SHORELINE MASTER PROGRAM PERIODIC REVIEW COMMENTS

WRITTEN COMMENTS

AUG 2019 – JUL 2020

This document includes written comments received during the project from summer 2019 through July 20, 2020.

Additional comments received between July 20, 2020 and the August 20, 2020 Planning Commission Hearing will be forwarded to Planning Commission members and posted on the Planning Commission website as they are received.

A summary of the comments received during the 30-day public comment period held from January 28 – February 27, 2020 is provided in a separate document.

Click on the text below to quickly access that section of the document. Please note that there is no back button in the PDF to return to this page. You will need to scroll back to return.

Contents

From: Jenna Kay
To: Temple Lentz
Cc: Lindsey Shafar; Oliver Orjiako; Christine Cook
Subject: RE: Project Update: Shoreline Master Program Periodic Review
Date: Monday, June 15, 2020 10:48:00 AM

Hi Councilor Lentz,

Thanks for your note.

We are fine waiting to hear your feedback as part of a future work session with Council. We plan to inquire about those items at that time (hopefully sometime later this year, but timing is a bit uncertain at this point). Logistically, we think it could work to add any of the policy items of Council interest to future work programs rather than packaging as part of this periodic review. However, please let us know if you have any concerns with that approach.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Temple Lentz <Temple.Lentz@clark.wa.gov>
Sent: Saturday, June 13, 2020 3:42 PM
To: Jenna Kay <Jenna.Kay@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Re: Project Update: Shoreline Master Program Periodic Review

Hi Jenna-

So sorry for my delay on this. I don't have specific questions but I do have a general one -- with the items that required council input, is that waiting for a council session to discuss, or do you want input now? If now, please say the word and I'll respond (more promptly). Thanks!

From: Jenna Kay <Jenna.Kay@clark.wa.gov>
Sent: Friday, June 5, 2020 10:04 AM

To: Temple Lentz <Temple.Lentz@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: RE: Project Update: Shoreline Master Program Periodic Review

Good morning Councilor Lentz,

We are writing to follow-up on the below email to see if you have any questions for us. Please let us know if you do. We know you are very busy with COVID-19 matters.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Jenna Kay
Sent: Thursday, May 14, 2020 5:00 PM
To: Temple Lentz <Temple.Lentz@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Project Update: Shoreline Master Program Periodic Review

Greetings Councilor Lentz,

I am writing today regarding the Shoreline Master Program Periodic Review project. Shortly before the COVID-19 stay at home order went into effect, Community Planning had requested a conversation with Council to provide an update on the Shoreline Master Program (SMP) Periodic Review project. In lieu of an in-person discussion, attached please find a written update on this project and a proposal for next steps.

There are four items attached for your consideration, as follows:

- **Project update** memo
- Appendix A: **Summary of comments** received during a 30-day public comment period held in early 2020
- Appendix B: Copies of the ten (10) **comments** received

Appendix C: Current **draft proposed amendments**. There are no major policy changes in the proposal. Amendments in response to comments are highlighted; many address feedback from Ecology to bring the SMP into compliance with updated critical areas requirements.

Please let Oliver and me know if you have any questions.

Thank you,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Jenna Kay
To: Julie Olson
Cc: Lindsey Shafar; Oliver Orjiako; Christine Cook
Subject: RE: Project Update: Shoreline Master Program Periodic Review
Date: Friday, June 5, 2020 11:04:00 AM

Thank you Councilor Olson.

From: Julie Olson <Julie.Olson2@clark.wa.gov>
Sent: Friday, June 5, 2020 11:02 AM
To: Jenna Kay <Jenna.Kay@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Re: Project Update: Shoreline Master Program Periodic Review

Hi Jenna,

Thank you for following up with me. No, I don't have any specific questions. Thanks for all you do.

Julie Olson
Clark County Council District 2
julie.olson2@clark.wa.gov

"The function of Congress is not to convert the will of the majority into law, rather its function is to hammer out on the anvil of public debate a compromise between polar positions acceptable to a majority." William Mcculloch

> On Jun 5, 2020, at 10:05 AM, Jenna Kay <Jenna.Kay@clark.wa.gov> wrote:
>
> Good morning Councilor Olson,
>
> We are writing to follow-up on the below email to see if you have any questions for us. Please let us know if you do. We know you are very busy with COVID-19 matters.
>
> Regards,
> Jenna
>
> <image009.jpg>
>
> **Jenna Kay**
> Planner II
> COMMUNITY PLANNING
>
> 564.397.4968
>
> <image010.jpg> <image011.jpg> <image012.jpg>

From: Jenna Kay
Sent: Thursday, May 14, 2020 5:01 PM
To: Julie Olson <Julie.Olson2@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Project Update: Shoreline Master Program Periodic Review

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I am writing today regarding the Shoreline Master Program Periodic Review project. Shortly before the COVID-19 stay at home order went into effect, Community Planning had requested a conversation with Council to provide an update on the Shoreline Master Program (SMP) Periodic Review project. In lieu of an in-person discussion, attached please find a written update on this project and a proposal for next steps.

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Please let Oliver and me know if you have any questions.

Thank you,
Jenna

<image005.jpg>

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

<image006.jpg> <image007.jpg> <image008.jpg>

From: Jenna Kay
To: John Blom
Cc: Lindsey Shafar; Oliver Orjiako; Christine Cook
Subject: RE: Project Update: Shoreline Master Program Periodic Review
Date: Friday, June 5, 2020 10:22:00 AM

Thank you Councilor Blom.

From: John Blom <John.Blom@clark.wa.gov>
Sent: Friday, June 5, 2020 10:12 AM
To: Jenna Kay <Jenna.Kay@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Re: Project Update: Shoreline Master Program Periodic Review

Thank you Jenna -

No real questions. My only comment is that I would not be supportive of anything that moves us toward "net ecological gain" as a standard.

Best,

John

From: Jenna Kay <Jenna.Kay@clark.wa.gov>
Sent: Thursday, May 14, 2020 5:02 PM
To: John Blom <John.Blom@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Project Update: Shoreline Master Program Periodic Review

Greetings Councilor Blom,

I am writing today regarding the Shoreline Master Program Periodic Review project. Shortly before the COVID-19 stay at home order went into effect, Community Planning had requested a conversation with Council to provide an update on the Shoreline Master Program (SMP) Periodic Review project. In lieu of an in-person discussion, attached please find a written update on this project and a proposal for next steps.

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proposal. Amendments in response to comments are highlighted; many address feedback from Ecology to bring the SMP into compliance with updated critical areas requirements.

Please let Oliver and me know if you have any questions.

Thank you,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From:	Jenna Kay
To:	Gary Medvigy
Cc:	Lindsey Shafar; Oliver Orjiako; Christine Cook; Kristin Davidson
Subject:	RE: Project Update: Shoreline Master Program Periodic Review
Date:	Friday, June 5, 2020 1:03:00 PM

Thank you Councilor Medvigy. I can work with Kristin to get a call scheduled.

From: Gary Medvigy <Gary.Medvigy@clark.wa.gov>
Sent: Friday, June 5, 2020 12:40 PM
To: Jenna Kay <Jenna.Kay@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Re: Project Update: Shoreline Master Program Periodic Review

I have questions specific to Lacamas lake... maybe we can do a zoom call?
Best, Gary

Get Outlook for iOS

From: Jenna Kay <Jenna.Kay@clark.wa.gov>
Sent: Friday, June 5, 2020 10:06:20 AM
To: Gary Medvigy <Gary.Medvigy@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: RE: Project Update: Shoreline Master Program Periodic Review

Good morning Councilor Medvigy,

We are writing to follow-up on the below email to see if you have any questions for us. Please let us know if you do. We know you are very busy with COVID-19 matters.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Jenna Kay
Sent: Thursday, May 14, 2020 5:03 PM
To: Gary Medvigy <Gary.Medvigy@clark.wa.gov>
Cc: Lindsey Shafar <Lindsey.Shafar@clark.wa.gov>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>; Christine Cook <Christine.Cook@clark.wa.gov>
Subject: Project Update: Shoreline Master Program Periodic Review

Greetings Councilor Medvigy,

I am writing today regarding the Shoreline Master Program Periodic Review project. Shortly before the COVID-19 stay at home order went into effect, Community Planning had requested a conversation with Council to provide an update on the Shoreline Master Program (SMP) Periodic Review project. In lieu of an in-person discussion, attached please find a written update on this project and a proposal for next steps.

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Please let Oliver and me know if you have any questions.

Thank you,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Kevin Tyler
To: "frsuter@comcast.net"
Cc: Jenna Kay; Jennifer Taylor; Magan Reed
Subject: RE: [Contains External Hyperlinks] Questions
Date: Monday, March 16, 2020 3:24:55 PM

Hi Fred,

Thanks for your interest in culvert repair and fish passage in Clark County. I'm hopeful that my response below will answer your questions.

Clark County Public Works is working to implement a culvert program countywide that will seek to inventory all culverts and prioritize replacement of culverts based on several factors including risk to public infrastructure, available funding, and fish passage.

Clark County Public Works has also been applying for culvert replacement projects through the state's Fish Barrier Removal Board and Salmon Recovery Funding Board in recent years, and has been seeking partnerships with the Cowlitz Tribe and Lower Columbia Estuary Partnership on related projects. We are currently working on a project to design a new fish passable culvert on Mason Creek through a grant allocated by the state through the Fish Barrier Removal Board, and have submitted two additional grant applications.

Clark County Public Works has recently replaced several culverts with fish passable structures on sections of Gee Creek, Salmon Creek, and tributaries to the East Fork Lewis River. Clark County Public Works will replace four culverts with fish passable structures on Manley Creek starting this summer, and will replace a culvert on a tributary to Whipple Creek with a fish passable structure in summer 2021.

Please let us know if you have additional questions.

Thanks

Kevin Tyler
Lands Manager
PARKS & LANDS DIVISION
PUBLIC WORKS

564.397.4258
360.907.6552 mobile

From: Jenna Kay
Sent: Friday, March 13, 2020 2:02 PM
To: 'FRED SUTER'
Cc: Jennifer Taylor
Subject: RE: [Contains External Hyperlinks] Questions

Hi Mr. Suter,

I am writing to follow-up on your below email. Jennifer Taylor, copied here, works in the county's Public Works Department and should be able to provide you more information on the culvert topic.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: FRED SUTER [mailto:]
Sent: Friday, March 6, 2020 1:09 PM
To: Jenna Kay
Subject: [Contains External Hyperlinks] Questions

Hi Jenna - we talked several times - the latest at the Shoreline Mgmnt event hosted by Friends of Clark County.

This didn't come up for me during the public comment period, but I started to think about it recently. I have a few questions and I'm hoping you can either answer them or steer me in the right direction.

In 2013, a US district court ordered the State of Washington to replace culverts that were too damaged or too small and impeded the ability of salmon and other fish to reach their spawning ground.

In 2018, Gov Inslee established a task force to address the dwindling orca whale population in the Puget Sound and one of the task force recommendations was that

culverts be repaired, replaced, retrofitted to improve salmon habitat and restore salmon populations.

WSDOT estimated that it would cost $3.7 billion to satisfy the court order. The state legislature funded the effort at $100 million for 2019-2021. Gov Inslee has redirected other transportation budget funding to increase the funding for fish blocking culverts to $275 million and has asked for more further down the road.

https://www.governor.wa.gov/news-media/inslee-directs-state-agencies-immediately-ramp-culvert-repairs-ignored-legislators

In 2018, the Association of Washington Cities wrote:

"We are still working through our full understanding of the ramifications of this (ie the Court's) decision, but here are a few highlights:

- The state remains on the hook to fix hundreds of fish-blocking culverts underneath state highways, with a potential cost of several billion dollars without resources dedicated to this purpose.
- The state is obligated to fix almost all of their culverts under a very aggressive timeline, with little flexibility to prioritize investments where they will make the biggest difference.
- There's wide belief that the resolution of this case could ultimately point the way for the treatment of city- and county-owned culverts."

https://wacities.org/advocacy/News/advocacy-news/2018/06/13/u.s.-supreme-court-deadlock-on-culverts-case-ninth-circuit-decision-remains-the-law

My questions - has the state allocated any funds to the county for culvert repair?What is happening at the county level to address this?

Thank you - sincerely,

Fred Suter

From: Jenna Kay
To: "William Robison"
Subject: RE: SMP2020
Date: Tuesday, February 4, 2020 11:21:04 AM

Your welcome. Please let us know if you think of any other questions.

Regards,
Jenna

From: William Robison [mailto:brobison@ccrslaw.com]
Sent: Tuesday, February 4, 2020 9:52 AM
To: Jenna Kay
Subject: [Contains External Hyperlinks] RE: SMP2020

Thanks, the overlay of the relevant exhibit seemed to show a change that crosses the line, but when looking at it further I think there was no change.

William D. Robison
Caron, Colven, Robison & Shafton
900 Washington St., Ste. 1000
Vancouver, WA 98660
Phone: (360) 699-3001
Fax: (360) 699-3012
E-Mail: wrobison@ccrslaw.com<mailto:wrobison@ccrslaw.com>

From: Jenna Kay <Jenna.Kay@clark.wa.gov>
Sent: Tuesday, February 4, 2020 9:37 AM
To: William Robison <brobison@ccrslaw.com>
Cc: Brent Davis <Brent.Davis@clark.wa.gov>
Subject: RE: SMP2020

Hello Mr. Robinson,

Thank you for your inquiry.

I have looked up your property to see how the county proposal impacts it.

I am confirming that no shoreline map changes are proposed that would affect your property. There are some shoreline designation changes on the Plas Newydd farm property, due to the detailed mapping work they have done on their own property, but those changes do not extend to your

property.

Since your property is located along the Lewis River, much of your property does have a Rural Conservancy Resource Land shoreline designation. That designation has been on your property for many years, so it is nothing new.

Please let me know if I can provide more information or answer additional questions. I have also copied our shoreline administrator on this email in case you have any additional questions he can help answer.

Thank you again for reaching out.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: William Robison [mailto:brobison@ccrslaw.com]
Sent: Monday, February 3, 2020 4:59 PM
To: Jenna Kay
Subject: SMP2020

I own Pekin Ferry which abuts the east edge of Plas Newydd farm. It appears to me that this plan proposes to re designate my property as Rural Conservancy Resource Land. Is that true? Is it intentional? If so why?
Bill Robison 34115 n.w. Pekin Ferry road Ridgefield.

