animals and birds, as well as fish. I support the SED of Natural, or at minimum Rural Conservancy for that area.

Thank you for all of your hard work in this process and I wish you all the best as you move forward with it. As was said the other night at the Hearing, we home owners and lake users love the lake the most and want to see it protected. In this case, from over development and destruction of the last true natural waterfront environment on Long Lake.

Respectfully,

Mary Lyn Kappert
4214 Kyro Rd SE
Olympia, WA 98503

From: K LS
To: Andrew Deffobis; Karin Strelioff
Subject: SMP Comments
Date: Friday, October 22, 2021 10:33:43 PM

Hi Andrew,
I really apologize for taking so long to review the SMP draft and share comments regarding the proposed update. Unfortunately time got away from me and I only realized that tonight is the deadline for comments (so of course now I am submitting via my personal email at home on Friday night. Apparently there's nothing like a pending deadline to mobilize me!) Again, apologies.

A few thoughts on the below comments:

- If you would like to discuss any of this in person or via a phone call, just let me know. Please feel welcome to call my Thurston CD cell phone at 360-972-4565.
- For document locations, I refer to the section and/or page numbers on the bottom of the document pages rather than to the pdf pages.
- I will try to note comments in red. My observations tend to fall into these categories:
    - Clarification might be needed (This means I wasn't clear about something, but my confusion might be a result of the fact that I was speeding through this immense document on a Friday night and missed info. Or there might be a problem to consider with the wording)
    - Personal Comment as Karin Strelioff, Thurston County Resident
    - TCD Comment (from perspective of Thurston Conservation District shoreline specialist)
    - Correction: - if something needs to be changed or will be inaccurate/misleading

Okay, here we go:

Definitions Section
p 13 / 19.150.400 Hard Surface: An impervious surface, a permeable pavement, or a vegetated roof

- Clarification - in my professional experience "hard surfaces" typically refer to impervious surfaces like roofs/pavement/asphalt etc. In contrast, permeable pavement or vegetated roofs are considered to be pervious or permeable surfaces - water can infiltrate through them. My point of reference is stormwater management. I would suggest checking this definition with stormwater experts in house to make sure you are defining it the way you want.
- Clarification - the words "shoreline armor" and the word "armoring" are used at various points in the document. You might want to include a definition of shoreline "armor" in relation to shoreline modification - either under the definition of "bulkhead" or as an interchangeable term or as a stand alone word/phrase needing definition (Shoreline armoring = see bulkhead definition) . Or maybe it's there and I just missed it.

P 38
F. Policy SH-12 Shoreline processes, both freshwater and marine, that should be protected to support the above functions include, but are not limited to the delivery, loss and movement of sediment etc....

- TCD Comment ***wish this language was not struck. Shoreline processes such as sediment deposition in the marine environment are critical. It seems important to reflect the importance of coastal processes for ecological function in the marine nearshore, and to try to preserve these processes to the greatest extent possible. I would encourage this topic somehow.

P 39
B. Policy SH-16 Shoreline landowners are encouraged to preserve and enhance native woody vegetation and native groundcovers to stabilize soils and provide habitat. When shoreline uses or modifications require a planting plan, maintaining native plant communities, replacing noxious weeds and avoiding installation of ornamental plants are preferred. *Unless approved by the Director or their designee, nonnative vegetation is prohibited within critical areas, their buffers, and associated setbacks.*

- TCD Comment *** While I understand and agree with the intent of the last line in italics, I have some concern about a blanket prohibition regarding the use of non-native species, especially in the face of climate change. There are scenarios where the use of nonnative species (but not invasive nonnative species) can in fact benefit habitat and might be advantageous to plant in setback areas - such as installing drought-tolerant plantings or enhancing pollinator habitat or other goals. Is it acceptable to offer potential flexibility: Use of nonnative veg within crit area, buffers, etc. must be part of an approved (appropriate type) plan; otherwise nonnative species are prohibited etc.*** I could argue this position both ways. Just wanted to share the idea.

P. 40, E
Policy SH-21.5 Promote the use of and participation in voluntary incentive programs to protect water quality, such as the Thurston Conservation District ~~County~~ Shore Friendly program, Stream Team initiatives, Thurston County Environmental Health water quality programs, Thurston County Conservation Futures and Open Space Tax Programs, Transfer of Development Rights program, and other stewardship programs offered by Thurston Conservation District and others.

- Correction - needs to say "Thurston Conservation District Shore Friendly Program" - this is not a Thurston County Program. This is an important distinction to maintain the non-regulatory perspective and we don't want to create confusion. Thanks for fixing this!

P 40 ,G. Policy SH-21.7 Stormwater outfalls into the rivers, streams, lakes and marine environment should be eliminated and diverted into settling ponds to reduce organics, harmful chemicals and
waste from entering these water bodies and degrading water quality and contributing to algae growth.

- TCD Commen t/CORRECTION *** *This is a really tough topic without a good solution. I absolutely agree with the intent to ensure that only clean water drains to shorelines, but the recommendation here is not a good one to use as a generality/standard solution; it is in fact dangerous in certain circumstances. This is a

very important topic to understand before making recommendations. Guiding landowners to create holding ponds or to infiltrate stormwater on marine shorelines or high bank river/creek shorelines is complicated and not a recommended practice because this action can compromise human safety. Infiltrating water near steep slopes or bluffs can saturate the slope/bank/bluff and trigger landslides. I have been to multiple properties where this happened, and it can be scary. Water is a major destabilizing factor. If this recommendation will be included, Thurston County needs to protect itself from liability by requiring engineering and/or geotechnical expertise prior to establishing any kind of infiltration pond/facility on a marine bluff, near a steep slope, or above a high-bank on a river. This action could otherwise cause a catastrophic slope failure.

p 42
F. Policy SH-30 Aquaculture is of statewide interest. Properly managed, it can result in long-term, over short-term, benefit and can protect the resources and ecology of the shoreline. Aquaculture
is dependent on the use of the water area and, when consistent with the control of pollution and prevention of damage to the environment, is a preferred use of the water area.

- Personal Comment *** I disagree with unqualified description or designation of aquaculture as a "preferred use" based on current practices. In the context of impacts to beach substrate and the management of predators. I have observed commercial shellfish companies eradicate large numbers of native species such as sea stars that would normally inhabit the areas they are farming. There is not enough monitoring of predator deterrence at present when it relates to management of waterfowl, sea stars etc.(as opposed to simply requiring the use of materials that are helpful to deter predation). I understand the influence of aquaculture in Puget Sound and I appreciate the cultural and economic value of aquaculture, but we have to return to the question of no net loss and be certain that we have the science to ensure that those understudied populations aren't being adversely impacted by aquaculture practices for predation control. The language as it stands doesn't adequately place a burden on aquaculture producers to explain how they won't impact those native intertidal species.

p 55 E. Geologically Hazardous Areas
Channel migration zones shall be classified as landslide hazard areas, and may be either high geologic hazard or low geologic hazard depending on the site characteristics outlined in TCC

- TCD Comment: ?? Why are marine shorelines not also addressed in this section. A large percentage of our marine shorelines are inherently geologically unstable and landslides are common. This seems like an important oversight.

p 56 Buffer Widths recommendations (marine shorelines / lakes)

- TCD Comment: I would encourage preserving the larger of proposed buffer widths in the chart with the main goal of protecting human safety and addressing potential landslide hazard risks that are very much exacerbated by vegetation removal and development occurring too close to steep slopes/ bluffs adjacent to surface water. Narrower buffers result in development closer to "the edge.," Common land

management practices then adversely impact slope/shoreline stability and increase the likelihood of landowners requesting modification of shorelines to address the resulting impacts. It also results in unnecessary stress/fear on the part of homeowners experiencing erosion as a result of poor land management practices. This very difficult and expensive situation can be prevented by having people build farther from shorelines.