Sent from my Verizon, Samsung Galaxy smartphone

From:	Jenna Kay
To:	Help Desk-County
Subject:	FW: Shoreline Master Plan feedback - Marinas
Date:	Monday, February 10, 2020 10:44:50 AM

From: Mail Delivery System [mailto:MAILER-DAEMON@smtp2.clark.wa.gov]
Sent: Thursday, February 6, 2020 4:57 PM
To: Jenna Kay
Subject: Undeliverable: Shoreline Master Plan feedback - Marinas

Delivery has failed to these recipients or groups:

outlook_B7B3E16CDC438A8B@outlook.com
A communication failure occurred during the delivery of this message. Please try resending the message later. If the problem continues, contact your helpdesk.

The following organization rejected your message: outlook-com.olc.protection.outlook.com.

Diagnostic information for administrators:

Generating server: smtp2.clark.wa.gov

outlook_B7B3E16CDC438A8B@outlook.com
outlook-com.olc.protection.outlook.com #<outlook-com.olc.protection.outlook.com #5.5.0 smtp; 550 5.5.0 Requested action not taken: mailbox unavailable.> #SMTP#

Original message headers:

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 <outlook_B7B3E16CDC438A8B@outlook.com>; Fri,  7 Feb 2020 00:56:34 +0000 (GMT)
Received: from cas.clark.wa.gov (esxvm401.clark.root.local [141.185.2.177]) by
 smtp2.clark.wa.gov (Sophos Email Appliance) with ESMTP id C2877F3033_E3CB5C1F
        for <outlook_B7B3E16CDC438A8B@outlook.com>; Fri,  7 Feb 2020 00:56:33
+0000
 (GMT)
Received: from ESXVM406.clark.root.local ([141.185.2.168]) by
 esxvm401.clark.root.local ([141.185.2.177]) with mapi id 14.03.0468.000; Thu,
 6 Feb 2020 16:56:33 -0800
From: Jenna Kay <Jenna.Kay@clark.wa.gov>
To: 'William K Mathison' <outlook_B7B3E16CDC438A8B@outlook.com>
Subject: RE: Shoreline Master Plan feedback - Marinas
Thread-Topic: Shoreline Master Plan feedback - Marinas
Thread-Index: AQHV3U2RXPCaJih0CEuyJdvVM2uvu6gO45QQ
Date: Fri, 7 Feb 2020 00:56:33 +0000
Message-ID:
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<BY5PR08MB6406530A4796F47A5EA44DCBEC1D0@BY5PR08MB6406.namprd08.prod.outlook.com>
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From: Jenna Kay
To: "William K Mathison"
Subject: RE: Shoreline Master Plan feedback - Marinas
Date: Friday, February 7, 2020 7:55:04 AM

Mr. Mathison,

I am writing to confirm receipt of your comment and to thank you for your participation in the county's Shoreline Master Plan periodic review project.

In case it's helpful to know, in addition to the county's Shoreline Master Program review, each of the cities in Clark County will also be reviewing their Shoreline Master Programs over the course of the next year to year and a half, and will also be holding comment periods. I encourage you to share your comments with these other local jurisdictions as well.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: William K Mathison [mailto:outlook_B7B3E16CDC438A8B@outlook.com]
Sent: Thursday, February 6, 2020 4:36 PM
To: Jenna Kay
Subject: Shoreline Master Plan feedback - Marinas

Dear Jenna,

One thing that needs to be improved with the Shoreline Master Plan is the marina situation in Clark County. Marina improvements at existing marinas and adding a Marina to The Waterfront in downtown Vancouver.

The Ridgefield Marina needs more transient moorage/boat rental slips and docks. It has a small/newer covered boat slip building that is very nice but the few uncovered docks and slips are so

primitive and rickety a boat would surely get scratched and dented using them, and the electrical looks scary. The few marinas, docks, and boat slips we have on Washington shores should be kept in first class condition NOT distressed.

The Waterfront development in downtown Vancouver made a huge mistake not expanding the ridiculously tiny little transient boat dock. With the new Waterfront Vancouver should be a boating destination. It should have a marina similar to the Riverplace Marina in downtown Portland. The excuses I have heard for not including a nice marina at the biggest City on the Columbia River Washington waterfront are very lame… I consider the excuses an abuse of power by environmental extremists who want everything off limits to humans. There needs to be more balance than that.

The Camas/Washougal Marina is very nice. Bottom line Clark County deserves decent Marinas in Ridgefield, Vancouver, and Camas/Washougal to cover the west, central, and eastern sides of the County. Steamboat landing is a nice private marina but not much of a destination for transient visitors.

This is not too much to ask. Just look at all the marinas on the Portland side. This would be a fraction of what they have. I am not a lone voice on this subject.

Sincerely,

William K Mathison
Battle Ground, WA
360-903-5951

From: Cathy Steiger
To: Jenna Kay
Subject: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: Salmon creek
Date: Saturday, February 8, 2020 10:27:27 AM

Thank you for your attention. Regards, Cathy

On Feb 7, 2020, at 1:35 PM, Jenna Kay <Jenna.Kay@clark.wa.gov> wrote:

Hi Cathy,

It will be the city's Community Development team that manages the shoreline master program, any updates to it, and implementation of it. Any changes to the plan would be approved by the city's Council as well as the state Dept. of Ecology. The Dept. of Ecology is also involved on the implementation side of shoreline master programs too.

I'm not sure who the city's primary shoreline contact is, but if you contact Sam Crummett, the Community Development Director, he should be able to direct you to the best person and answer additional city-specific questions.

Hope this helps.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Cathy Steiger [mailto:forks.cate@gmail.com]
Sent: Friday, February 7, 2020 12:03 PM
To: Jenna Kay
Subject: [Contains External Hyperlinks] Re: Salmon creek

Your answer is what I assumed, but does does give me comfort. What agency approves and follows compliance with City of Battle Ground or any other incorporated area?

On Feb 7, 2020, at 11:56 AM, Jenna Kay <Jenna.Kay@clark.wa.gov> wrote:

Hi Cathy,

Thank you for your note.

The county's Shoreline Master Program only applies to the unincorporated parts of the county. The City of Battle Ground has its own Shoreline Master Program that covers the shorelines of the state within its boundaries, such as Salmon Creek. Similarly, each of the other cities in Clark County have their own Shoreline Master Programs.

Hopefully that answers your question, but if not, please let me know.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

-----Original Message-----
From: Cathy Steiger [mailto:forks.cate@gmail.com]
Sent: Friday, February 7, 2020 11:51 AM
To: Jenna Kay
Subject: Salmon creek

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi, Jenna,
I see no change proposed for Salmon Creek near me. I am frighten, tho , that it appears jurisdiction and rules governing our stream seems to end where the City of Battle begins. What's with that? Rules for Streams of Statewide Significance I assumed were comprehensive.

What is the jurisdictional overlay of regulations.?

Thank you, Cathy Steiger

This e-mail and related attachments and any response may be subject to public disclosure under state law.

From: Jenna Kay
To: "SHARLEEN JAMES"
Subject: RE: Shoreline program
Date: Monday, February 10, 2020 10:11:03 AM

Hello,

Thanks for reaching out.

There are no proposed changes in the county's proposal related to boater access on private property. Does that answer your question? If not, please let me know.

Also, in case it is helpful: the county's proposal only applies to the unincorporated areas in Clark County. If your property happens to be located in one of the cities along the Columbia, i.e. Vancouver, Camas, or Washougal, then the county's proposal would not apply to you.

Please let me know if I can provide any additional information.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

-----Original Message-----
From: SHARLEEN JAMES [mailto:sjames2996@aol.com]
Sent: Saturday, February 8, 2020 4:38 PM
To: Jenna Kay
Subject: Shoreline program

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi. I happen to own tide lands along the Columbia River. Are you proposing any changes such as letting boaters up on our property such as Oregon does?

Sent from my iPhone

From: Derek Huegel
To: Jenna Kay
Subject: Shoreline Comments
Date: Monday, February 24, 2020 5:51:21 PM

Hi Jenna,

I would like to request modifications to the list of exemptions preventing folks from building within 100' of a state shoreline. Currently WAC 173-27-040 does not have a provision for a hardship / temporary permit to be issued under a non-substantial development permit and I think there should be.

I think there should be because:

1. The impact the area is less or equal to building a single family home which is currently allowed
2. The use is temporary in nature – it's a hardship
3. The cost of doing a substantial development permit is 8k – 15k and isn't guaranteed – this itself is a hardship.
4. The true number of hardships is limited in it's very nature – this won't be a catalyst for major # of homes going in.
5. I have a customer that want's a house in the area but can't do it legally because she doesn't have the $ or time to get a substantial development permit and therefore she lives in an RV – terrible situation.

I hope this helps formulate a decent/persuasive case to change the code to allow Hardship Permits without the stress of doing a substantial development permit.

Thanks,

Derek Huegel
360-314-8037

From: Derek Huegel
To: Jenna Kay
Subject: Shoreline comments
Date: Tuesday, January 28, 2020 10:25:20 AM

Hi Jenna,
Is now the time to make the comments to the state about allowing a hardship near the shoreline?
Thanks,

Derek Huegel
Wolf Industries, Inc.
C: 360.314.8037 O: 360.723.5307

From: Denis Markian Wichar
To: Jenna Kay
Subject: Shoreline Master Plan Review
Date: Tuesday, February 25, 2020 3:18:42 PM

My main concern about the county's shoreline is that what little wetland remains should not be compromised in any way. Already, the only wetland remaining between the two interstate bridges is on the Washington side, at Water Resources Education Center. That is pathetic. Actually, it would be great if the county could and would restore wetland that once existed.

Den Mark Wichar
711 W 25 St
Vancouver WA 98660

"We learn from history
that we don't learn from history."
--- Anglican Archbishop Desmond Mpilo Tutu

From: Sue Marshall
To: Jenna Kay
Cc: Jim Byrne; Fred Suter; Mark Leed (markleed02@gmail.com); Oliver Orjiako
Subject: [Contains External Hyperlinks] Joint Comments FOCC, Sierra Club re Update SMP
Date: Wednesday, February 26, 2020 1:49:49 PM
Attachments: FoCC & Sierra Club Comments CC Shoreline Management.docx

Hello Jenna,

Please accept the attached joint comments from Friends of Clark County and Sierra Club - Loo Wit Group, regarding the Shoreline Master Program update.

Thank you very much for your time in meeting with several of us regarding the SMP. It was a very helpful and we appreciate that you and Brent Davis provided your expertise.

We look forward to hearing back from you as the process moves forward.

Best regards,

Sue Marshall

Sent from Outlook

Feb. 26, 2020

Jenna Kay
Clark County Community Planning
PO Box 9810,
Vancouver, WA 98666-9810

REGARDING: FRIENDS OF CLARK COUNTY – SHORELINE MANAGEMENT UPDATE COMMENTS

Dear Ms. Kay:

Friends of Clark County (FoCC, Friends) appreciates the opportunity to comment on the 8 year update of its Shoreline Master Program (SMP), as required by the Washington State Shoreline Management Act (SMA), **RCW 90.58.080(4)**. The following comments are jointly submitted on behalf of Friends of Clark County and Sierra Club – Loo Wit Group.

The County has determined "The Shoreline Master Program (SMP) is a set of policies and regulations required by state law that has three basic policy areas: fostering reasonable and appropriate uses, protecting natural resources and promoting public access. There are seven shoreline designations aquatic, natural, urban conservancy, medium intensity, high intensity, rural conversancy residential and rural conservancy resource." Some of these designations are somewhat confusing such as natural, urban conservancy, medium intensity, rural conversancy residential and rural conservancy resource. Perhaps clearer descriptions could be developed including allowable uses in each category.

No Net Loss

County planners have determined, "No net loss is a key concept of the Shoreline Management Act (SMA). It means that the condition of shoreline ecological functions post-development need to be at least equal to pre-development ecological functions. The no net loss standard is designed to balance the introduction of new impacts to shoreline ecological functions resulting from new development through mitigation sequencing and restoration. Any amendments to the Shoreline Master Program that may occur

through this periodic review process will need to comply with the no net loss standard." Friends believes the County needs to go further than merely "No Net Loss.

Net Ecological Gain

Presently there are two bills in the legislature, HB 2549 and HB 2550. **HB 2549 - Integrates salmon recovery efforts with growth management.** This bill revises the role of "No Net Loss" into one of a net ecological gain. This is a more modern, enlightened concept and reflects the failings of previous mitigation projects coupled with the effects of climate change. It is being addressed in the Governor's salmon recovery efforts and in potential salmon recovery dollar distributions. Friends encourages staff to review this concept and incorporate it into current planning.

HB 2550 - Establishing net ecological gain as a policy for application across identified land use, development, and environmental laws, is an environmental community priority that may have far reaching implications for state and city environmental regulatory efforts. The Washington Association of Cities states, "The premise of the proposal, sponsored by Rep. Debra Lekanoff (D–La Conner), is that the decline of Washington State Southern Resident Orca and our inability to recover the state's endangered salmon runs can be traced to the lack of rigor in the state and local environmental regulations. The argument is that the state's current "no net loss" approach to environmental standards has failed and that we must institute a "net ecological gain" standard. In recent reviews, planners and legislators have followed the success of the "No Net Loss" concept and have found it lacking. . . . "Net ecological gain" means a standard for a development project, policy, plan, or activity in which the impacts on the ecological integrity caused by the development are outweighed by measures taken consistent with the new mitigation hierarchy to avoid and minimize the impacts, undertake site restoration, and compensate for any remaining impacts in an amount sufficient for the gain to exceed the loss.

Net Ecological Gain. "The concept of net ecological gain is defined for purposes of the Growth Management Act (GMA) as a standard for a development project, policy, plan, development regulation, or activity in which the environmental impacts caused by the development are outweighed by measures taken consistent with the mitigation hierarchy. The mitigation hierarchy is established as the following management options to address environmental impacts, in **descending order of priority**:

- avoidance;
- minimization;
- rehabilitation or restoration;
- offset;
- and compensation." **HB2549**

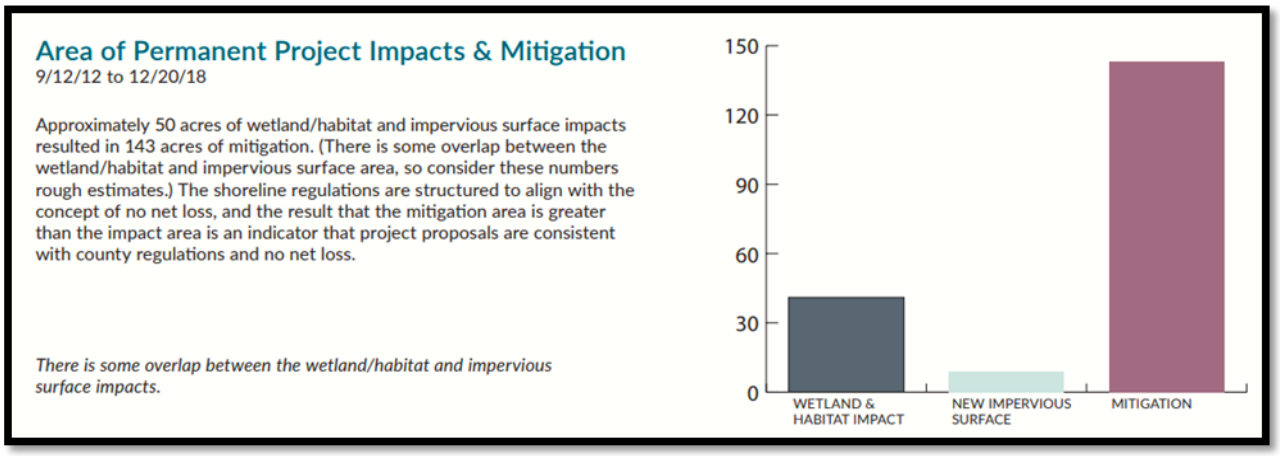
FoCC believe the mitigation activities, should be avoided if possible. This should be the County's first choice. and should be proactively incorporated early in long range planning and zoning determinations to most effectively **avoid** impacts. If the action cannot be avoided, then it should be kept to a minimum. If mitigation is to occur, it must stay on the same site, or at least in the same watershed. This is designated in Policies 1 & 2 of Chapter 13 Comprehensive Plan – SMP Periodic Review – Jan 2020 Draft, exhibit 2 pg. 5, ". New developments should be located in such a manner as to not require shoreline stabilization measures. 2. When necessary, natural, non-structural shoreline stabilization measures are preferred over structural stabilization measures. Alternatives for shoreline stabilization should be based on the following hierarchy of preference: No action", . . . then increasing actions needed to minimize disturbance.

Friends agree with net ecological gain and with this priority system. We do not believe it needs to be incorporated into state law, prior to the County adopting it as a guiding policy. We would like to see Clark County in the fore front of promoting this concept. Since it exceeds rather than diminishes the existing standard; it should be legally defensible.

Net Ecological Gain to Address Clean Water Act Compliance

There is an opportunity when development is proposed along a shoreline to address water quality limiting parameters such as elevated temperature, decreased dissolved oxygen, increased turbidity and bacteria. Each site should be evaluated not just for the impact of the development, but also the **site potential** to correct for previous impacts that exacerbate poor water quality. The riparian planting program of Clean Water Services in Washington County, Oregon, is a good example where riparian planting to restore stream buffers are requirement in both land use permitting and a component of their NPDES water quality permit.

The County has provided an inventory of project impacts and mitigation acreage (see below). The chart appears on the County's Shorelines Update webpage. It appears to indicate 50 acres of wetland and shoreline activity, resulted in 143 acres of mitigation. More acres were created through mitigation than consumed from development activities during 2012 through 2018. The ratio of development acres to mitigation acreage is not apparent in this graph. It is not clear how these ratios are set. The different ratios per mitigation activity should be listed for the public. In face of climate change, Friends advocates for increasing the ratio of mitigation for disturbed lands (see climate change section).



Friends has great concern with the present use of the term "Mitigation". Numerous studies indicate it does not produce the desired effects associated with no net loss. The concept of "No Net Loss" is hard to document, particularly in shoreline areas where levels of shading, underground water flow, temperature increase are difficult to monitor, particularly in the short term. Mitigation needs to be effective in the long term and on many levels, not just the aesthetic.

Often, on the ground, mitigation refers to an acre for acre land swap according to some set ratio. The results are most often visual, without a true evaluation of the true functions and values of an individual parcel. Most often overlooked, are the hyporheic flows that a particular shoreline parcel might provide. Because these flows are sub-surface, they are not often recognized; but are essential to the proper function and values of that shoreline parcel. Tree removal and shade are also functions, that can seem to be easily exchanged, but this is not often the case. Shoreline ecological functions post-development need to be at least equal to pre-development ecological functions. It is the functions and values that must be protected, not merely a swap of modified land.

The focus of the mitigation should be protecting the functions and values of that particular parcel. This means maintaining the hyporheic flow, shade and other functional values; not merely the aesthetics of the property. The functioning needs to occur in perpetuity if possible.

Mitigation Literature Review

In the past, Clark County has relied heavily on mitigation to insure "No Net Loss", but there are no assurances that it truly works, in restoring subterranean the functions and values associated with a particular parcel. There is doubt that these functions can be completely duplicated or replaced. Here are six peer reviewed citations regarding the effectiveness of mitigation efforts:

● Results from a WASDOT review demonstrated that wetland mitigation on sites were not completely effective. Only one of the 30 mitigation sites reviewed for this study met all of the specified goals, and a few had significant shortfalls. Sixteen of 30 mitigation sites did not obtain their required wetland acreage, and only 96 of 173 performance standards were achieved during the intended monitoring period for sites included in this study. From: **AN EVALUATION OF WETLAND MITIGATION SITE COMPLIANCE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION 2005. Fredrick S. Bergdolt, 1 Cynthia A. Prehmus, 2 and Jesse B. Barham 3 Washington State Department of Transportation, P.O. Box 47332, Olympia, Washington, USA 98504-7332**.

● Based on reviews of both published literature and agency reports, our survey of past mitigation projects nationwide indicates that the success rate of permit - linked mitigation projects remains low overall. In addition, there is continuing difficulty in translating mitigation concepts into legal principles, regulatory standards, and permit conditions that are scientifically defensible and sound. Based on the record of past poor performance, we assert that continued piecemeal revision efforts focused on technical or scientific details are not likely to make compensatory mitigation more effective. From: **Race, M.S. and Fonseca, M.S. (1996), Fixing Compensatory Mitigation: What Will it Take?. Ecological Applications, 6: 94-101. doi:10.2307/2269556**

● Washington. In Washington State, 71 percent wetland compensatory mitigation projects were failing to meet basic permit requirements (Johnson, et al., 2000). In addition, only 65% of the total acreage of wetlands lost was replaced by wetland creation or restoration of new wetland area and only 63% of projects were at least partially compensating for the permitted wetland losses. . . . Mitigation plans should include a detailed assessment of land uses at local, watershed and regional scales including projected changes in land use and development. There has been inadequate assessment of ecosystem integrity and quality. Success criteria for mitigation has often been developed for permit requirements without regards to restoration of ecosystem integrity which encompasses the physiochemical and biological attributes of the wetland or stream.

Discussion -- Successful compensatory mitigation for wetland losses and stream impacts requires restoration of dynamic processes, function, and structure. The intent of restoration is to partially or fully reestablish the attributes of a naturalistic, functioning, self-regulating system (USACE, 1999). Wetland mitigation projects have generally failed due to inadequate incorporation of a hydrologic assessment (Bedford, 1996). The key to a successful stream or wetland restoration is an understanding of the underlying hydrogeomorphic processes, how to measure them and how to replace or incorporation those processes into the restoration project. Successfully compensating for wetland losses requires duplication of wetland structure and function; however, simple measures of function do not exist (Zedler, 1996). From**: Compensatory Mitigation: Success Rates, Causes of Failure, and Future Directions By Bruce A. Pruitt, PhD, PH, PWS US Army Corps of Engineers Engineer Research and Development Center Presented at the Environmental Law Summer Seminar July 26-27, 2013 The Omni, Amelia Island Plantation, FL**

● Estimates of mitigation success vary, but local, regional, and national studies show that most mitigation projects fail to fully achieve their intended goals and are not effectively replacing lost or

damaged resources, habitats, and functions. We are not even close to achieving the goal of no net loss for wetlands and other aquatic habitats.

Land use planning and permit decisions are not adequately informed by an understanding of ecosystem processes or watershed conditions. Opportunities to direct mitigation dollars to the most beneficial restoration and conservation efforts likely are being lost. As a result, we may be inadvertently driving development into the areas that are more appropriate and suited for restoration or conservation. At the same time, there is not confidence that conservation and restoration priorities are harmonized with other local efforts to maintain a buildable lands inventory and protect resource lands, especially agricultural lands. From: **Making Mitigation Work: The Report of the Mitigation that Works Forum p. 1 WA State Dept. of Ecology, PO Box 47600, Olympia WA 98504 - 7600 Publication Number #08 - 06 - 018**

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● Several studies determined the level of success of compensatory mitigation projects . . . Though the data indicated that some projects were successful and some projects were unsuccessful, most compensation projects had an intermediate level of success, meaning they were neither fully successful nor completely unsuccessful.

• 25 to 66% of projects were determined to have an intermediate level of success
• 3 to 43% of projects achieved full success
• 7 to 97% of projects were unsuccessful, though half of the studies found that at least 20% of projects were unsuccessful . . . From: **D. Sheldon, T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale, *Wetlands in Washington State - Volume 1: A Synthesis of the Science* p. 6-8 (Washington State Department of Ecology Publication #05-06-006 Olympia, WA: March 2005)**

● The effectiveness of habitat compensation projects in achieving no net loss of habitat productivity (NNL) was evaluated at 16 sites across Canada. Periphyton biomass, invertebrate density, fish biomass, and riparian vegetation density were used as indicators of habitat productivity. Approximately 63% of projects resulted in net losses in habitat productivity. From: **Effectiveness of Fish Habitat Compensation in Canada in Achieving No Net Loss. 2006. Quigley J. T. and D. J. Harper, Environmental Management Vol. 37, No.3, pp. 351-366**

Currently, "No Net Loss" is a key concept of the Shoreline Management Act (SMA). It means that the condition of shoreline ecological functions post-development need to be at least equal to pre-development ecological functions. The no net loss standard is designed to balance the introduction of new impacts to shoreline ecological functions resulting from new development through mitigation sequencing and restoration. The county must achieve this standard through both the Shoreline Master Program planning process and appropriately regulating individual developments as they are proposed in the future." From – **Clark Co Display Panel, Shorelines website.**

FoCC believes there has been a too heavy reliance on mitigation to maintain the concept of no net loss within Clark County. The citations above indicate mitigation has yet to be proven as an effective habitat preservation tool. If the County proposes to utilize mitigation, there needs to be some assurance that the mitigation process is working, with a series of annual inspections to assure effectiveness and compliance. Evaluations of mitigation success or failure need to be made available to the public. Citizens just cannot take it on faith that mitigation works in the face of many scientific studies indicating it is ineffective in many instances and does result in loss of function. The mitigation must be effective for a long timeframe (20 years); ideally in perpetuity.

HB 2549 also incorporates salmon recovery as one of the listed goals of the GMA. "It is specified to include supporting the recovery and enhancement of salmon stocks through net ecological gain from growth planning designed to fulfill tribal treaty obligations and achieve the delisting of threatened or endangered species. The environment and open space and recreation goals of the GMA are also amended to establish a goal of net ecological gain with respect to the protection of the environment and the conservation, protection, and restoration of fish and wildlife habitat."

Future Climate Change

Climate change and raising sea levels due to melting polar caps will alter the County's shorelines in the future. As the ocean rises, more water will flood into the Columbia River and its Clark Co. tributaries (Lewis River and East Fork Lewis, Salmon Creek, Lake River, Vancouver Lake, and the Washougal River. These water bodies will climb higher onto the shoreline. The 100-year floodplain is one of the criteria for determining shoreline jurisdiction. The shoreline boundaries will need to be modified in areas where the 100-year floodplain has changed and results in a shift to new and higher shoreline jurisdictions. This impact to county waters needs to be addressed on a frequent and re-occurring basis.

The County will need to develop a mechanism / process in place to address this in the planning and permitting process. Then, County mapping and zoning will need to reflect the reality of the 100-year floodplain and rising sea levels as reflected in current Univ. of Washington and FEMA data. The county appears to have done this. County maps are good. We have no discrepancies with lands included or excluded from the current shoreline designation; however, Certain high bank areas (Wiseman development on East Fork Lewis) are currently sloughing off into the river. Setbacks on high bank or cliff areas; need to be extended further back to protect homes and ensure family safety.

Climate change poses the issue of higher sea level and flooding. But it also can decrease stream flows in warmer months. The last six summers have shown very reduced flows (<40 CFS- a near all-time record) in the East Fork summer flow. While summer flows are down, summer water temperatures are higher than normal. The Dept. of Ecology lists the East Fork Lewis as a 303 (d) river, exceeding the threshold 64^{o} F. temperature for salmonid fishes and excessive bacteria levels. This is especially true for the lower portions of the river. The river below Heisson regularly exceeds this temperature during summer months. Most of the river below this point is unsuitable for trout and salmon during summer. The County should fly drones along the rivers in the summer, monitoring for illegal water withdrawals for lawns and gardens. Riparian landowners should not exceed their water rights, when known. The County needs to beef up its enforcement efforts, and not rely on neighbors informing on fellow citizens.

Temperatures continue to increase beyond those suitable for ESA listed Fish. It is critical that the Shoreline Management Plan lines up with temperature, flow, shade, and other habitat attributes as defined in the fish and wildlife habitat critical areas ordinance. The County must assure that fish species are meeting the latest standards as proposed by WDFW, including extra riparian vegetation in Chinook habitats.