- The exception to this recommendation is the 250 foot buffer requirement on freshwater systems where agricultural land abuts a waterway. There needs to be some flexibility in buffer widths on active ag lands to ensure that we meet equally importantThurston County goals of preservation of working farms. Including language that allows for variable buffer widths based on implementation of farm plans or NRCS practices could help to achieve this flexibility and ensure we don't lose critical farmland. Unlike the earlier scenarios, on active farmland there isn't a human safety factor (as long as buildings aren't allowed nearby); flooding or river avulsion in these scenarios is a genuine frustration but it doesn't put people at risk the way development too close to a river/marine shoreline can.

p 60 b. Decks and Viewing Platforms. Decks and viewing platforms adjacent to residential structures may be permitted, but shall be limited to one hundred square feet in size, unless demonstrated that a larger structure will not result in a net loss of shoreline ecological function through submittal of a Shoreline Mitigation Plan (Section 19.700.140). The structure shall be no closer than 25 feet from the ordinary high water
mark (OHMW). Viewing platforms shall not have roofs, except where otherwise permitted through the view blockage standards (Section 19.400.135) and be no higher than 3 feet above grade. Creosote and pentachlorophenol should not be utilized in construction materials for decks, viewing platforms or boardwalks. (Public Hearing Option: Consider allowing decks and viewing platforms larger than 100 square feet as default option, or closer than 25 feet, allowing it for public access, and whether this requires a shoreline variance.)

- Clarification - *** I think I am correct that this section is intended to address these features only next to residential structures. In that case, I recommend smaller and farther away as preferable, to limit impact.
- I wondered about scenarios such as Land Trust properties that allow public access to shorelines for salmon viewing or other educational purposes. Do they fall in this section or later in the Public Access section? Is there a need to clarify this? For non-residential scenarios it might be important to allow larger platforms or a closer location, to allow for the educational opportunity that would be available to a wide portion of the public, not just an individual family at a residence.

p 61
e. Water-Oriented Storage Structure. One water-oriented storage structure to house store boats and related equipment may be allowed within the buffer provided:
i. The structure is no closer than 25 feet from ordinary high water mark as determined by the Department;
etc
vii. Allowance of a storage structure within a buffer shall not justify the need for shoreline armoring to protect the structure.

- TCD Comment: It seems there is a risk that this still might inadvertently give property

owners the idea to try to install shoreline armor to protect this appurtenance building in the future. It would be helpful to include clear language in this section that any structures built under the guidelines of this section would not be allowed *at any point* to install new shoreline armor. Without that clarification, this language still offers a pathway.

p61 3. Standards for View Thinning
a. View thinning activities shall be the minimum necessary, and limited to 30% of the total buffer length . . .

- TCD Comment: needs earlier definition /clarification that "view thinning" refers to tree removal as opposed to limbing up/ windowing /other view creation practices.
- The percentages suggested here are quite large and would have a serious impact on the riparian area's function. Removal of 30% of shoreline trees is not necessary to create extraordinary views of the water; no more than 10% removal without a detailed plan seems far more in line with maintaining riparian function and preserving the additional stormwater management and stabilization benefits provided by trees on shorelines.
- I would also specifically stipulate that removal work needs to be done by certified arborist, and encourage a combo of best practices for view creation: limited tree removal, limbing up/ branch removal to create or maintain view corridors

p63
19.400.125 Water Quality and Quantity

- TCD Comment: Here I return to the issue of water in relation to slope/shoreline stability. It is critical to consider the risk of recommending installing infiltration facilities above steep slopes/bluffs. As mentioned earlier, this recommendation can inadvertently result in landslides if facilities are not designed with appropriate hydrogeological experts involved. In general, I really don't recommend infiltration of water above bluffs for this reason. Needs additional review/work here. Standard recommendations for LID/SW BMPs that apply inland do not always work on shorelines and are potentially even dangerous. Again, I feel this could set up Thurston County for liability without putting some kind of framework around the appropriate design of these facilities to ensure they won't destabilize the shoreline.

p 69
19.400.145 Public Access -L.

- Personal Comment - it would be nice to include limitation of removal of native vegetation for lawn areas will be the minimum amount possible
- (maybe this is the section where a land trust wanting to provide public access via walking trails would go for guidance regarding trail/boardwalk regs?)

p72
19.400.150 Flood Hazard Reduction Measures

- TCD Comment - it says it applies to all environmental designations. However, mainly the language seems to refer to river/stream-related flooding. Read with an eye towards implications for marine shorelines, for example does 3.1 create a loophole

for bulkhead/armor installation?

p78-79
c. Construction of the normal protective bulkhead common to single-family residences. A "normal protective" bulkhead includes those structural and nonstructural developments installed at or near, and parallel to, the OHWM for the sole purpose of protecting an existing single-family residence and appurtenant structures from loss or damage by erosion;

- Personal Comment - I do not understand how new bulkheads remain exempt from Substantial Development permits. It is also very strange that a stairway costing over $7047 would trigger SDP and a $100K bulkhead won't. Unfortunately this doesn't help Thurston County make true progress in relation to ensuring no net loss of shoreline function.
- In the charts later shoreline stabilization actions do seem to require SDP. CONFUSING unless bulkheads are not considered shoreline stabilization? I suspect I am getting tired at this point and missed something. Apologies
- TCD Comment Also, do you want to include the word "bulkhead" in yourchart since that is in the definitions at start (as opposed to shore armor or shoreline stabilization)?
- TCD Comment g- installation of a septic system between house and water should no longer be permissible unless there is virtually no other feasible option; this can eventually trigger a BH installation to protect the drainfield/tank/water quality etc. Is there a way to require septics to be installed upland of the house unless additional reports prove it infeasible. Then I question too why we would develop a site like that but I know there are limits to regs.

p 83
F. Developments Not Required to Obtain Shoreline Permits or Local Reviews

- TCD Comment F.6 - landscaping retaining walls included here could be "interpreted" by creative people to install bulkhead-like structures.

114 Forest practices/timber harvest

- TCD Comment -concern that SMP doesn't review harvests other than conversions - there is a serious stormwater and down slope geologic impact to consider relative to human health/safety. DNR-reviewed harvests can substantially impact shoreline conditions waterward of the harvest area, including changing stormwater drainage patterns and slope stability compromises as a result of increased saturation due to stormwater runoff. Seems it would be in the interest of public safety to include some provision for a permit to be submitted for review by TC prior to a DNR permitted harvest, to allow TC to consider potential SW impacts to downslope properties and shoreline stability.
- If #6. refers to the issue of someone harvesting under DNR without applying for a conversion permit through TC, then deciding to convert for development within a short timeframe, 6 years is not enough

p116

- Personal Comment industrial dev- prohibit in all 3 SEDs under consideration: Shoreline res, Urban Conservancy, and Rural Conserv

p131 C App requirements for Shoreline stabilization

- TCD Comment Additional information required section - does not clearly indicate level of coastal engineering/geotech engineering expertise required for report - only refers to Geotechnical report. In K indicates an engineer must design it but would be helpful to include this info above in relation to the alternatives discussion too

p135 -TCD Comment -to ensure no net loss, replacement structures SHOULD also require a geotech report justifying the need and why soft shore alts can't be used

p160 MITIGATION STANDARDS SECTION -

- TCD Comment Again, THIS IS REALLY A CONCERN & COULD SET COUNTY UP FOR LIABILITY/HUMAN HEALTH/SAFETY RISKS
- TCD Comment Rain Garden option should not be included on a shoreline unless it will be designed with geotechnical/ stormwater engineering review first, due to high risk of destabilizing bluff/bank as a result of concentrated water infiltration *** SERIOUS SAFETY ISSUE

p161 B3 Shoreline armoring replacement

- TCD Comment **Unclear if this line is mandating use of soft/hybrid alternatives for 50% of replacement? I like this concept but in practice soft shore stabilization is extremely tricky and not feasible in many (I would argue the majority) of cases, based on current design/technology available to do so effectively. Perhaps TC could include language that permit applicant has to explore the option and submit report to prove if it is infeasible to avoid? That's a cost burden however. I do think exploring requirements for moving replacement bulkheads landward to replace any armor that is projecting out onto the beach with fill, beyond normal location of adjacent shorelines, is worth considering.

p124 and 162

- TCD Comment recommend not to strike any requirements for grating on overwater structures on any type of waterbody. Grating is understood to mitigate the impact and provides better light; it seems a reasonable requirement to support no net loss goals.

p158 Restoration and Protection

- TCD Comment - mechanisms described in the second paragraph will rarely work at the residential parcel scale for restoration projects, I am finding. We need to continue to come up with other creative options like extending Open Space classification to restored parcels that might not otherwise meet the size/other Open Space requirements, that could be a really helpful protective measure.

p171
D. Programmatic Restoration and Protection Actions

- TCD Comment - revisions needed here in the sections related to Thurston Conservation District.
- TCD Comment 1. Education and Incentives- Thurston CD education covers: marine, wetland, freshwater, and overall watershed education; forest land, agricultural land, and natural resource stewardship guidance, workshops, technical support for land management, yard care, farm plans, restoration, forest management etc.