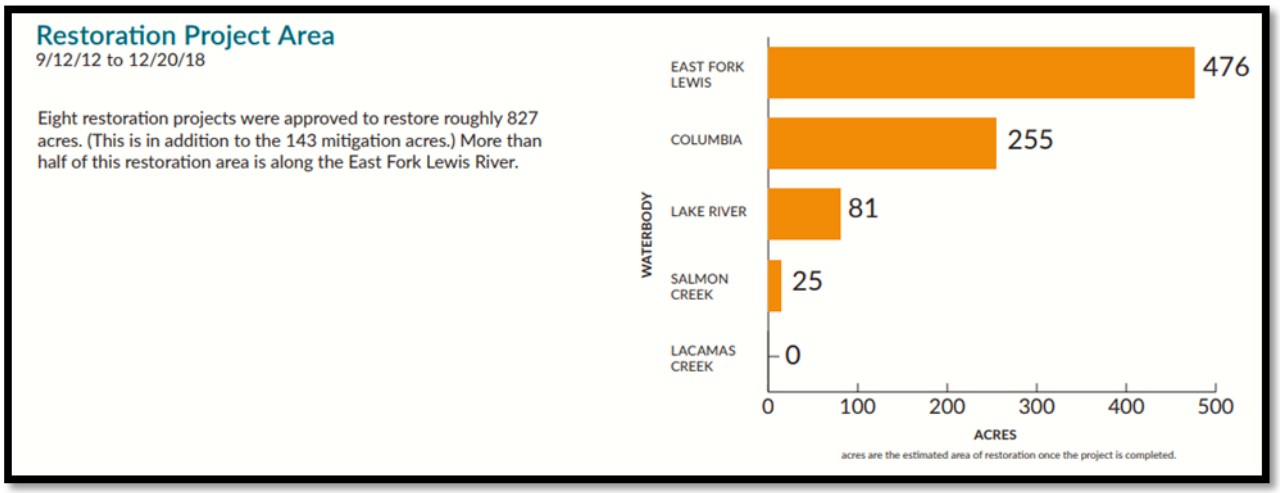
Climate change will also cause a drying of vegetation and increased fire danger in shoreline and other areas. Buffers near homes will need to be extended to provide additional fire protection in shoreline and all areas.

Because we are advocating for an ecological net gain policy; as protected waters fail to meet required standards, what will the County do? What additional mitigation can be employed to counter these losses? What is the impact on ecological net gain or no net loss? What will be the County's proactive plans?

We urge the county to incorporate adaptation to climate change in the Shoreline Management update.

Restoration Success

Below is an inventory of Restoration Project Areas in Clark County. As you can see from the graph, the majority (58%) of effort has occurred in the East Fork of the Lewis River Basin. Since 2000, the Lower Columbia Fish Recovery Board has delivered $12.6 million for fish recovery efforts in the East Fork. Much of that was devoted to fish restoration efforts. Clark County has continued to acquire parcels along the East Fork through the Legacy Lands program, costing millions of dollars. In November 2017 alone, the County Councilors authorized issuing $7 million in bonds to purchase 10 properties spread across the county. Six of which are located in the East Fork Basin



Yet, the East Fork Lewis continues to have increased temperatures and reduced flow regimes, during summer. It is on the Dept. of Ecology's 303(d) list of rivers that fail in temperature flow and bacteria levels. Salmonid numbers returning to the East Fork are also in decline. This would indicate the restoration projects on the East Fork are not realizing their intended goals. The county is not getting a good return for the millions of dollars spent in land acquisition and restoration efforts. Current restoration efforts do not appear to be working. A shift to "Net Ecological Gain" is needed.

Friends agrees with the listed County's Shoreline Modification and Stabilization goal, "The goal for shoreline modification and stabilization is to avoid or minimize the need for shoreline armoring along shorelines of the state and when it is necessary, achieve it in a way that best protects ecosystem processes, shoreline ecological functions and downstream properties", in Exhibit 2 Proposed Amendments to Chapter 13 of the Clark County Comprehensive Growth Management Plan 2015-2035.

Under the goal for Views and Aesthetics, "The goal for views and aesthetics is to assure that the public's opportunity to enjoy the physical and aesthetic qualities of shorelines of the state, including views of the water, is protected to the greatest extent feasible". However, riparian shoreline vegetation which may be less visually pleasing, is essential in providing and preserving riparian shoreline habitat. A clean swarth of grass running to the shoreline edge may be visually enticing, but it does not provide the functions and values of riparian vegetation. Shrubs and their shade, cool water and provide needed insects as food for fish and other species. We should not remove shrubs and trees and replace with grass. Shoreline vegetation should be enhanced, particularly in Chinook habitats.

We would like to see all priority species and habitats protected from nearby adverse uses, not just point habitats. This is particularly important in streams and rivers, where listed threatened and endangered fish species reside and migrate. Streams and riparian areas are often used as migration corridors for many listed and unlisted fish and wildlife species.

In summary, Friends would like to see the County:

- Embrace a shift from "No Net Loss" to a "Net Ecological Gain" objective; to more effectively meet standards that protect and restore public resources. We believe in the hierarchy of mitigation: to more seriously avoid impacts, keep disturbance to a minimum, mitigate on site, and if that is not possible – mitigate in the same reach.
- Monitor new and existing mitigation efforts for functions and values, and to ensure full compliance over time (20 years) and report findings to the public.
- Prepare for anticipated Climate Change Effects of rising sea-level, increased water temperature, and reduced summer stream flows.

Thank you for your attention.

Sincerely,

Sue Marshall, President
Friends of Clark County.

Mark Leed, Chair
Sierra Club – Loo Wit Group

From: Tim Trohimovich
To: Jenna Kay
Subject: [Contains External Hyperlinks] Futurewise's comments on the Clark County Shoreline Master Program Update
Date: Wednesday, February 26, 2020 3:20:48 PM
Attachments: image003.png
Futurewise Coms on Clark Co SMP Update Feb 26 2020 Final.pdf

Dear Ms. Kay:

Enclosed please find Futurewise's comments on the Clark County Shoreline Master Program Update. This letter references documents on a data CD we mailed to you yesterday. It should arrive tomorrow.

If you need anything else, please let me know.

Tim Trohimovich, AICP (he/him)
Director of Planning & Law

Join me for the 30th Anniversary Spring Luncheon & Livable Communities Awards!
816 Second Avenue, Suite 200
Seattle, WA 98104-1530
206 343-0681 Ex 102
tim@futurewise.org
connect:
futurewise.org

February 26, 2020

Ms. Jenna Kay, Planner II
Clark County Community Planning
PO Box 9810
Vancouver, Washington 98666-9810

Dear Ms. Kay:

Subject: Comments on the 2020 Shoreline Master Program (SMP) Periodic Review.
Send via email to: jenna.kay@clark.wa.gov

Thank you for the opportunity to comment on the 2020 Shoreline Master Program (SMP) Periodic Review. Futurewise strongly supports the review and update. The update is an important opportunity to provide for the recovery of important fish and wildlife resources such as the Chinook salmon and to begin addressing the adverse effects of global warming including sea level rise and increased wildfire danger. We have recommendations address these important issues and to strengthen the SMP review and update included in this letter below.

Futurewise works throughout Washington State to support land-use policies that encourage healthy, equitable and opportunity-rich communities, and that protect our most valuable farmlands, forests, and water resources. Futurewise has members and supporters throughout Washington State including Clark County.

This letter will first summarize our recommendations. We then explain the recommendations in more detail.

Summary of the Recommendations

- Futurewise agrees with the Friends of Clark County and the Sierra Club recommendations that avoiding impacts should be required whenever possible. The Shoreline Master Program Update should include stronger avoidance and minimization requirements. Please see page 2 of this letter for more information.
- Futurewise recommends that Clark County require wider setbacks between development and shoreline and critical areas buffers to protect homes and property from wildfire danger. Please see page 4 of this letter for more information.
- Futurewise strongly recommends that the Clark County Shoreline Master Program (SMP) should comprehensively address sea level rise and include regulations protecting people, property, and the environment from the adverse effects of sea level rise. As is documented below, sea level rise is accelerating and buildings need to be protected from increased flooding. Please see page 4 of this letter for more information.

- We recommend that the County require an analysis of all geologically hazardous which can adversely impact a proposed development and require case-by-case determinations of landslide buffers based on the risk to the proposed development. This will better protect people and property. Please see page 7 of this letter for more information.
- Clark County should adopt up-to-date riparian buffers in Clark County Code (CCC) 40.460.530F.1.a.(3) and CCC 40.460.570 to protect Chinook habitat and other aquatic habitats. Please see page 11 of this letter for more information.
- Please clarify that the SMP protects fish and wildlife habitats depicted in the PHS GIS database as points, lines, and areas. This is needed to protect all priority species and habitats and to comply with the Shoreline Master Program (SMP) Guidelines. Please see page 12 of this letter for more information.
- Please clarify that all development must comply with the fish and wildlife habitat conservation requirements. This is needed to protect all priority species and habitats and to comply with the SMP Guidelines. Please see page 13 of this letter for more information.
- Please update the priority habitat and species list and the priority species and habitats documents listed in the critical areas regulations. This is needed to protect all priority species and habitats and comply with the SMP Guidelines. Please see page 14 of this letter for more information.
- Protect isolated Category III wetlands of less than 2,500 square feet in area and isolated Category IV wetlands of less than 4,350 square feet. This is needed to protect wetland functions and to comply with the SMP Guidelines. Please see page 15 of this letter for more information.
- Increase mitigation ratios for riparian vegetation mitigation in CCC 40.460.570D. to protect fish and wildlife habitats. This is necessary to comply with the SMP Guidelines. Please see page 16 of this letter for more information.
- Prohibit net pen aquaculture for nonnative species in Table 40.460.620-1. This will make the SMP consistent with RCW 77.125.050(1). Please see page 16 of this letter for more information.

Detailed Comments on Exhibit 5 Proposed Amendments to Chapter 40.460 Clark County Code

Futurewise agrees with the Friends of Clark County and the Sierra Club recommendations that avoiding impacts should be required whenever possible. Please see Clark County Code (CCC) 40.460.530A.10 on page 29 of 99

Futurewise agrees with the Friends of Clark County and the Sierra Club that impacts to shoreline ecological functions and systems should be avoided whenever possible and that the Clark County Shoreline Master Program should have stronger avoidance requirements. *As Making Mitigation Work: The Report of the Mitigation that Works Forum* concluded "[e]stimates of mitigation success vary, but local, regional, and national studies show that most mitigation projects fail to fully achieve their intended goals and are not effectively replacing lost or damaged resources, habitats, and functions.

We are not even close to achieving the goal of no net loss for wetlands and other aquatic habitats."[1] This is why for forum's "Recommendation 1" is to "Reinforce the Importance of Avoiding and Minimizing Impacts to Resources that are Highly Valuable or Difficult to Replace."[2] The Shoreline Master Program regulations must include strengthened avoidance and minimization requirements.

Require wider setbacks between development and shoreline and critical areas buffers to protect homes and property from wildfire danger. Please see Clark County Code (CCC) 40.460.530E. on pages 28 and 29 of 99

The Washington Department of Natural Resources' database of wildfires on the lands protected by the agency lists more than 1,050 fires in Clark County between 1970 and January 2016.[3] Climate change has the potential to increase wildlife risk through changes in fire behavior, wildfire ignitions, fire management, and the vegetation that fuels wildfire.[4]

Setbacks from critical areas buffers provide an area in which buildings can be repaired and maintained without having to intrude into the buffer. It also allows for the creation of a Home Ignition Zone that can protect buildings from wildfires and allow firefighters to attempt to save the buildings during a wildfire. Since a 30-foot-wide Home Ignition Zone is important to protect buildings,[5] we recommend that CCC 40.460.530E. require a setback at least 30 feet wide adjacent to shoreline and critical area buffers. Combustible structures, such as decks, should not be allowed within this setback to protect the building from wildfires. This will increase protection for people and property. We recommend that a new CCC 40.460.530E.12. be adopted to read as follows with our additions double underlined.

> 12. There shall be a building setback of thirty (30) feet established on the landward or development facing edge of any buffer required by this chapter. The setback shall be an open space that may include landscaping and paved surfaces. Buildings, decks, architectural features, and combustible structures shall not be constructed in the setback.

[1] ESA and Ross & Associates Environmental Consulting, Ltd., *Making Mitigation Work: The Report of the Mitigation that Works Forum* (Washington State Department of Ecology Olympia, Washington Publication Number: 08-06-018: Dec. 2008) last accessed on Feb. 25, 2020 at: https://fortress.wa.gov/ecy/publications/SummaryPages/0806018.html https:/ and on the CAO on CD on CD 1 enclosed with Futurewise's Feb. 25, 2020, letter in the Wetlands directory with the filename: "0806018.html.pdf."
[2] *Id.* at p. 7.
[3] Tetra Tech, *Clark Regional Natural Hazard Mitigation Plan Volume 1 — Planning Area-Wide Elements* p. 14-3 (Clark Regional Emergency Services Agency: Final Aug. 2017) accessed on Feb. 19, 2020 at: http://cresa911.org/wp-content/uploads/2018/04/ClarkCoHazMitPlan_Volume1_Final_2017-09-21v2-2.pdf and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "ClarkCoHazMitPlan_Volume1_Final_2017-09-21v2-2.pdf."
[4] *Id.* at p. 14-15.
[5] Nation Fire Protection Association "preparing homes for wildfire" webpage last accessed on Feb. 19, 2020 at: https://www.nfpa.org/Public-Education/By-topic/Wildfire/Preparing-homes-for-wildfire and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "NFPA - Preparing homes for wildfire.pdf."

Futurewise strongly recommends that the Clark County Shoreline Master Program should comprehensively address sea level rise. Please see CCC 40.460.530D.3. on page 31 of 99

The Shoreline Management Act and Shoreline Master Program (SMP) Guidelines require shoreline master programs to address the flooding that will be caused by sea level rise.[6] RCW 90.58.100(2)(h) requires that shoreline master programs "shall include" "[a]n element that gives consideration to the statewide interest in the prevention and minimization of flood damages …" WAC 173-26-221(3)(b) provides in part that "[o]ver the long term, the most effective means of flood hazard reduction is to prevent or remove development in flood-prone areas …" The areas subject to sea level rise are flood prone areas just the same as areas along bays, rivers, or streams that are within the 100-year flood plain. RCW 90.58.100(1) and WAC 173-26-201(2)(a) also require "that the 'most current, accurate, and complete scientific and technical information' and 'management recommendations' [shall to the extent feasible] form the basis of SMP provisions."[7]

Sea level rise is a real problem that is happening now. Sea level is rising and floods and erosion are increasing. In 2012 the National Research Council concluded that global sea level had risen by about seven inches in the 20th Century.[8] A recent analysis of sea-level measurements for tide-gage stations, including the Astoria, Oregon tide-gauge, shows that sea level rise is accelerating.[9] The Virginia Institute of Marine Science (VIMS) "emeritus professor John Boon, says 'the key message from the 2019 report cards is a clear trend toward acceleration in rates of sea-level rise at 25 of our 32 tide-gauge stations. Acceleration can be a game changer in terms of impacts and planning, so we really need to pay heed to these patterns.'

"VIMS marine scientist Molly Mitchell says 'seeing acceleration at so many of our stations suggests that—when we look at the multiple sea-level scenarios that NOAA puts out based on global models—we may be moving towards the higher projections.'"[10]

Climate Central projects two feet of sea level rise for the Columbia River and other tidally influenced water bodies in Clark County by 2100 based on the National Research Council's mid-range Pacific

[6] Although the Shoreline Master Program (SMP) Guidelines are called "guidelines," they are actually binding state agency rules and shoreline management program updates must comply with them. RCW 90.58.030(3)(b) & (c); RCW 90.58.080(1) & (7).
[7] *Taylor Shellfish Company, Inc., et al., v. Pierce County and Ecology (Aquaculture II)*, Final Decision and Order Central Puget Sound Region Growth Management Hearings Board Case No. 18-3-0013c (June 17, 2019), at 10 of 81 footnote omitted.
[8] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* p. 23, p. 156, p. 96, p. 102 (2012) last accessed on Feb. 5, 2020 at: https://www.nap.edu/download/13389.
[9] William and Mary Virginia Institute of Marine Science, *U.S. West Coast Sea-Level Trends & Processes Trend Values for 2019* accessed on Feb. 5, 2020 at: https://www.vims.edu/research/products/slrc/compare/west_coast/index.php and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "2020-02-05 US West Coast Sea-Level Trends.pdf."
[10] David Malmquist, *Sea-level report cards: 2019 data adds to trend in acceleration* Virginia Institute of Marine Science website (Jan. 30, 2020) accessed on Feb. 5, 2020 at: https://www.vims.edu/newsandevents/topstories/2020/slrc_2019.php and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "2020-02-05 2019 data adds to sea level rise acceleration trend.pdf."

coast sea level rise projections.[11] The extent of the sea level rise currently projected for Clark County can be seen on the NOAA Office for Coastal Management Digitalcoast Sea Level Rise Viewer available at: https://coast.noaa.gov/digitalcoast/tools/slr.html.

Projected sea level rise will substantially increase flooding. As Ecology writes, "[s]ea level rise and storm surge[s] will increase the frequency and severity of flooding, erosion, and seawater intrusion—thus increasing risks to vulnerable communities, infrastructure, and coastal ecosystems."[12] Not only our marine shorelines will be impacted, as Ecology writes "[m]ore frequent extreme storms are likely to cause river and coastal flooding, leading to increased injuries and loss of life."[13]

Zillow recently estimated that 31,235 homes in Washington State may be underwater by 2100, 1.32 percent of the state's total housing stock. The value of the submerged homes is an estimated $13.7 billon.[14] Zillow wrote:

> It's important to note that 2100 is a long way off, and it's certainly possible that communities [may] take steps to mitigate these risks. Then again, given the enduring popularity of living near the sea despite its many dangers and drawbacks, it may be that even more homes will be located closer to the water in a century's time, and these estimates could turn out to be very conservative. Either way, left unchecked, it is clear the threats posed by climate change and rising sea levels have the potential to destroy housing values on an enormous scale.[15]

Sea level rise will have an impact beyond rising seas, floods, and storm surges. The National Research Council wrote that:

> Rising sea levels and increasing wave heights will exacerbate coastal erosion and shoreline retreat in all geomorphic environments along the west coast. Projections of future cliff and bluff retreat are limited by sparse data in Oregon and Washington and by a high degree of geomorphic variability along the coast. Projections using only historic rates of cliff erosion predict 10–30 meters [33 to 98 feet] or more of retreat along the west coast by 2100. An increase in the rate of sea-level rise combined with larger waves could significantly increase these rates. Future retreat of

[11] Climate Central, *Sea level rise and coastal flood risk: Summary for Clark County, WA* p. 1 (2016) accessed on Feb. 14, 2019 at: https://riskfinder.climatecentral.org/county/clark-county.wa.us?comparisonType=postal-code&forecastType=NOAA2017_int_p50&level=7&unit=ft and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "WA_Clark_County-report sea level rise 2016.pdf."
[12] State of Washington Department of Ecology, *Preparing for a Changing Climate Washington State's Integrated Climate Response Strategy* p. 90 (Publication No. 12-01-004: April 2012) last accessed on Feb. 5, 2020 at: https://fortress.wa.gov/ecy/publications/publications/1201004.pdf and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "1201004.pdf."
[13] *Id.* at p. 17.
[14] Krishna Rao, *Climate Change and Housing: Will a Rising Tide Sink all Homes?* ZILLOW webpage (Jun. 2, 2017) last accessed on Feb. 14, 2020 at: http://www.zillow.com/research/climate-change-underwater-homes-12890/.
[15] *Id.*

> beaches will depend on the rate of sea-level rise and, to a lesser extent, the amount of sediment input and loss.[16]

These impacts are why the Washington State Department of Ecology recommends "[l]imiting new development in highly vulnerable areas."[17]

Unless wetlands and shoreline vegetation can migrate landward, their area and ecological functions will decline.[18] If development regulations are not updated to address the need for vegetation to migrate landward in feasible locations, wetlands and shoreline vegetation will decline. This loss of shoreline vegetation will harm the environment. It will also deprive marine shorelines of the vegetation that protects property from erosion and storm damage by modifying soils and accreting sediment.[19] This will increase damage to upland properties.

To prevent these adverse impacts Futurewise recommend that the SMP require new lots and new buildings be located outside the area of likely sea level rise and if that is not possible, buildings should be elevated above the likely sea level rise. These requirements will provide better protection for buildings and people and will also allow wetlands and marine vegetation to migrate as the sea level rises. We recommend the following new regulations be added to the SMP periodic update in CCC 40.460.530D.3. on page 31 of 99.

> h. New lots shall be designed and located so that the buildable area is outside the area likely to be inundated by sea level rise in 2100 and outside of the area in which wetlands and aquatic vegetation will likely migrate during that time.
>
> i. Where lots are large enough, new structures and buildings shall be located so that they are outside the area likely to be inundated by sea level rise in 2100 and outside of the area in which wetlands and aquatic vegetation will likely migrate during that time.

[16] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* p. 135 (2012).
[17] State of Washington Department of Ecology, *Preparing for a Changing Climate Washington State's Integrated Climate Response Strategy* p. 90 (Publication No. 12-01-004: April 2012).
[18] Christopher Craft, Jonathan Clough, Jeff Ehman, Samantha Joye, Richard Park, Steve Pennings, Hongyu Guo, and Megan Machmuller, *Forecasting the effects of accelerated sea-level rise on tidal marsh ecosystem services* FRONT ECOL ENVIRON 2009; 7, doi:10.1890/070219 p. *6 last accessed on Feb. 5, 2020 at: http://nsmn1.uh.edu/steve/CV/Publications/Craft%20et%20al%202009.pdf. Frontiers in Ecology and the Environment is a peer-reviewed scientific journal. Frontiers in Ecology and the Environment Journal Overview webpage last accessed on Feb. 19, 2020 at: https://esajournals.onlinelibrary.wiley.com/journal/15409309. Both on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Craft et al 2009.pdf" and "Frontiers in Ecology and the Environment - Journal Overview" respectively.
[19] R. A. Feagin, S. M. Lozada-Bernard, T. M. Ravens, I. Möller, K. M. Yeagei, A. H. Baird and David H. Thomas, *Does Vegetation Prevent Wave Erosion of Salt Marsh Edges?* 106 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA pp. 10110-10111 (Jun. 23, 2009) last accessed on Feb. 5, 2020 at: http://www.pnas.org/content/106/25/10109.full and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "10109.full.pdf." This journal is peer-reviewed. *Id.* at p. 10113.

j. New and substantially improved structures shall be elevated above the likely sea level rise elevation in 2100 or for the life of the building, whichever is less.

Also, to avoid flooding, erosion, and other adverse impacts on shoreline resources, Futurewise strongly recommends that the County take a comprehensive approach to adapting to sea level rise and its adverse impacts modeled on the process California's coastal counties and cities use. The process includes six steps.[20]

1. Determine the range of sea level rise projections relevant to Clark County's shorelines subject to tidal influence. The California Coastal Commission recommends analyzing intermediate and long-term projections because "development constructed today is likely to remain in place over the next 75-100 years, or longer."[21]
2. Identify potential physical sea level rise impacts in Clark County's shorelines subject to tidal influence.
3. Assess potential risks from sea level rise to the resources and development on the shorelines subject to tidal influence.
4. Identify adaptation strategies to minimize risks. The *California Coastal Commission Sea Level Rise Policy Guidance* includes recommended adaptation strategies to consider.[22]
5. Adopt an updated shoreline master program incorporating the selected adaption strategies.
6. Implement the updated shoreline master program and monitor and revise as needed. Because the scientific data on sea level rise is evolving, the California Coastal Commission recommends modifying "the current and future hazard areas on a five to ten year basis or as necessary to allow for the incorporation of new sea level rise science, monitoring results, and information on coastal conditions."[23]

Require analysis of all geological hazards which can adversely impact a proposed development and require case-by-case determinations of landslide buffers based on the risk to the proposed development. Please see CCC 40.460.530E.2.a. and 3.c. on pages 31 – 32 of 99

The March 22, 2014, Oso landslide "claimed the lives of 43 people, making it the deadliest landslide event in United States history. Of the approximately 10 individuals who were struck by the landslide

[20] *California Coastal Commission Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits* pp. 69 – 95 (Nov. 7, 2018) last accessed on Feb. 10, 2020 at: https://www.coastal.ca.gov/climate/slrguidance.html and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "0_Full_2018AdoptedSLRGuidanceUpdate.pdf."
[21] *Id.* at p. 74.
[22] *Id.* at pp. 121 – 162.
[23] *Id.* at p. 94.

and survived, several sustained serious injuries."[24] So properly designating geologically hazardous areas and protecting people from geological hazards is very important.

Homeowner's insurance does not cover the damage from landslides. "Insurance coverage for landslides is uncommon. It is almost never a standard coverage and is difficult to purchase inexpensively as a policy endorsement."[25]

None of the Oso victims' homes were covered by insurance for landslide hazards.[26] And that is common when homes are damaged by landslides.[27] For example, on March 14, 2011, a landslide damaged the home of Rich and Pat Lord.[28] This damage required the homeowners to abandon their home on Norma Beach Road near Edmonds, Washington. Because their homeowner's insurance did not cover landslides, they lost their home.[29] This loss of what may be a family's largest financial asset is common when homes are damaged or destroyed by landslides or other geological hazards.

Landslide buyouts are rare and when they occur the property owner often only recovers pennies on the dollar. The property owners bought out after the Aldercrest-Banyon landslide in Kelso, Washington destroyed their homes received 30 cents on the dollar.[30] This underlines why preventing development in geologically hazardous areas is just plain ordinary consumer protection.

Landslides in Western Washington can run out long distances. The 1949 Tacoma Narrows Landslide, in Tacoma "failed catastrophically along steep" 300 feet high bluffs and ran out 1,500 feet

[24] Jeffrey R. Keaton, Joseph Wartman, Scott Anderson, Jean Benoît, John deLaChapelle, Robert Gilbert, David R. Montgomery, *The 22 March 2014 Oso Landslide, Snohomish County, Washington* p. 1 (Geotechnical Extreme Events Reconnaissance (GEER): July 22, 2014) last accessed on Jan. 23, 2020 at: http://www.geerassociation.org/index.php/component/geer_reports/?view=geerreports&layout=build&id=30 and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "GEER_Oso_Landslide_Report.pdf." If the American territories are included, then the Oso landslide is the second deadliest landslide in American history. R.M. Iverson, D.L. George, K. Allstadt, *Landslide mobility and hazards: implications of the Oso disaster* 412 EARTH AND PLANETARY SCIENCE LETTERS 197, 198 (2015). The Geological Society of America gave an award to *The 22 March 2014 Oso Landslide, Snohomish County, Washington*. Hannah Hickey, Joseph Wartman, David Montgomery honored for Oso landslide report p. 1 (July 15, 2016) on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "GEER Oso Report Receives Award.pdf."

[25] Robert L. Schuster & Lynn M. Highland, *The Third Hans Cloos Lecture: Urban landslides: socioeconomic impacts and overview of mitigative strategies* 66 BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT 1, p. 22 (2007) last accessed on Jan. 23, 2020 at: https://www.researchgate.net/publication/225794820_The_Third_Hans_Cloos_Lecture_Urban_landslides_socioeconomic_impacts_and_overview_of_mitigative_strategies.

[26] Sanjay Bhatt, *Slide erased their homes, but maybe not their loans* The Seattle Times (April 2, 2014) last accessed on Jan. 6, 2020 at: http://old.seattletimes.com/html/latestnews/2023278858_mudslidefinancialxml.html.

[27] *Id.*

[28] Ian Terry, *Abandoned and trashed after mudslide, Edmonds house now for sale* The Herald (Feb. 11, 2015). The house is for sale after the bank who held the Lord's mortgage took ownership of the home. *Id.* Last accessed on Jan. 6, 2020 at: http://www.heraldnet.com/article/20150211/NEWS01/150219829.

[29] *Id.* at p. *6.