- TCD Comment 3. Infrastructure - rain garden program- why does this specific call out TCD rain garden program as problematic? Please remove this as it seems out of context and inappropriate. The language ensuring appropriate engineering review should apply to all organizations, including Thurston CD.

p173 Chart

- TCD Comment Thurston Conservation District section *updates*
- Mission - The mission of Thurston Conservation District is to educate and assist the citizens of Thurston County in the management of natural resources for the benefit of present and future generations, inspiring voluntary, incentive-based conservation practices.
- Scope -provide free technical assistance and professional expertise regarding natural resource management, planning & design services, funding assistance

Programs/services include:
Voluntary Stewardship Program (VSP)- land stewardship, esp ag. lands
Shore Friendly Thurston -Marine shoreline Stewardship
Conservation Reserve Enhancement Program (CREP) - riparian buffer incentive and implementation program
Agricultural assistance including farm plans, implementation of ag BMPs and other technical assistance
Technical support and design of restoration, invasive control, habitat enhancement and stewardship projects
Stormwater management/Green stormwater infrastructure project development
Forest stewardship and planning services

REMOVE LEAD ENTITY FOR SALMON RECOVERY/3 yr WORK PLAN- now at Thurston Regional Planning Council

Role in Future Efforts
Natural resources management -planning, funding, technical assistance
-Farmland conservation and agricultural stewardship, BMPs, planning support
-habitat restoration design and implementation of projects,
- marine shoreline management, bulkhead removal and restoration/ Shore Friendly Thurston
- prairie habitat stewardship

Examples
large and small scale restoration of river/creek habitats, marine shorelines, wetlands, riparian forest, prairies

p177 POTENTIAL RESTORATION PARTNERS

Add Thurston CD to the list here, as we do a LOT of restoration projects -(TCD Is basically half ag /half restoration services)
- repeat mission
The mission of Thurston Conservation District is to educate and assist the citizens of Thurston County in the management of natural resources for the benefit of present and future generations, inspiring voluntary, incentive-based conservation practices.
repeat restoration focuses
-habitat restoration design and implementation of projects,
- marine shoreline management, bulkhead removal and restoration/ Shore Friendly Thurston
- prairie habitat stewardship
Examples
Freshwater, Wetland, Marine Shoreline project design and implementation,
planting restoration projects- design and implementation
shoreline restoration; armor/bulkhead removal; in-stream habitat enhancement; floodplain reconnection; design and planning
Prairie restoration; endangered species habitat management

THANK YOU Andy! I appreciate all the hard work you and your team have put into the SMP update process.
Karin

2021 10-20 Testimony, Planning Commission Public Hearing, SMP Update

Anne Van Sweringen, NE Olympia, representing 5 Thurston environmental nonprofits (Black Hills Audubon Society, Sierra Club, League of Women Voters, Thurston Climate Action Team, Thurston Environmental Voters).

Please read the comments I have submitted. I want to thank Commissioners and County staff for your good work on the current draft of the SMP Update. I have a few last points:

We support management designed to achieve *no net loss* of shoreline ecological functions, that follows the SMP guidelines (WAC 173-26). The update should require more of an evaluation of no net loss. To achieve no net loss using mitigation, the county must: Stand firm on avoiding and minimizing impacts, and ensure developers provide full compensatory mitigation.

The success of the SMP will depend on how the county improves mitigation in the permitting process to achieve no net loss. How will cumulative impacts be determined using descriptive methods? A more quantitative assessment method of baseline conditions, more robust monitoring, and adaptive management is necessary.

Buffer widths must be maximized to account for climate change, sea level rise, and flooding. A net gain in buffer width means a net gain in ecological functions for water quality and quantity, habitat, and amelioration of climate change.

We would like to see the county develop regulations that severely limit or restrict the expansion of industrial geoduck aquaculture. Geoduck farms reduce foraging and feeding opportunities for birds during breeding and migration. Create development standards for all shellfish aquaculture; and include: 1) avoiding plastics and micro-plastics, which cause starvation in birds and marine life; 2) minimizing predator control netting to reduce the risk of birds being trapped; and 3) avoiding estuaries until aquaculture as a disturbance can be understood in the estuarine landscape.

Lastly, the SMP Guidelines state the county has an obligation to assure that no net loss of ecological functions is achieved within the SMP. Thank you.

Thurston County Shoreline Stakeholders Coalition

7541 Holmes Island Rd SE, Olympia, WA 98503-4026

September 23, 2021

To: Thurston County shoreline residents,

From: John H Woodford, Chairman

Re: Coalition's Key Shoreline Master Program (SMP) Issues

Neighbors,

The CPED Community Planning staff is currently hosting the virtual **SMP Open House** online **now…until October 20, 2021.** At **7:00 PM, October 20,** the Planning Commission will hold the **Public Hearing** on the SMP. Now is the time to get involved, ask questions and make your thoughts and concerns known. Log into the Open House:

https://www.thurstoncountywa.gov/planning/Pages/shorelines-update-open-house.aspx

Take a good look the SMP Open House Fact Sheets, Maps and Posters…then contact Planning staff with your concerns and questions. The very first document listed on the SMP Virtual Open House home page is ***Shoreline Master Program Public Hearing Draft (PDF)***…just click on it.

On this SMP draft you will find yellow highlighted text boxes, such as *Staff note, Option for Public Hearing, Planning Commission Option,* etc. These options are important. They represent issues not yet pinned down in the SMP. Both the Planning staff and the Planning Commission will look closely at the number and content of the public communication.

I am going to first address key **yellow highlighted text boxes** and state the Coalition's position. Please relay your thoughts on these issues to the Planning staff; email Andrew Deffobis.

1) Ch 19.400.100. The labeling of all existing legally built homes and/or accessory structures already located within the buffer should be "conforming," not "legally non-conforming." State law recognizes these structures as "conforming." So should Thurston County. This is a hot button issue with lots of people.

2) Ch 19.400.120. Buffer widths should stay as presented in this July 28, 2021, draft SMP. Shoreline Residential buffer widths should be 50-feet for both marine and lake properties…as they have been since the 1990 SMP, and longer.

3) Ch 19.400.120.D.1.b. and Appendix B, Section B.2.c. Decks and Viewing Platforms properly constructed to be pervious should not be required to be "…adjacent to residential structures…" There should be no limit on size or location and there should be no requirement for a shoreline variance to build such a deck.

4) Ch 19.400.120.D.1.e. We agree with the Option. Limit water-oriented accessory storage structures to residential uses only.

5) Ch 19.500.075 and 19.500.100.B.2. We agree with the Options: Substantial Developments Permits, Conditional Use Permits and Variances should be processed administratively rather than having to undergo a public hearing before the Hearing Examiner.

6) Ch 19.600.150. The Coalition supports the option to prohibit industrial development in Shoreline Residential Environmental Designations.

7) Ch 19.600.160.C.1.r., Ch 19.600.160.C.4.f. and Ch 19.600.160.C.5. We agree with each of these Options. Strike the requirement for pier, dock, float or ramp grating on lakes that do not contain salmon.

8) Ch 19.600.160.C.3.b. We agree with this Public Hearing Option, *"Consider a shorter distance (than the specified 20-foot spacing) for spacing of residential pilings (supporting piers and/or docks) in lakes…"* 8-foot spacing is a move in the right direction; we would like to see 6-foot.

9) Ch 19.600.160.C.4.a. Again, we agree with this Public Hearing Option…and more. The maximum width of single-use and joint-use piers should be 8-feet, and more if the applicant can demonstrate the need.

Additional **Coalition Key Issues,** not necessarily listed here in any order of priority, that also require resolution at the Planning Commission Public Hearing include:

10) Nothing in the Thurston County SMP should be more restrictive than State requirements.

11) A companion pamphlet must be completed simultaneously with the SMP to guide the public through the SMP requirements, including development restrictions, acceptable native plants for the buffer (with specific examples), and permitting requirements. Without the guidelines that the pamphlet can provide, property owners will be at a loss to understand the regulations, requirements and restrictions buried deep within the full-blown SMP document.

12) The Shoreline Environmental Designation (de facto, the zoning) of any property should not be changed to a more restrictive classification or added to the SMP jurisdiction without due process. Some 2,700 properties are facing this new designation or re-designation. This issue must be resolved for each one of these properties before the SMP moves forward. Open House Fact Sheets #3 and #10 present some SED information, but nothing about how to determine your SED or to appeal a new designation. Check your property's SED on the characterization map: https://thurston.maps.arcgis.com/.../webapp.../index.html... If you oppose the re-designation contact the Planning staff immediately.

13) Staff has begun to acknowledge that different environmental conditions exist for a) marine waters, b) streams/rivers and c) lakes in the County…and amending the SMP to address those differences. Yet, even more is required. Establish fresh water (lake) requirements for decks, docks, piers, floats and bulkheads and address the unique habitat characteristics associated with shoreline residential use. Maximum dimensions must be increased for single use piers, and floats (both mooring and recreational) in Shoreline Residential SEDs; docks with their piers, ramps and floats on lakes are places of water access for swimming, fishing and other water-oriented family play and enjoyment.

14) In the SMP, *Buffer* is defined as "*a non-clearing area established to protect the integrity, functions and values of the affected critical area or shoreline…*" What if your waterfront yard is a lawn? Is it a buffer? …a setback? This needs to be clarified.

15) Several changes should be made to the chapter "Definitions." Examples include - Add: *Conforming, Eutrophic Lakes,* and *Letter of Exemption.* Delete: *(Legally) Nonconforming.*

16) There are several Unnamed Lakes, Unnamed Ponds and Unnamed Mines listed in Ch 19.200 as lakes now subject to the County's SMP. How are property owners adjacent these lakes, ponds and mines going to know that they are now subject to this new designation?

Without names, known to all, these water bodies should not be included in the SMP jurisdiction.

17) In the policy statements, Ch 19.300, and development standards, Ch 19.600, concerning public access to publicly owned areas of the shoreline, there is no mention of ADA compliance. Why not?

18) Pollution of Thurston County waters is only addressed in passing in the in this draft SMP…whether that pollution comes from:

   a) Faulty or inappropriately located septic systems,

   b) Use of inappropriate lawn and/or garden fertilizers, and/or

   c) Stormwater runoff directly into the County's marine waters, lakes and rivers should not be allowed. For example, here on Long Lake there are thirteen outfall pipes that drain from County roads into the lake…most of these outfalls drain directly into the lake with no pretreatment. Stormwater runoff accounts for 75% of the pollution of our waters.

19) The Planning staff should provide new goals to ban the use of plastics by the shellfish industry on Thurston County tidelands and to establish new operational guidelines.

And finally, please remember, as I've pointed out many times in the past, the *Cumulative Impacts Analysis of Thurston County's Shoreline Master Program* states that **Shoreline Residential SED properties accounts for only 3.5% of the total County shoreline acreage**. Rural Conservancy accounts for 63.5%, Natural – 31.9% and Urban Conservancy – 1.1%. Further, the vast majority of parcels located in Shoreline Residential SEDs are already built out; there are very few vacant parcels available for new development. Our existing shoreline residential properties should not bear the brunt of these very restrictive regulations.

Give your fullest consideration of these key issues…and anything else that is of special interest to you. Express your concerns at the virtual Open House and at the Public Hearing.

The **virtual Open House** is "open" now; the login is noted in the first paragraph of this letter. The **Public Hearing** is at 7:00 PM, October 20, 2021, at the County Courthouse complex. Important emails:

- Planning Commission: address to the Planning Commission and send to: polly.stoker@co.thurston.wa.us

- Planning staff – Andrew Deffobis, Interim Senior Planner: andrew.deffobis@co.thurston.wa.us and/or (360) 786-5467

- The Coalition – me: jwoodford.aia@gmail.com

Respectfully,

John H. Woodford

Summer 2013
Vol 24, No. 1

Pipeline

NESC

Small Community Wastewater Issues Explained to the Public

Phosphorus and Onsite Wastewater Systems

In the previous Pipeline *we discussed the role of nitrogen in onsite wastewater systems, its effect on the environment, and how to reduce nitrogen discharges. In this issue of* Pipeline *we discuss phosphorus, the other major nutrient of concern found in residential wastewater, and what happens to phosphorus in the environment and in onsite wastewater systems. Phosphorus has not generally been considered to be a major problem for onsite systems. However, because of the site-specific nature of onsite wastewater treatment, in some cases it does create problems. This* Pipeline *discusses situations where and why it may be a problem and what the options are for controlling phosphorus.*

Phosphorus and the environment: The back story

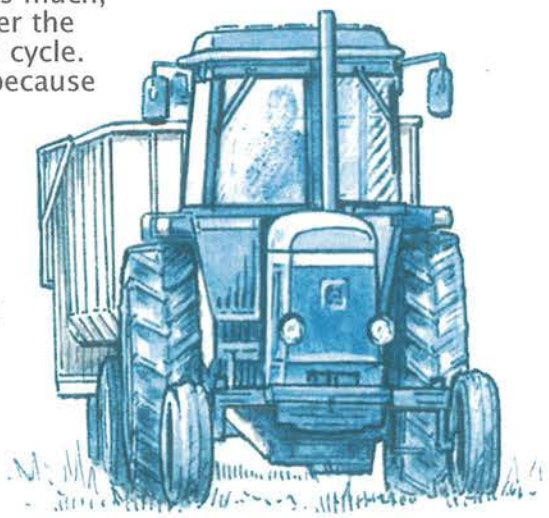
Phosphorus is an essential nutrient for sustaining all life and is present in every cell in every living organism. It is an indispensable part of the important, but generally underappreciated, adenosine triphosphate molecule, which stores energy and releases it as needed for cellular activity. Phosphorus is also a key component in the structure of DNA. In vertebrates phosphorus is found in teeth and bones. It is one of the major nutrients necessary for healthy plant growth, where it plays key roles in photosynthesis and a variety of other functions such as healthy root development and seed formation.

Because of its high chemical reactivity, phosphorus is rarely found in its elemental state in nature. Phosphorus atoms frequently combine with three oxygen atoms to form a composite phosphate ion with a negative three charge. The phosphate ion can then combine with other atoms and molecules to form a variety of compounds. We often use the terms phosphorus and phosphate interchangeably but a phosphorus atom is a part of the phosphate ion.

As with carbon and nitrogen, phosphorus has a natural cycle in the environment. It is present in rocks and in the soil. As rocks weather, phosphorus is released that becomes available for incorporation into soil and for uptake by plants. Phosphorus in soil that is not taken up by plants is subject to erosion by both wind and rain, and eventually finds its way into streams and rivers in a dissolved form or as components of suspended sediment. Considerable biological recycling of phosphorus occurs both in terrestrial and aquatic environments—animals consume plants containing phosphorus and excrete wastes containing phosphorus that then becomes available for use by other plants, animals, and microbes.