[30] Isabelle Sarikhan, *Sliding Thought Blog, Washington's Landslide Blog* Landslide of the Week – Aldercrest Banyon Landslide July 29, 2009 last accessed on Feb. 6, 2020 at: https://slidingthought.wordpress.com/2009/07/29/landslide-of-the-week-aldercrest-banyon-landslide/.

into Puget Sound.[31] This is five times the buff height. The 2014 Oso slide ran out for over a mile (5,500 feet) even through the slope height was 600 feet.[32] This was nine times the slope height. Recent research shows that long runout landslides are more common than had been realized.[33] This research documents that over the past 2000 years, the average landslide frequency of long runout landsides in the area near the Oso landslide is one landslide every 140 years.[34] The landslides ran out from 656 feet to the 6,561 feet of the 2014 landside.[35] The 2013 Ledgewood-Bonair Landslide on Whidbey Island extended approximately 300 feet into Puget Sound.[36] In a study of shallow landslides along Puget Sound from Seattle to Everett, the average runout length was 197.5 feet (60.2 m) and the maximum runout length was 771 feet (235 m).[37] So only requiring development that must obtain a county approval and is in or within 100 feet of a geologic hazard area to comply with the geologically hazardous area requirements as CCC 40.460.530E.2.a. does not adequately protect people and property. As the cited landslide runouts show, limiting the toe of slope buffer to half of the slope height but not to exceed 15 feet as CCC 40.430.020D.2.a. does will not protect people and

[31] Alan F. Chleborad, *Modeling and Analysis of the 1949 Narrows Landslide, Tacoma, Washington* xxxi ENVIRONMENTAL AND ENGINEERING GEOSCIENCE 305 p. 305 (1994) last accessed on Feb. 6, 2020 at: https://pubs.geoscienceworld.org/aeg/eeg/article-abstract/xxxi/3/305/137520/modeling-and-analysis-of-the-1949-narrows?redirectedFrom=fulltext and cited page on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Modeling and Analysis of the 1949 Narrows Landslide, Tacoma, WA _ Environmental and Engineering Geoscience.pdf" Environmental & Engineering Geoscience is a peer-reviewed journal. Environmental & Engineering Geoscience Complete Author Instructions p. 1 of 6 (May 8, 2012) on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Environmental & Engineering Geoscience Author Instructions.pdf."

[32] Jeffrey R. Keaton, Joseph Wartman, Scott Anderson, Jean Benoît, John deLaChapelle, Robert Gilbert, David R. Montgomery, *The 22 March 2014 Oso Landslide, Snohomish County, Washington* p. 56 & p. 144 (Geotechnical Extreme Events Reconnaissance (GEER): July 22, 2014).

[33] Sean R. LaHusen, Alison R. Duvall, Adam M. Booth, and David R. Montgomery, *Surface roughness dating of long-runout landslides near Oso, Washington (USA), reveals persistent postglacial hillslope instability* GEOLOGY pp. *2 – 3, published online on 22 December 2015 as doi:10.1130/G37267.1 and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "G37267.1.full.pdf"; Geological Society of America (GSA) Data Repository 2016029, *Data repository for: Surface roughness dating of long-runout landslides near Oso, WA reveals persistent postglacial hillslope instability* p. 4 and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "2016029.pdf." Geology is a peer-reviewed scientific journal. Geology – Prep webpage accessed on Jan. 23, 2018 at: http://www.geosociety.org/GSA/Publications/Journals/Geology/GSA/Pubs/geology/home.aspx#overview and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Geology – Prep.pdf."

[34] Sean R. LaHusen, Alison R. Duvall, Adam M. Booth, and David R. Montgomery, *Surface roughness dating of long-runout landslides near Oso, Washington (USA), reveals persistent postglacial hillslope instability* GEOLOGY p. *2, published online on 22 December 2015 as doi:10.1130/G37267.1.

[35] Geological Society of America (GSA) Data Repository 2016029, *Data repository for: Surface roughness dating of long-runout landslides near Oso, WA reveals persistent postglacial hillslope instability* p. 4.

[36] Stephen Slaughter, Isabelle Sarikhan, Michael Polenz, and Tim Walsh, *Quick Report for the Ledgewood-Bonair Landslide, Whidbey Island, Island County, Washington* pp. 3 – 4 (Washington State Department of Natural Resources, Division of Geology and Earth Resources: March 28, 2013) last accessed on Feb. 6, 2020 at: http://www.dnr.wa.gov/publications/ger_qr_whidbey_island_landslide_2013.pdf.

[37] Edwin L. Harp, John A. Michael, and William T. Laprade, *Shallow-Landslide Hazard Map of Seattle, Washington* p. 17 (U.S. Geological Survey Open-File Report 2006–1139: 2006) accessed on Feb. 6, 2020 at: http://pubs.usgs.gov/of/2006/1139/ and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "of06-1139_508.pdf."

property. Similarly, limiting the top of slope buffer to one third of the slope height but not to exceed 40 feet as CCC 40.430.020D.2.b. does will not protect people and property.

The Joint SR 530 Landslide Commission recommends identifying "[c]ritical area buffer widths based on site specific geotechnical studies" as an "innovative development regulation[]" that counties and cities should adopt.[38] So we recommend that all properties that may be adversely impacted by a steep slope hazard should have their buffers based on a critical areas report for that site. Construction should not be allowed in buffer areas. These standards are necessary to protect Clark County families and their largest investment, their homes. For these reasons we recommend that CCC 40.460.530E.2.a. be revised to read as follows with our additions double underlined and our deletions struck through.

> a. All construction, development, earth movement, clearing, or other site disturbance which may be adversely impacted by ~~requires a permit, approval or other authorization from the County in or within one hundred (100) feet of~~ a geologic hazard area shall comply with the requirements of this Program.

For the above reasons we recommend that CCC 40.460.530E.2.a. be revised to read as follows with our additions double underlined and our deletions struck through.

> a. The Shoreline Administrator shall determine the size of the required buffer and setback based upon a critical area report prepared by a geotechnical engineer or geologist. ~~Required buffers and setbacks for development activities in geologic hazard areas are specified in Section 40.430.020.~~
>
> b. ~~The Shoreline Administrator may approve buffers and setbacks which differ from those required by Section 40.430.020(D)(1) if the applicant submits a geologic hazard area study described in Section 2 40.430.030(C), which technically demonstrates and illustrates that the alternative buffer provides protection which is greater than or equal to that provided by the buffer required in Section 40.430.020(D)(1).~~
>
> ~~c.~~The Shoreline Administrator may increase buffers or setbacks where necessary to meet requirements of the International Building Code.

[38] The SR 530 Landslide Commission, *Final Report* p. 31 (Dec. 15, 2014) accessed on Feb. 6, 2020 at: http://www.governor.wa.gov/sites/default/files/documents/SR530LC_Final_Report.pdf and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "SR530LC_Final_Report.pdf."

Adopt up-to-date riparian buffers in CCC 40.460.530F.1.a.(3) on page 32 of 99 and CCC 40.460.570 on pages 40 – 42 of 99 to protect Chinook habitat and other aquatic habitats

As has been reported in media and scientific reports, the Southern Resident orcas, or killer whales, are threatened by (1) an inadequate availability of prey, the Chinook salmon, "(2) legacy and new toxic contaminants, and (3) disturbance from noise and vessel traffic."[39] "Recent scientific studies indicate that reduced Chinook salmon runs undermine the potential for the Southern Resident population to successfully reproduce and recover."[40] A 2018 analysis by the National Oceanic and Atmospheric Administration and the State of Washington Department of Fish and Wildlife ranked the Lower Columbia spring Chinook stocks that originate in the Lewis River as the 7th highest in importance as food sources for the Southern Resident killer whales.[41] The shoreline master program update is an opportunity to take steps to help recover the Southern Resident orcas, the Chinook salmon, and the species and habitats on which they depend.

The Shoreline Master Program (SMP) Guidelines, in WAC 173-26-221(3)(c), provides in part that "[i]n establishing vegetation conservation regulations, local governments must use available scientific and technical information, as described in WAC 173-26-201 (2)(a). At a minimum, local governments should consult shoreline management assistance materials provided by the department and *Management Recommendations for Washington's Priority Habitats*, prepared by the Washington state department of fish and wildlife where applicable."

The State of Washington Department of Fish and Wildlife has recently updated the Priority Habitat and Species recommendations for riparian areas. The updated management recommendations document that fish and wildlife depend on protecting riparian vegetation and the functions this vegetation performs such as maintaining a complex food web that supports salmon and maintaining temperature regimes to name just a few of the functions.[42]

The updated *Riparian Ecosystems, Volume 1: Science synthesis and management implications* scientific report concludes that the "[p]rotection and restoration of riparian ecosystems continues to be critically important because: a) they are disproportionately important, relative to area, for aquatic species, e.g.,

[39] State of Washington Office of the Governor, Executive Order 18-02 Southern Resident Killer Whale Recovery and Task Force p. 1 (March 14, 2018) last accessed on Feb. 18, 2020 at: https://www.governor.wa.gov/sites/default/files/exe_order/eo_18-02_1.pdf and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "eo_18-02_1.pdf."
[40] *Id.*
[41] National Oceanic and Atmospheric Administration and the State of Washington Department of Fish and Wildlife, *Southern Resident Killer Whale Priority Chinook Stocks* p. 6 (June 22, 2018) last accessed on Feb. 18, 2020 at: https://www.documentcloud.org/documents/4615304-SRKW-Priority-Chinook-Stocks.html and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "SRKW-Priority-Chinook-Stocks.pdf."
[42] Timothy Quinn, George F. Wilhere, and Kirk L. Krueger, technical editors, *Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications* pp. 265 – 68 & p. 270 (A Priority Habitat and Species Document of the Washington Department of Fish and Wildlife, Olympia, WA: Updated Jan. 2020) last accessed on Feb. 18, 2020 at: https://wdfw.wa.gov/publications/01987/ and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "wdfw01987.pdf." This report was peer-reviewed. *Id.* at pp. 11 – 12.

salmon, and terrestrial wildlife, b) they provide ecosystem services such as water purification and fisheries (Naiman and Bilby 2001; NRC 2002; Richardson et al. 2012), and c) by interacting with watershed-scale processes, they contribute to the creation and maintenance of aquatic habitats."[43] The report states that "[t]he width of the riparian ecosystem is estimated by one 200-year site-potential tree height (SPTH) measured from the edge of the active channel or active floodplain. Protecting functions within at least one 200-year SPTH is a scientifically supported approach if the goal is to protect and maintain full function of the riparian ecosystem."[44] For Clark County, the stream length-weighted third quartile 200-year SPTH is 235 feet.[45]

We recommend that shoreline jurisdiction should continue to include the 100-year flood plain[46] and that the buffers for river and stream shoreline be increased to use the newly recommended 200-year SPTH of 235 feet and that this width should be measured from the edge of the channel, channel migration zone, or active floodplain whichever is wider.[47] New development, except water dependent uses should not be allowed within this area.[48] This will help maintain shoreline functions and Chinook habitat.

Clarify that the SMP protects fish and wildlife habitats depicted in the PHS GIS database as points, lines, and areas. Please see CCC 40.460.530F.1.a.(4) on page 32 of 99

The Shoreline Master Program (SMP) Guidelines in WAC 173-26-221(2)(a)(ii) provide that shoreline master programs "must" "[p]rovide a level of protection to critical areas within the shoreline area [including fish and wildlife habitat conservation areas] that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources[.]"[49] WAC 173-26-191(2) provides in relevant part that "[t]he terms 'shall,' 'must,' and 'are required' and the imperative voice, mean a mandate; the action is required ..."

The actual location of most fish and wildlife habitats are identified through the Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) geographic

[43] *Id.* at p. 270.
[44] *Id.* at p. 271.
[45] Amy Windrope, Timothy Quinn, Keith Folkerts, and Terra Rentz, *Riparian Ecosystems, Volume 2: Management Recommendations* p. A2-3 (A Priority Habitat and Species Document of the Washington Department of Fish and Wildlife, Olympia: May 2018 Public Review Draft) last accessed on Feb. 18, 2020 at: https://wdfw.wa.gov/publications/01988/ and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "wdfw01988.pdf."
[46] Authorized by RCW 90.58.030(2)(d)(i).
[47] Amy Windrope, Timothy Quinn, Keith Folkerts, and Terra Rentz, *Riparian Ecosystems, Volume 2: Management Recommendations* p. A2-8 (A Priority Habitat and Species Document of the Washington Department of Fish and Wildlife, Olympia: May 2018 Public Review Draft).
[48] Timothy Quinn, George F. Wilhere, and Kirk L. Krueger, technical editors, *Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications* pp. 270 – 71 (A Priority Habitat and Species Document of the Washington Department of Fish and Wildlife, Olympia, WA: Updated Jan. 2020).
[49] The SMP Guidelines specifically recognize fish and wildlife habitat conservation areas as critical areas. WAC 173-26-020(8); WAC 173-26-221(2)(a)(ii).

information system maps and datasets.[50] This habitat data is depicted as points, lines, and polygons, the polygons are also referred to as areas.[51] The enclosed screen shots from the PHS on the Web website show various habitats in unincorporated Clark County.[52] As you can see, the habitats are shown as lines and areas. The line habitats include the federally threatened Coho and Chinook salmon. The area habitats include the state endangered Sandhill Crane and waterfowl concentrations.[53] However, the current shoreline master program does not protect the area and line habitats. CCC 40.460.530F.1.a.(4) only requires review for developments that are near but will impact out of water priority species and habitats for point habitats, not line or area habitats. WAC 173-26-221(2)(a)(ii) requires no net loss of all fish and wildlife habitat conservation areas including the habitats shown in the databases as areas and lines.[54] By failing to protect habitats depicted as lines and areas, CCC 40.460.530F.1.a.(4) fails to comply with this requirement. To address this inconsistency with the SMP Guidelines, we recommend that the following amendment to CCC 40.460.530F.1.a.(4) with our additions double underlined and our deletions double struck through.

> (4) Other Priority Habitats and Species (PHS) Areas. Areas identified by and consistent with WDFW priority habitats and species criteria, including areas within one thousand (1,000) feet of individual priority habitats and areas used by priority species ~~point sites~~. The county shall defer to WDFW in regards to classification, mapping and interpretation of priority habitat species.