Ultimately, phosphorus ends up in the oceans where, after more biological

recycling by marine plankton and other organisms, it is deposited on the ocean floor. Over periods of millions of years ocean sediments become compressed and consolidated into layers of rock. These ocean-floor rock layers eventually are subject to geologic uplift into above-sea-level mountains that are again subject to weathering and erosion, completing the cycle. Because we are talking about geologic time scales, the phosphorus cycle is much, much slower than either the carbon or the nitrogen cycle. This is at least partly because phosphorus does not naturally exist in a gaseous state to any significant extent. As a result there is no atmospheric cycling of phosphorus between the terrestrial and marine environments as there is with carbon and nitrogen.



The key role of phosphorus in enhancing plant growth was scientifically verified less than 200 years ago. Before that farmers, without knowing exactly how or why it helped, had learned to add substances that contained phosphorus to croplands. Historically these were mainly animal manures, plant residues, or human waste products. Within the last 100 years, however, the mining of phosphate-bearing rock deposits that are then industrially processed has been the main source of agricultural phosphorus fertilizers. About 80 to 90 percent of the mined phosphate rock is made into fertilizer with the remainder being used in food and beverages, detergents, industrial processes, and animal feeds. The availability of mass amounts of phosphate fertilizer contributed to the "Green Revolution" that dramatically increased global food production, in turn allowing global population to increase from about 1.6 billion people in 1900 to more than seven billion people today.

However, because phosphate rock deposits are formed only over long geologic time periods, from the human perspective, phosphorus is a finite resource that is being rapidly consumed. Accelerated mining and consumption of phosphate rock have essentially turned the phosphorus cycle into a one-way transfer of phosphorus from the land to the ocean bottoms. The phosphorus is not destroyed, but it is dispersed to the ocean floor where recovery is economically not feasible.

Because the easily accessible, high-quality phosphate rock deposits are being depleted there have been discussions in the past 10 years of phosphorus production peaking and declining, which raises concerns about the ability to keep the world fed. Others believe that new deposits of phosphorus will be discovered and made available averting any potential global food security crisis. It is likely, however, that newly discovered deposits will require more energy to mine, process, and purify. As a result, regardless of it relative availability, phosphorus is expected to become a more expensive resource in the near future.

As with nitrogen, the dramatic increase in the agricultural use of phosphorus during the past 100 years has brought some unintended, negative consequences. Phosphorus is not a selective fertilizer. When soil that contains phosphorus is eroded by wind or rain, phosphorus ends up in streams

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and lakes where it can stimulate biological activity beyond normal levels, a condition referred to as eutrophication. This often results in the overabundant growth of undesirable algae, referred to as a harmful algal bloom.

The frequency and severity of harmful algal blooms in lakes and rivers is increasing globally.

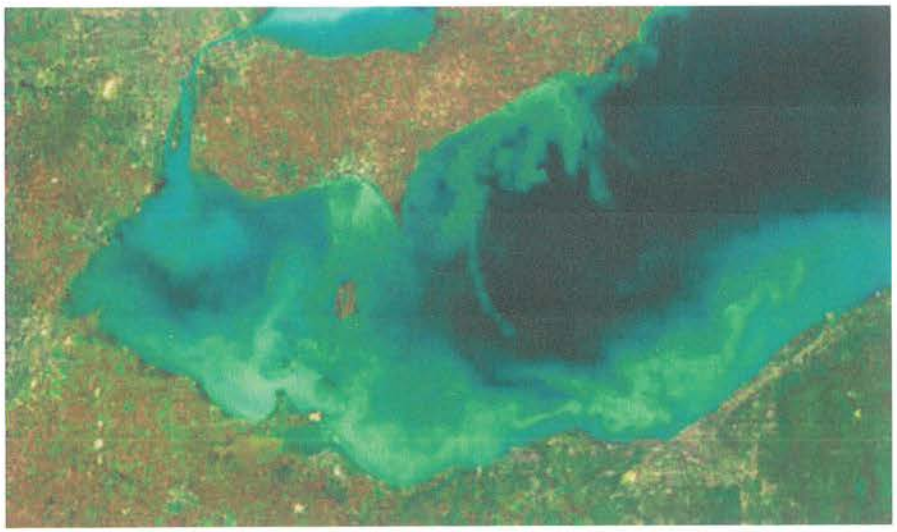
Undesirable or harmful algal blooms create a number of problems besides being unsightly. Individual algae are short-lived and as they die and decompose they consume dissolved oxygen. Low-oxygen conditions, referred to as hypoxia, can lead to fish kills, loss of other aquatic life, and noxious conditions. Algal blooms can also shade out native rooted aquatic plants and negatively shift the ecological balance in aquatic environments.

Certain types of algae called cyanobacteria, also referred to as blue-green algae, produce potent toxins that are harmful to humans and aquatic life. Blooms of cyanobacteria have become increasingly more frequent in freshwater lakes in the U.S. in the last 20 years. Because cyanobacteria can fix nitrogen from the atmosphere, they can bloom in water bodies that are low in nitrogen if sufficient phosphorus is present. The toxins can be ingested by swimmers and boaters who are in direct contact with the water. However, under certain conditions the toxins can also become aerosolized and inhaled by others at a distance from their source. The toxins can be removed from drinking water sources but at an added cost.

It is generally accepted that phosphorus is usually the limiting nutrient when it comes to eutrophication of freshwater resources and nitrogen is usually the limiting nutrient in offshore waters and estuaries. The limiting nutrient is the nutrient in least supply relative to its demand and controls the amount of biological growth taking place. Concentrations of total phosphorus in the range of 0.02 to 0.03 mg/l have been shown to stimulate algal growth in many North American freshwater lakes.

In the 1960s, widespread eutrophication of lakes and rivers attributed to phosphate pollution became a public concern leading to 27 states passing full or partial bans on laundry detergents containing phosphate. Detergent manufacturers voluntarily phased out the use of phosphates in laundry detergents nationally in 1994. More recently, attention has focused on dishwasher detergents containing phosphates. Because automatic dishwashers were not as common in the 1960s, dishwasher detergents were not included in the initial bans. In response to 16 states passing bans limiting phosphates in dishwashing detergents, in 2010 the detergent industry greatly reduced the use of phosphates in domestic dishwasher detergents nationally from 8.7 percent to no more than 0.5 percent. Phosphates are still present in consumer products such as some hair dyes, toothpastes, mouth washes, liquid hand soaps, and shampoos.

Although phosphate bans and other actions taken to control phosphate have helped, the continued application of phosphate fertilizers and animal manures along with population growth means that phosphate contamination continues to be an issue. Currently, the U.S. Environmental Protection Agency estimates more than 100,000 miles of streams; about 2.5 million acres of lakes, reservoirs, and ponds; and 800 square miles of bays and estuaries have poor water quality due to excess nutrients including phosphorus.



This satellite image shows the extent of a blue-green algae bloom in the western section of Lake Erie in 2011. An unusually wet spring, which generated high levels of nutrients in runoff, followed by warmer weather contributed to the worst algal bloom in Lake Erie since the 1960s.

Photo credit: MERIS/NASA; processed by NOAA/NOS/NCCOS

Phosphorus in Wastewater

Phosphorus in wastewater is categorized as either inorganic or organic phosphorus. Inorganic phosphorus includes relatively simple forms of phosphates referred to as reactive or ortho-phosphates consisting of one phosphate ion and zero to three hydrogen ions, depending on the pH level. Condensed phosphates or polyphosphates, also categorized as inorganic, are somewhat more complex chemical structures with more than one phosphorus atom linked together in each molecule. Most polyphosphates originate in detergents and other cleaning products and eventually decompose into ortho-phosphates. Organic phosphorus includes phosphorus incorporated into undigested food residue and dead and living bacteria that are present in feces. Some organic phosphorus is also present in uneaten food scraps that are part of the wastewater stream.

Phosphorus in water and wastewater is typically measured as total phosphorus, which includes both inorganic and organic forms of phosphorus. The concentration of total phosphorus in raw wastewater is quite variable from household to household. A 2008 survey of 17 residences in three regions of the U.S. found total phosphorus concentrations ranging from 0.2 to 32 mg P/l with a median value of 10.4 mg/l. A 1991 study estimated that the average person in the US generates about 2.7 grams of phosphorus per day with approximately 59 percent of the phosphorus coming from toilets; 37 percent from sinks, showers, and appliances; and four percent from kitchen garbage disposals. Due to the 1994 ban on phosphates in laundry detergents and the 2010 ban affecting dishwashing detergents the average amount generated per person has decreased and it has been estimated that as much as 75 percent of phosphorus may now be contained in toilet wastewater.

For toilet wastes, approximately two-thirds of the phosphorus is contained in urine, with the remainder found in feces. The total amount of phosphorus excreted varies from person to person depending on diet and other factors. The approximately two-to-one ratio between the amount of phosphorus found in urine to that in feces, however, is fairly consistent.

On a national basis the majority of phosphorus released to the environment by human activity comes from agriculture. Current data are not available. However, a 1984 study estimated that 72 percent came from agriculture, split evenly between fertilizer application and manure application. Five percent came from wastewater treatment plants and the remaining 22 percent came from all other non-point sources, including onsite wastewater systems.

Agriculture and domestic wastewater are closely connected when it comes to phosphorus. Phosphorus applied by farmers ends up in the foods we eat. Any excess phosphorus our bodies don't need is excreted and ends up in our wastewater. Our wastewater is now being viewed by many as a potential source of phosphate and other nutrients to be recycled for agricultural use. As the availability of easily mined, high-quality rock phosphate declines and the need to make agriculture more sustainable becomes more apparent, wastewater will increasingly be seen more as a resource and less as a waste product.

What happens to phosphorus in onsite wastewater systems?

The concern with phosphorus in onsite systems is that the concentration of phosphorus in wastewater is usually hundreds of times higher than that needed to stimulate algal growth in surface water. Fortunately, compared to other wastewater constitu-

ents, phosphorus is not very mobile. In most cases, phosphorus is effectively retained in the soils below drainfields (or soil absorption systems), preventing much phosphorus from being released to streams and lakes. As a result phosphorus from onsite wastewater systems has historically been lightly regulated and added treatment for phosphorus reduction is still rare. The science underlying how phosphorus is retained by soils, however, is complex and varies with soil types.

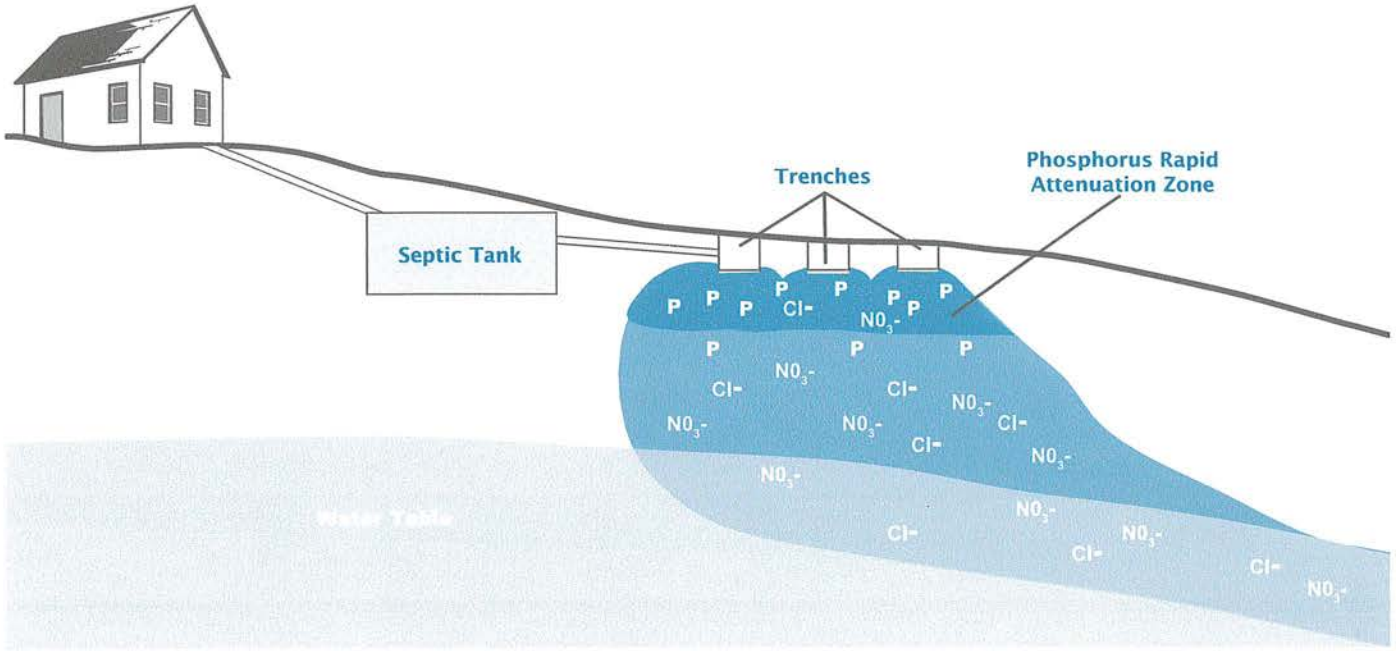
Some phosphorus is removed as the wastewater flows through the septic tank. Some studies have estimated that as much as 20 to 30 percent of phosphorus becomes part of the settled solids in the septic tank. A 2008 study indicated less than six percent removal of phosphorus occurs in septic tanks, however. The concentration of total phosphorus in septic tank effluent, the liquid exiting the septic tank, varies widely from household to household but the median value is approximately 10 mg/l.

As the wastewater leaves the septic tank and is dispersed to the unsaturated soil beneath the drainfield, phosphorus is retained due to two chemical processes: precipitation and adsorption. Precipitation occurs when negatively charged phosphate anions react chemically with positively charged cations to form a solid mineral that is immobilized in the soil. Common cations that react with phosphate to form minerals are iron (both Fe^{+2} and Fe^{+3}), aluminum (Al^{+3}), and calcium (Ca^{+2}). Phosphate also reacts with oxides of iron, aluminum, and calcium to form stable phosphate-metal complexes.

The extent to which precipitation occurs in soil depends on a number of factors including soil pH, the oxidation/reduction status of the soil, the relative availability of cations to react with phosphate, and whether a soil is calcareous or non-calcareous. Calcareous soils are soils of marine origin that have a significant calcium carbonate content and tend to be alkaline in nature. Non-calcareous soils tend to be acidic rather than alkaline. Cations such as iron and aluminum that can react effectively with phosphate are generally more available in non-calcareous soils. Although phosphate reacts with calcium in calcareous soils, it is more effectively immobilized by iron and aluminum in non-calcareous soils.

The other way phosphate is immobilized is through adsorption. Adsorption occurs when phosphate anions are attracted to and bind to positively charged mineral particle surfaces. Binding by adsorption is not as strong as precipitation reactions and is considered more reversible. Adsorption is limited by the number of adsorption sites available. The capacity for precipitation is also finite but can continue as long as cations are available and there is space in the soil for the precipitating solid.

As with precipitation, adsorption is more effective in acidic environments than alkaline environments. Adsorption



In many onsite wastewater systems, phosphorus (P) is effectively immobilized within the first two or three feet of soil below drainfield trenches. This area has been referred to as the Phosphorus Rapid Attenuation Zone or Phosphorus Enrichment Zone. This is in contrast to the plume associated with other more mobile wastewater constituents such as nitrate (NO_3^-) and chloride (Cl^-). The extent of movement of phosphorus varies from system to system but is almost always less than that of NO_3^- and Cl^-.

relies on negatively charged phosphate anions being attracted to positively charged surfaces including aluminum and iron oxides and hydroxides and clay minerals. The surface charge of the minerals can vary under different conditions. In alkaline conditions, such as in calcareous soils, the net surface charge is more likely to be negative in which case little or no adsorption is likely to occur.