Clarify that all development must comply with the fish and wildlife habitat conservation requirements. Please see CCC 40.460.530F.2.a. on page 32 of 99

The Shoreline Master Program (SMP) Guidelines in WAC 173-26-221(2)(a)(ii) provide that shoreline master programs "must" "[p]rovide a level of protection to critical areas within the shoreline area [including fish and wildlife habitat conservation areas] that assures no net loss of shoreline ecological

[50] Washington Department of Fish and Wildlife, U*sing PHS Data: Frequently Asked Questions* pp. 1 – 2 of 5 accessed on Jan. 22, 2018 at http://apps.wdfw.wa.gov/phsontheweb/faq.htm and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "PHS on the Web FAQs.pdf."
[51] *Id.* at 1 – 2 of 5; Washington Department of Fish and Wildlife, PHS on the Web screen shots pp. 1 – 4 accessed on Feb. 18, 2020 at: http://apps.wdfw.wa.gov/phsontheweb/ and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "2020-02-18_10-37-06 PHS on Web Clark Co.pdf." materials.
[52] Washington Department of Fish and Wildlife, PHS on the Web screen shots pp. 1 – 4.
[53] *Id.* at pp. 1 – 3; Washington Department of Fish and Wildlife, Priority Habitats and Species identified for Clark County accessed on Feb. 18, 2020 at: https://wdfw.wa.gov/species-habitats/at-risk/phs/list and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Copy of 2019_distribution_by_county.xls."
[54] *Olympic Stewardship Found. v. State Envtl. & Land Use Hearings Office through W. Washington Growth Mgmt. Hearings Bd.*, 199 Wn. App. 668, 690, 399 P.3d 562, 572 (2017) review denied Olympic Stewardship Foundation v. State Department of Ecology, 189 Wn.2d 1040, 409 P.3d 1066 (2018) and *certiorari denied Olympic Stewardship Foundation v. State of Washington Environmental and Land Use Hearings Office,* 139 S.Ct. 81, 202 L.Ed.2d 25 (Oct. 01, 2018) "In fact, reasonable and appropriate uses should be allowed on the shorelines only if they will result in no net loss of shoreline ecological functions and systems. *See* RCW 90.58.020; WAC 173-27-241(3)(j)."See also *Futurewise v. Stevens County*, EWGMHB Case No. 05-1-0006, Final Decision and Order (Jan. 13, 2006), at 2 *affirmed Stevens Cty. v. Futurewise*, 146 Wn. App. 493, 497, 192 P.3d 1, 3 (2008) *review denied Stevens Cty. v. Futurewise*, 165 Wn.2d 1038, 205 P.3d 132 (2009).

functions necessary to sustain shoreline natural resources[.]" WAC 173-26-186(8)(b)(ii) also provides that "[l]ocal master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline."

However, CCC 40.460.530F.2.a. only applies to proposals within a habitat area which require a permit, approval, or other authorization from the County. To ensure that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline as WAC 173-26-186(8)(b)(ii) requires, we recommend that CCC 40.460.530F.2.a. be amended to require review of all site disturbing proposals. Our recommended deletions are double struck through.

> a. All construction, development, earth movement, clearing, or other site disturbance proposals within a habitat area ~~which require a permit, approval, or other authorization from the county~~ shall be reviewed pursuant to Chapter 40.440 and shall comply with the requirements of this section.

Please update priority habitat and species list and the priority species and habitat documents listed in the critical areas regulations.

The Washington State Department of Fish and Wildlife regularly updates the priority habitats and species list. The most recent list was updated in 2019 and is enclosed on the data CD that includes the documents cited in this letter. In addition, other the management recommendations for the priority species have been updated and other recommendations are being updated, such as the mammal recommendations.

CCC 40.460.530B.4. provides that CCC 40.440.010C.2. applies to the protection of priority habitats and species in shoreline jurisdiction. CCC 40.440.010C.2. references two out of date documents. To adequately protect shoreline functions, CCC 40.440.010C.2. should be updated with our additions double underlined and our deletions double struck through.

> 2. Best Available Science. Definitions and maps of habitat areas are based on best available science, as defined in WAC 365-195-905 (Criteria for determining which information is the "best available science") and described in the following documents:
>
> > a. The current ~~1999~~ Washington Department of Fish and Wildlife Priority Habitats and Species List;
> >
> > b. The State of Washington Department of Fish and Wildlife's current ~~1997~~ m~~M~~anagement r~~R~~ecommendations for the priority habitat or priority species~~Washington's Priority Habitats~~;

[No additional amendments recommended to CCC 40.440.010C.2.]

Protect isolated Category III wetlands of less than 2,500 square feet and isolated Category IV wetlands of less than 4,350 square feet

The Shoreline Master Program (SMP) Guidelines in WAC 173-26-221(2)(a)(ii) provide that shoreline master programs "must" "[p]rovide a level of protection to critical areas within the shoreline area [including wetlands] that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources[.]"[55] WAC 173-26-191(2) provides in relevant part that "[t]he terms 'shall,' 'must,' and 'are required' and the imperative voice, mean a mandate; the action is required ..." WAC 173-26-221(2)(c)(i)(A) requires Shoreline Master Program regulations "to achieve, at a minimum, no net loss of wetland area and functions …."

Small wetlands provide important wetland functions. The State of Washington Department of Ecology has summarized the science applicable to small wetlands:

- The studies of the correlation of wetland size to wildlife use conflict somewhat in their findings, but most generally conclude that small wetlands are important habitats (particularly where adjacent buffer habitats are available) and that elimination of small wetlands can negatively impact local populations.

- Small wetlands provide habitat for a range of species that are not a subset of the species found in larger, more permanently inundated wetlands. Small wetlands do not just provide a smaller area for the same array of amphibian species found in larger wetlands.

- Small wetlands are very important in reducing isolation among wetland habitat patches. Smaller wetlands provide significant habitat for wildlife and affect the habitat suitability of larger wetlands by reducing isolation on the landscape.

- The presence of small wetlands reduces the distance between wetlands and thus increases the probability of successful dispersal of organisms. This, in turn, likely increases the number of individuals dispersing among patches in a wetland mosaic, thereby reducing the chance of population extinction.

- Isolated wetlands provide the same range of wetland functions as non-isolated wetlands. Isolated wetlands provide important water quantity, water quality, and habitat functions.[56]

[55] The SMP Guidelines specifically recognize wetlands as critical areas. WAC 173-26-020(8)(a); WAC 173-26-221(2)(c)(i).
[56] D. Sheldon, T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale, *Wetlands in Washington State - Volume 1: A Synthesis of the Science* pp. 5-12 – 5-13 (Washington State Department of Ecology Publication #05-06-006 Olympia, WA: March 2005) last accessed on Aug. 15, 2019 at: https://fortress.wa.gov/ecy/publications/summarypages/0506006.html and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "0506006.pdf."

CCC 40.460.530B.5. provides that CCC 40.450.010C.2.a. applies to wetlands under the jurisdiction of the Shoreline Management Act. CCC 40.450.010C.2.a. exempts from wetland protections isolated Category III wetlands less than 2,500 square feet in area and isolated Category IV wetlands less than 4,350 square feet in area. So, these wetlands can be adversely impacted without any replacement of the lost functions. This violates WAC 173-26-221(2)(a)(ii) and WAC 173-26-221(2)(c)(i)(A). CCC 40.460.530B.5. should be repealed to comply with the SMP Guidelines and the Shoreline Management Act.

Increase mitigation ratios for riparian vegetation mitigation in CCC 40.460.570D. on page 41 of 99 to protect fish and wildlife habitats

No net loss of ecological functions is a requirement for shoreline management programs.[57] A peer-reviewed study concluded that "[i]t appears that riparian habitats are much more difficult to compensate for because 57% of projects sampled for this variable resulted in a net loss and no projects achieved a net gain."[58] The study continued "even if projects were entirely compliant and created twice as much compensation habitat compared to the [impacted habitat], the Habitat Policy goal of [no net loss] NNL would still not always be achieved."[59]

Mitigation ratios of 1 to 1 will not result in no net loss for riparian vegetation. We recommend that CCC 40.460.570D be amended to read as follows with our additions double underlined.

> D. If vegetation removal cannot be avoided, it shall be minimized and then mitigated at a minimum ratio of one to one (1:1), and shall result in no net loss of shoreline ecological functions. <u>Riparian vegetation shall be replaced at a ratio of 2.25 in mitigation area to 1 of the area adversely impacted.</u> Lost functions may be replaced by enhancing other functions; provided, that no net loss in overall functions is demonstrated and habitat connectivity is maintained. Mitigation shall be provided consistent with an approved mitigation plan.

Prohibit net pen aquaculture for nonnative species in Table 40.460.620-1. Shoreline Use, Modification, and Development Standards on page 44 of 99

RCW 77.125.050(1) provides that the State of Washington Department of Natural Resources "may authorize or permit activities associated with the use of marine net pens for nonnative marine finfish aquaculture only if these activities are performed under a lease of state-owned aquatic lands in effect on June 7, 2018. The department may not authorize or permit any of these activities or operations after the expiration date of the relevant lease of state-owned aquatic lands in effect on June 7, 2018."

[57] WAC 173-26-186(8)(b) & (d); WAC 173-27-241(3)(j).
[58] Jason T. Quigley and David J. Harper, *Effectiveness of Fish Habitat Compensation in Canada in Achieving No Net Loss* 37 ENVIRONMENTAL MANAGEMENT 351, p. 356 (2006) and on the data CD enclosed with Futurewise's Feb. 25, 2020, letter transmitting supporting materials with the filename: "Effectiveness of Fish Habitat Compensation in Canada in Achieving No Net Loss 2006.pdf." This article was peer-reviewed. *Id.* at p. 364.
[59] *Id.* pp. 361 – 62.

Consistent with RCW 77.125.050(1), Table 40.460.620-1 should prohibit marine net pens for nonnative marine finfish aquaculture.

Thank you for considering our comments. If you require additional information, please contact me at telephone 206-343-0681 Ext. 102 and email: tim@futurewise.org.

Very Truly Yours,

Tim Trohimovich, AICP
Director of Planning and Law

DATA Compact Discs

A copy of the contents of the three CDs Futurewise mailed to the county are available on the county website.

Please click below:

https://www.clark.wa.gov/community-planning/futurewise-supplemental-compact-discs-submittal

From: FLORES, HUGO (DNR)
To: Jenna Kay
Subject: [Contains External Hyperlinks] Clark County SMP Periodic Review Comments
Date: Thursday, February 27, 2020 7:55:40 AM
Attachments: SMPprComments.pdf

Hello Jenna,

Thank you for the opportunity to provide comments on the Clark County SMP Periodic Review. Let me know if you have questions.

Hugo

Hugo Flores
SMA-GMA-HARBOR AREAS
1111 Washington St SE
PO Box 47027
Olympia, WA 98504-7027
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WASHINGTON STATE DEPT OF
NATURAL RESOURCES

February 25, 2020

Jenna Key, Planner II
Clark County Community Planning
1300 Franklin Street PO Box 9810
Vancouver, WA. 98666-9810

RE: Clark County SMP Periodic Review

Dear Jenna,

Thank you for the opportunity to provide comments on the Clark County Shoreline Master Program Periodic Review. The Department of Natural Resources (DNR) manages 2.6 million acres of state-owned aquatic lands for the benefit of current and future citizens of the state. As steward of these lands, DNR is responsible for balancing the benefits provided by state-owned aquatic lands, which include encouraging direct public use and access; fostering water dependent uses; ensuring environmental protection; utilizing renewable resources; and when in agreement with these public benefits, generating revenue which is also a public benefit. The Department of Natural Resources' comments take into consideration these public benefits and are intended to avoid inconsistencies with the Clark County SMP. DNR staff have reviewed the proposed Clark County SMP amendments and provided comments summarized in the table attached to this letter. If you have questions, you may contact me at (360) 902-1126 or hugo.flores@dnr.wa.gov

Sincerely,

Hugo Flores
SMA-GMA-Harbor Areas

Location	Text	Comment	Suggested Language
4. Floating homes and on-water residences. Proposed Code Change to CCC 40.460.250(B)(7) and 40.460.630(K)(11) and (12).12(a)	Floating homes shall be moored at sites established as floating home moorages consistent with Section 40.460.630(C)	40.460.630(C) addresses boating uses which reference DNR requirements and other state guidance. DNR is very supportive of this and commends Clark County for this approach. However, the lack of a definition for "floating home moorages" does not provide specific criteria and guidelines. This opens many potential interpretations for floating home moorages.	DNR would suggest adding language that identifies what a floating home moorage is and that they can only be located at established marinas/boating facilities according to 40.460.630(C).
4. Floating homes and on-water residences. Proposed Code Change to CCC 40.460.250(B)(7) and 40.460.630(K)(11) and (12).12(c)	Floating homes may relocate within a moorage or between moorage sites, consistent with the standards of Section 40.460.630(C) and 40.460.630(K).	DNR's WAC 332-30-171(a-c) addresses the issue of grandfather sites flor floating homes. According to this, local governments need to identify specific sites and circumstances for floating house moorage in an adopted local shoreline management plan that provides for the present and future needs of all uses, considers cumulative impacts to habitat and resources of statewide value, identifies specific areas or situations in which floating house moorage will be allowed, and justifies the exceptional nature of those areas or situations; and (C) The floating house moorage is compatible with water-dependent uses existing in or planned for the area.	DNR would suggest adding language that identifies the specific circumstances for moving floating homes.

Location	Text	Comment	Suggested Language
4. Floating homes and on-water residences. Proposed Code Change to CCC 40.460.250(B)(7) and 40.460.630(K)(13).13(a)	New floating on-water residences shall be moored at sites established as a floating on-water moorages consistent with Section 40.460.630(C).	40.460.630(C) addresses boating uses which reference DNR requirements and other state guidance. DNR is very supportive of this and commends Clark County for this approach. However, the lack of a definition for "floating on-water moorages" does not provide specific criteria and guidelines. This opens many potential interpretations for floating on-water moorages.	DNR would suggest adding language that identifies what a floating on-water moorage is and that they can only be located at established marinas/boating facilities according to 40.460.630(C).
4. Floating homes and on-water residences. Proposed Code Change to CCC 40.460.250(B)(7) and 40.460.630(K)(11) and (12).12(c)	On-water residences may relocated within a moorage or between moorage sites, consistent with the standards of Section 40.460.630(C) and 40.460.630(K).	DNR's WAC 332-30-171(7)(a-c) addresses the issue of grandfather sites flor floating homes. According to this, local governments need to identify specific sites and circumstances for floating house moorage in an adopted local shoreline management plan that provides for the present and future needs of all uses, considers cumulative impacts to habitat and resources of statewide value, identifies specific areas or situations in which floating house moorage will be allowed, and justifies the exceptional nature of those areas or situations; and (C) The floating house moorage is compatible with water-dependent uses existing in or planned for the area.	DNR would suggest adding language that identifies the specific circumstances for moving on-water residences as established by WAC 332-30-171(7)(a-c).