Precipitation and adsorption quickly and effectively retard the movement of phosphorus in many drainfield soils to the extent that there is a zone of phosphorus enrichment or accumulation within the first meter below the drainfield lines. This zone, which includes the biomat, has been referred to as the Phosphorus Rapid Attenuation Zone.

Precipitation and adsorption are less effective once any remaining phosphorus reaches groundwater. The movement of phosphorus in groundwater is still slower however than the movement of more mobile, less reactive anions such as nitrate and chloride. Studies that have plotted the movement of groundwater plumes of septic system contaminants almost always show a considerably longer plume for nitrates and chlorides compared to phosphate, even in situations where conditions for phosphate immobilization may not be ideal. The extent to which phosphorus migration is retarded is variable and site-specific.

Nevertheless, there are circumstances where phosphorus from onsite wastewater systems can contribute to pollution of lakes or streams. Some of the factors that contribute to problem sites include:

- Calcareous soils;
- Coarse-grained soils such as sandy and gravelly soils that allow rapid flow rates;
- Households that generate more wastewater than their septic systems were designed to handle;
- Drainfields with thin soils, shallow bedrock, or high water tables;
- Systems with drainfields close to lakes or streams;
- Areas where onsite systems are densely sited;
- Systems where the septic tank effluent is not uniformly distributed across the drainfield; or
- Older or substandard systems such as cesspools, which may be in direct contact with groundwater during part of the year.

Problem areas often occur due to the combination of multiple factors. For example, numerous lake-front communities with closely sited homes, with drainfields in sandy or gravelly soils close to the lake shore have experienced problems with noxious algal blooms. In cases such as these, where drainfield soils are not capable of immobilizing phosphorus, some additional action may be necessary in order to restore lake water quality.

Phosphorus Reduction Options

A number of options can be used in situations where phosphorus from onsite wastewater systems has been identified as a problem. These options can be categorized as source diversion, advanced treatment, and drainfield modifications. Because concern with phosphorus from onsite wastewater systems is fairly recent treatment approaches are continuing to evolve.

Source Diversion

Because 60 to 75 percent of phosphorus is contained in toilet wastewater, referred to as blackwater, removing the blackwater from the wastewater stream can greatly reduce the amount of phosphorus discharged from an onsite system. This has been achieved through the use of composting toilets, urine-diverting toilets, and holding tanks. The remaining wastewater in the household from other fixtures goes to the septic system or a grey water system.

Composting toilets collect toilet waste in a chamber below the toilet. The system is designed so that the contents compost or decompose biologically into a humus-like material that needs to be removed periodically. There are a wide variety of models of composting toilets available including ones that use a small amount of flush water and are able to evaporate off any excess liquid that might interfere with the composting process. Because most composting toilets capture all of the blackwater they can potentially remove as much as 75 percent of the phosphorus,

The fully composted material must occasionally be removed by a service provider or the homeowner. Some states have rules regarding the acceptable disposal of the composted material. Appropriate use or disposal of the compost is necessary so that the phosphorus problem is not simply transferred from one location to another.

Urine-diverting toilets remove urine from the wastewater stream to then be disposed of separately. These toilets are constructed with a barrier in the bowl that separates urine from solid toilet waste.

Urine is deposited in the front chamber and feces and toilet paper in the rear chamber. The front chamber has a separate line that allows urine to be collected in a storage tank. The urine can be processed for use as either a liquid or a solid fertilizer. Because urine contains about two-thirds of the phosphorus in blackwater, urine diversion has the potential to remove 35 to 50 percent of phosphorus from residential wastewater. The effectiveness of the toilet at diverting urine depends upon the correct use of the toilet by the users.

Urine-diverting toilets are not common in the U.S. at this time. However, they have been successfully used in other countries, particularly in planned communities in Europe. Their use in the U.S. has been limited by their unfamiliarity and the lack of a well-established system to collect, process, and reuse the urine agriculturally. However, urine harvesting is beginning to draw more interest in the U.S. and this is expected to increase as the benefits of capturing the nutrients in urine for agricultural use becomes more evident.

In some cases, households may be permitted to divert their toilet waste to a holding tank. The contents of the tank must be periodically pumped and transported to a wastewater treatment plant. Many health departments view holding tanks as a last-resort option and because of the cost of regular pumping this is an expensive option. With the use of a micro-flush toilet the intervals between pumping can be extended helping to reduce costs.

Advanced Treatment

Although advanced treatment systems for phosphorus reduction in onsite systems are still uncommon in the U.S., a number of units are available commercially. A variety of approaches to phosphorus reduction have been made but the most common method has been through the use of reactive media filters. These are modular units that are installed between the septic tank and the drainfield.

Media filters, such as sand or gravel filters, have been used for decades to provide an additional level of wastewater treatment for onsite systems. The difference with phosphorus removal systems is that a medium or combination of media are added that react specifically to immobilize phosphorus. Typically, the media contain some combination of iron, aluminum, or calcium compounds and the reactions are similar to the adsorption and precipitation reactions that occur in soil. The goal is to enhance and maximize the reactions in a more controlled environment.

The types of media used have been categorized as natural, manufactured, and industrial by-products. Natural media include iron-rich soils and peat, which may be supplemented with additional materials to increase their affinity for phosphorus. Other natural materials that have been tested include limestone, bauxite (aluminum ore), bentonite (a type of clay), and lignocellulose fibers, among others.

Manufactured materials include light-weight clay aggregates, which have been processed to expand the clay structure to provide greater surface area. Phosphorus removal for systems using light-weight aggregates have achieved greater than 90 percent phosphorus removal in test facilities. Filtralite® and Utelite® are two brands of manufactured clay aggregates that have been used for phosphorus removal media.

A wide variety of industrial by-products have been investigated for use in reactive media filters including different types of blast furnace or steel fur-

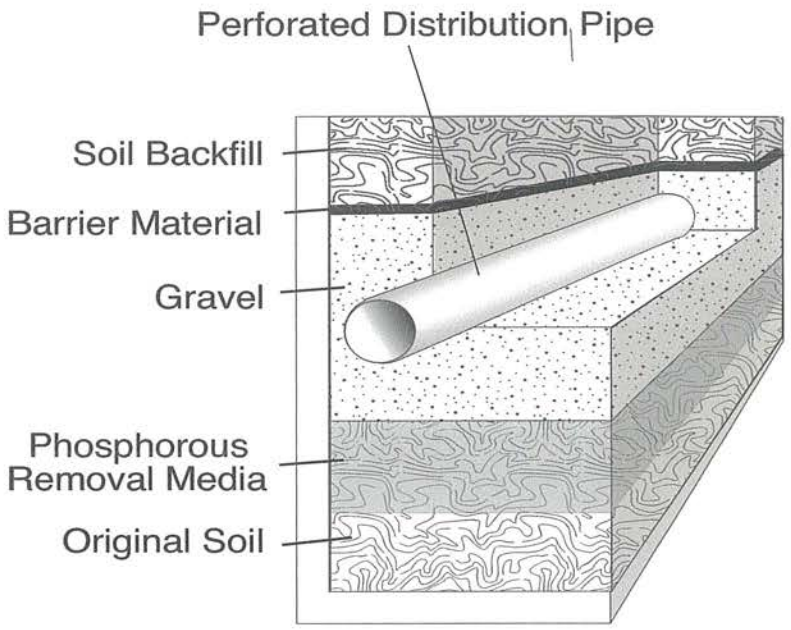
Separating urine from the wastewater of residences or public facilities through the use of urine-diverting toilets or urinals can potentially reduce phosphorus loading to onsite wastewater systems by as much as 50 percent.

nace slags and alkaline fly ash from coal-fired power plants. The composition of industrial slags varies depending on the type of industrial process that generated the slag. A high rate of phosphorus removal has been documented using some slags. However, a drawback with some slags is that they generate a high pH in the water exiting the filter, which means an extra treatment step may be needed to neutralize the pH before final dispersal.

Recently there has been much interest in the use of nanomaterials for phosphorus removal. As the overall surface area of a medium increases the number of attachment sites for phosphorus also increases. Because of the extremely small size of nanoparticles, the total surface area exposed is greatly increased, potentially giving these materials a much higher capacity for phosphorus removal than other media. Iron-based nano-materials have been coated onto base media and have also been incorporated into resins that can be regenerated once their phosphorus removal capacity has been reached. As with other media, because the demand for phosphorus removal is fairly recent, research and knowledge of the effectiveness and economic practicality of different media are continually developing.

Drainfield Modifications

Because phosphorus related problems from septic systems have been perceived as rare, proposed sites for septic systems are seldom evaluated for their capacity to immobilize phosphorus. However, in the future, especially in sensitive watersheds or in the vicinity of an impaired water body, it is likely that soils may be evaluated more frequently for their ability to capture phosphorus.



A number of media have been suggested for use in drainfield trenches to capture phosphorus. The medium is added between the bottom of the drainfield line and the trench bottom. A suitable medium must have a high capacity to immobilize phosphorus and sufficient permeability. Since it will eventually need to be replaced it should have as long a lifespan as possible.

In soils that are determined to have an inadequate or marginal capacity, in addition to advanced treatment, modification of the drainfield may also be considered.

One modification that has been suggested for marginal soils is timed, pressurized dosing of septic tank effluent to equalize flow over the entire drainfield. This eliminates the localized, saturated flow conditions that often occur after surge flows in conventional gravity-flow systems. Another suggestion has been the use of shallow dispersal options, especially the use of drip distribution systems in which the effluent is dispersed within the root zone of plants, which can then biologically take up phosphorus and incorporate it into plant tissue. These are more effective if any resulting non-woody plants are occasionally harvested to prevent localized phosphorus accumulation.

Research is also being conducted on adding a layer of material with a high capacity for immobilizing phosphorus to the drainfield. These materials would be added to the drainfield trenches between the drainlines and the original soil. Numerous materials have been considered including replacing gravel used in drainfields with limestone or tire chips. The effectiveness of tire chips comes from exposure of the iron present in steel belts. Many of the media that have been suggested for use in reactive media filters such as imported iron or aluminum-rich soils, industrial slag, or clay aggregates may also be candidates for incorporation into drainfield trenches.

The criteria for these types of drainfield amendments include a sufficient capacity to immobilize phosphorus and a texture that allows flow that is slow enough to provide adequate contact time but not so slow as to cause exces-

sive ponding. Because the material will eventually need to be replaced it is important that the material have a long lifespan so the need for replacement is infrequent. It is preferable if the spent material can be reused for horticultural or agricultural purposes. Cost considerations are, as always, a factor as well.

Because the need for better control of phosphorus from onsite wastewater systems is a slowly emerging issue, the options for dealing with it are also continuing to develop. As the need to better protect water resources and rehabilitate nutrient-impaired water bodies becomes more necessary it is likely that additional options for phosphorus control will also become available in the future.

References

Cucarella, Victor and Gunno Renman. 2009. "Phosphorus Sorption Capacity of Filter Materials Used for On-site Wastewater Treatment Determined in Batch Experiments—A Comparative Study." Journal of Environmental Quality, 38: 381-392. Accessed at: https://www.agronomy.org/publications/jeq/abstracts/38/2/381

Etnier, Carl et al. 2005. *Micro-Scale Evaluation of Phosphorus Management: Alternative Wastewater Systems Evaluation.* Project No. WU-HT_03-22. Prepared for the National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO by Stone Environmental, Inc., Montpelier, VT. Accessed at: http://www.ndwrcdp.org/research_project_WU-HT-03-22.asp

Glibert, Patricia, et al. 2005. "The Role of Eutrophication in the Global Proliferation of Harmful Algal Blooms." Oceanography, Vol. 18, No. 2. Rockville, MD. Accessed at: http://www.chnep.wateratlas.usf.edu/upload/documents/Eutrophication-AndHABs.pdf

Lombardo, Pio. 2006. *Phosphorus Geochemistry in Septic Tanks, Soil Absorption Systems, and Groundwater.* Lombardo Associates, Inc., Newton, MA. Accessed at: http://www.lombardoassociates.com/pdfs/060410-P-Geochemistry-FINAL-LAI-Version.pdf

Lowe, Kathryn et al. 2009. Influent Characteristics of the Modern Waste Stream from Single Sources. Water Environment Research Foundation, Alexandria, VA. Accessed at: http://www.ndwrcdp.org/documents/04-dec-1/04dec01web.pdf

Smil, Vaclav. 2000. "Phosphorus in the Environment: Natural Flows and Human Interferences." Annual Review of Energy and the Environment. 25:53-88. Accessed at: http://www.vaclavsmil.com/wp-content/uploads/docs/smil-article-2000-aree2000-2.pdf

Robertson, W.D. et al. 1998. "Review of Phosphate Mobility and Persistence in 10 Septic System Plumes." Groundwater, Vol. 36, No. 6. Accessed at: http://info.ngwa.org/gwol/pdf/982964321.PDF

Rosemarin, Arno. 2011. "Peak Phosphorus and the Eutrophication of Surface Waters: A Symptom of Disconnected Agricultural and Sanitation Policies" in *On the Water Front: Selections from the 2010 World Water Week in Stockholm*, J. Lundqvist (ed.). Stockholm Water Institute. Accessed at: http://www.worldwaterweek.org/documents/Resources/Best/2010/2011_OTWF_Arno_Rosemarin.pdf

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October 21, 2021

To Whom it Concerns,

Comment / Request for Thurston County Shoreline Master Program

Regarding 401 Summit Lake Shore Rd NW (parcel number 14813140203) and 409 Summit Lake Shore Rd (parcel number 14813140200) I oppose the change of designation from Rural to Rural Conservancy.

There are approximately 522 lots within the Summit Lake shoreline jurisdiction. Of those, only 2 properties, 401 and 409 Summit Lake Shore Rd are slated to be changed to a more restrictive designation.

Of the 522 lots, there are two properties currently designated as Conservancy. These two are proposed to be Rural Conservancy. This makes sense and is reasonable.

There are 520 lots currently designated Rural including 401 and 409 Summit Lake Shore Rd. Of these, 518 are proposed to be Shoreline Residential.

Here is the Designation Criteria for Rural Conservancy

- Outside incorporated municipalities and outside urban growth areas, AND at least one of the following:
- Currently supporting low-intensity resource based uses such as agriculture, forestry, or recreation.
- Currently accommodating residential uses
- Supporting human uses but subject to environmental limitations, such as properties that include or are adjacent to steep banks, feeder bluffs, wetlands, flood plains or other flood prone areas
- Can support low-intensity water-dependent uses without significant adverse impacts to shoreline functions or processes
- Private and/or publically owned lands (upland areas landward of OHWM) of high recreational value or with valuable historic or cultural resources or potential for public access.
- Does not meet the designation criteria for the Natural environment.

Yes, both 401 and 409 Summit Lake Shore Rd meet the primary and at least one of the secondary criteria for this designation. Also, the other 518 lots meet the primary and at least

one of the secondary criteria. Based on these facts, they too should be designated as Rural Conservancy.

Here is the Designation Criteria for Shoreline Residential.

- Does not meet the criteria for the Natural or Rural Conservancy Environments.
- Predominantly single-family or multifamily residential development or are planned and platted for residential development.
- Majority of the lot area is within the shoreline jurisdiction.
- Ecological functions have been impacted by more intense modification and use.

This is the proposed designation for 518 lots and they meet these criteria. 401 and 409 Summit Lake Shore Rd meet these criteria. Therefore, similar to the other 518 lots, 401 and 409 Summit Lake Shore Rd should be designated as Shoreline Residential.

Please change the proposed designation of 401 and 409 Summit Lake Shore Rd to Shoreline Residential.

Thank you,

Joel Waters

Joel Waters

409 Summit Lake Shore Rd

302

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Thank you,

Christopher Russo

401 Summit Lake Shore Rd