From: Van Zwalenburg, Kim (ECY)
To: Jenna Kay
Cc: Rothwell, Rebecca (ECY); Bunten, Donna (ECY)
Subject: [Contains External Hyperlinks] CAO comments - priorities for the SMP
Date: Friday, February 28, 2020 5:19:20 PM
Attachments: Ecology CAO comments.docx
Flood Hazard Areas NFIP regulations and your SMP.msg

Hi Jenna:

I wanted to send this quick email regarding this topic in case I need to leave suddenly again.

I copied the comments (from the email I forwarded to you earlier in the week) into the attached Word document and then annotated it to help set priorities for you in addressing these. In large measure, our concerns are focused on buffers, how they can be reduced and where things can occur – generally encroachment should be limited to the outer portion of the buffer.

The basis for my comments lies in the SMP Guidelines requirement to ensure no net loss of ecological function along with the need to ensure your regulations are consistent with the most current, accurate, and complete scientific or technical information available (WAC 173-26-201(2)(a)).

One other small piece, or perhaps not so small piece to think about, has to do with the incorporation of your Flood Code (because it is embedded into your CAO) directly into the SMP. I am attaching an email I sent to Cayla Cothron about the same issue, and while specific to the Vancouver SMP, I am providing it for your consideration.

We can talk more about all of this. It may also be that for the time being we leave the flood provisions in the SMP as is. If the County hasn't had issues with implementation, this could be a low priority item to be more fully addressed at a later date and after Ecology's policy around this has gotten clearer (and written down!).

Kim

Kim Van Zwalenburg, Senior Shoreline Planner
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Ecology comments on Clark County CAO[1]

- 40.450.040.C.1 Reduced width: We recommend including language that all applicable design elements shall be implemented in order to be eligible for the buffer reduction from high intensity to moderate intensity. Otherwise, applicants may select only one or two that won't sufficiently reduce the intensity of the impact to warrant the buffer reduction. Also, Ecology's guidance does not include the option of reducing buffers from moderate intensity to low intensity through the impact-reducing measures. The impact-reducing measures aren't designed to reduce the adjacent impacts to low-intensity land use, which include uses such as forestry and unpaved trails. In no case should a buffer width based on the habitat function of a wetland be reduced in exchange for reductions in water quality impacts from adjacent land uses (40.450.040.C.1.a.3 (surface water management) and C.1.b (LID design).

  The County should be aware that Ecology recently changed its guidance on habitat scores. A habitat score of 5 is now considered to be low habitat function (previously, only 3-4 were considered to be low function). In section C.1.c(1) the language should be changed to "…scores higher than five (5)…" to reflect this change. Also, C.4.b should say "fewer than six (6) points.

  40.450.040.C.2 states that the minimum buffer should be not less than the low-intensity buffer, which could represent a 50% reduction from our standard buffer recommendation. We believe that this represents a high-risk approach resulting in buffers that are not wide enough to protect the wetland's functions, and we recommend limiting the amount of reduction or average to 25% of the standard buffer width that would be required by the habitat score and the adjacent land use (i.e., the buffer should not be averaged or reduced to below 75% of the standard buffer).

- 40.450.040.C.3.a: Buffer averaging should not be used in combination with other buffer reduction methods on the same buffer segment.
- 40.450.040.C.4.b should state "(fewer than six (6) points…" (see above comment on habitat scores). Also, "the outer edge" is vague. We recommend limiting facilities to the outer 25% of the buffer.
- 40.450.040.C.5.b: We recommend including more specificity about how functions would be replaced. Would this mean requiring more buffer area to compensate for the area that is lost in the crossing?
- 40.450.040.C.6 should say "buffer reduction per 40.450.040.C.1" rather than "buffer reduction via enhancement."
- 40.450.040.D.1.a: These criteria for avoidance aren't consistent with mitigation sequencing. See https://ecology.wa.gov/Water-Shorelines/Wetlands/Mitigation/Avoidance-and-minimization. The applicant should be made aware that if state and federal permits are required, the Corps and Ecology do not interpret "avoidance" as it is described here.

[1] These comments were sent via email from Rebecca Rothwell to Sharon Lumbantobing on 4/16/2019 after review of proposed amendments to Title 40.450.040 submitted to Department of Commerce on March 20, 2019.

Comment [VZK(1)]: My comments are intended to provide you with some guidance and identify priorities for addressing where we find the CAO no longer meeting most current, accurate, and complete scientific and technical information available.

Ensuring your critical areas provisions are consistent with Ecology's wetland guidance meets this requirement. (WAC 173-26-201(2)(a))

Comment [VZK(2)]: Jenna: Addressing this issue is important to ensure provisions are consistent with the SMP Guidelines requirement to meet no net loss of shoreline ecological functions. At the very least, the option to allow for reduction of buffers from moderate intensity to low intensity should not apply in shoreline jurisdiction, nor should the buffer width be reduced in exchange for reductions in water quality impacts (last sentence).

Comment [VZK(3)]: Limiting buffer modifications in shoreline jurisdiction, whether by averaging or reduction to no more than 25% should be a requirement in the SMP. Any greater reduction would be authorized by shoreline variance.

Comment [VZK(4)]: If this isn't clear in the SMP it should be. Mechanisms to reduce buffers should not be combined. The issue here may simply be a result of the was this provision is written.

Comment [VZK(5)]: It appears the numerical issue was addressed. Facilities should be limited to the outer 25% of wetland buffers in shoreline jurisdiction.

Comment [VZK(6)]: This is an important clarification.

- 40.450.040.D.4.b: We recommend including additional criteria for considering preservation. See pages 40-41 of https://fortress.wa.gov/ecy/publications/documents/1606001.pdf.

- 40.450.040.D.4.c(4): This language is not consistent with interagency joint mitigation guidance or the wetland rating system regarding HGM classes separately within a wetland. We recommend removing it.

- 40.450.040.D.5.a: The meaning of this is not clear. Buffer loss doesn't result from wetland fill.

- 40.450.040.D.6: This language is not consistent with interagency joint mitigation guidance. The required width of the perimeter buffer should be sufficient to protect the proposed category of the compensation wetland and its proposed level of function, particularly habitat functions. If the applicant proposes to increase habitat functions then the buffer needs to be wide enough to protect those habitat functions.

- 40.450.040.D.8: Stormwater facilities must meet the avoidance and minimization criteria. They are considered an impact that must be compensated. This section should also state "fewer than six (6) points" (see above comment on habitat scores).
-
- 40.450.040.D.9: Underground utility crossing can have adverse effects on wetlands due to draining or soil disruption. You should consider adding language about BMPs for these situations.

- 40.450.040.D.10: This section should say "consistent with D.1" since D.1 doesn't prohibit any activities. However, we wonder if this language is necessary? Is there a list of allowed uses provided in this chapter? If so, consider deleting this language because it may generally allow uses that have adverse effects on wetlands not specifically anticipated in this language.

- 40.450.030.D.1 should state that the identification of wetlands and delineation of their boundaries pursuant to this Title shall be done in accordance with the approved federal wetland delineation manual and Regional Supplement to the Corps of
- Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (2010). All areas within the county meeting the wetland designation criteria in that procedure are hereby designated critical areas and are subject to the provisions of this Title.

- 40.450.030.D.2.e(4) should state specifically what type of wetland "class;" does this refer to Cowardin class or HGM class?

- 40.450.030.D.2.g: This isn't clear. How does the acreage affect buffer size? Since this section is about delineation, we recommend deleting part of the sentence so that it reads "Acreage of each wetland on the site."

- 40.450.030.E.2 should state that "Buffer widths are established by comparing the wetland rating category, the habitat score, and the intensity of land uses…" since habitat scores are used in the tables.

Comment [VZK(7]: I note that the definition for "wetland delineation manual" refers to WAC 173-22-035 which ultimately tells you which manual to use. It's an awkward way to get there and you might consider adding the language directly into the SMP:

- 40.450.030.E.2, Table 4 should include rows for habitat scores of 8 and 9 points. Ecology has determined that Category III wetlands with these habitat scores do exist. Since the county's buffer widths are based partially on habitat score, the Category III table should include buffers for wetlands with 8 or 9 points (which are the same as the buffers for Category I and II wetlands with 8 or 9 points). We recommend that the county adopt the buffer tables as shown in our guidance (https://fortress.wa.gov/ecy/publications/documents/1606001.pdf). These recommended buffers are dependent upon proper implementation of the buffer reduction criteria as discussed in the first bullet above.

- 40.450.030.E.3.c: The inability to create a non-buildable tract is not sufficient reason to allow a residential lot to extend into a wetland or its buffer. Mitigation sequencing must be applied.

- 40.450.030.E.4.b(1): What is meant by "vertical separation?" Is there a minimum height measurement? It's not clear that vertical separation would result in a functionally isolated buffer.

- 40.450.030.E.4.b(2): This approach is not consistent with how the rating system is applied. We recommend deleting it.

Comment [VZK(8]: I no longer see the referenced table in your CAO so this may be moot.

Comment [VZK(9]: The cited provision should not be applicable in shoreline jurisdiction.

Comment [VZK(10]: This provision should not be applicable in shoreline jurisdiction.

From: Van Zwalenburg, Kim (ECY)
To: Cothron, Cayla
Subject: Flood Hazard Areas, NFIP regulations and your SMP

Hi Cayla:

I think I brought up the issue of incorporating your flood code directly into the SMP by reference (usually happening because these codes are often embedded in a community's CAO). We (Ecology) have been thinking about a policy shift that would remove the "hard" reference which brings the language into the SMP, and making it a soft reference – in other words, acknowledging that the flood code is important and development needs to be consistent with it but not including it directly into the SMP. This, in part, to avoid conflicts with specific NFIP process requirements.

Our Guidelines in WAC 173-26-221(3) address flood hazard reduction and it does suggest integrating SMP flood hazard reduction provisions with other regulations and programs including flood plain regulations and the NFIP, among others. However, I don't think this suggestion to integrate leads to a requirement to adopt your NFIP program into the SMP. We likely wouldn't even be talking about this if your CAO included a few things about flood hazards and then referenced off to another part of the City's code for your NFIP ordinance.

When I look at Chapter 5A, certain sections of the flood code look appropriate to include but others which really look like building code requirements, do not. See for example: 6. Construction Materials and Methods, and 10. Residential Construction, particularly where it starts to address Fully Enclosed Areas Below the Lower Floor, talks about openings, etc. There are other provisions for non-residential buildings as well.

We do need to ensure the SMP meets the requirements of WAC 173-26-221(3)(c) and some additional language may need to be added. The SMP includes policies in 3.6.2. Some of the explicit standards required by the Guidelines are in 6.4.3.1 Flood Control Works. My question is whether the SMP includes provisions addressing WAC 173-26-221(3)(c)(i):

> (c) **Standards.** Master programs shall implement the following standards within shoreline jurisdiction:
>
> (i) Development in flood plains should not significantly or cumulatively increase flood hazard or be inconsistent with a comprehensive flood hazard management plan adopted pursuant to chapter 86.12 RCW, provided the plan has been adopted after 1994 and approved by the department. New development or new uses in shoreline jurisdiction, including the subdivision of land, should not be established when it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures within the channel migration zone or floodway. The following uses and activities may be appropriate and/or necessary within the channel migration zone or floodway:
>
> • Actions that protect or restore the ecosystem-wide processes or ecological functions.
>
> • Forest practices in compliance with the Washington State Forest Practices Act and its implementing rules.

• Existing and ongoing agricultural practices, provided that no new restrictions to channel movement occur.

• Mining when conducted in a manner consistent with the environment designation and with the provisions of WAC 173-26-241 (3)(h).

• Bridges, utility lines, and other public utility and transportation structures where no other feasible alternative exists or the alternative would result in unreasonable and disproportionate cost. Where such structures are allowed, mitigation shall address impacted functions and processes in the affected section of watershed or drift cell.

• Repair and maintenance of an existing legal use, provided that such actions do not cause significant ecological impacts or increase flood hazards to other uses.

• Development with a primary purpose of protecting or restoring ecological functions and ecosystem-wide processes.

• Modifications or additions to an existing nonagricultural legal use, provided that channel migration is not further limited and that the new development includes appropriate protection of ecological functions.

• Development in incorporated municipalities and designated urban growth areas, as defined in chapter 36.70A RCW, where existing structures prevent active channel movement and flooding.

• Measures to reduce shoreline erosion, provided that it is demonstrated that the erosion rate exceeds that which would normally occur in a natural condition, that the measure does not interfere with fluvial hydrological and geomorphological processes normally acting in natural conditions, and that the measure includes appropriate mitigation of impacts to ecological functions associated with the river or stream.

A colleague of mine in our Bellevue office recently worked on the decision for the City of Kenmore periodic review.

The recommended language added is shown below:

g. KMC Chapter 18.55, Article XIX, Flood Hazard Areas. While the Flood Hazard Areas regulations apply within shoreline jurisdiction, the regulations, themselves, are not incorporated as part of this *Shoreline Master Program*.

Her rationale:

Recommended change: Do not incorporate flood hazard regulations into the SMP.

Flood hazard regulations are not necessary for consistency with RCW 90.58 or the SMP guidelines. The purpose of these regulations is for NFIP certification, not the SMA. These regulations, by-and-large, are building codes. By incorporating these regulations into the SMP, any applicant that needs to deviate from these would need to obtain a shoreline variance, which could be hard to obtain. Furthermore any amendments to these that may be required by the NFIP would then need to go through the SMP amendment process. Several definitions in this section are inconsistent with SMA definitions. Ultimately, these unnecessary permitting and process steps could threaten the City's ability to maintain its certifications under the NFIP. We recommend that the SMP contain a soft reference to its flood hazard regulations and that these be implemented separately from the SMP.

I am sure we will have more to discuss regarding this particular issue, but did want to send this on.

Kim

Kim Van Zwalenburg, Senior Shoreline Planner
Department of Ecology - Southwest Regional Office
PO Box 47775 Olympia, WA. 98504-7775
(360) 407-6520; FAX (360) 407-6305
e-mail: kim.vanzwalenburg@ecy.wa.gov

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Started: Monday, November 25, 2019 1:30:29 PM
Last Modified: Monday, November 25, 2019 1:35:04 PM
Time Spent: 00:04:34
IP Address: 97.120.90.207

Page 1

Q1

How familiar are you with the existing Clark County Shoreline Master Program?

Somewhere in between familiar and not familiar

Q2

Have you ever applied for or received a shoreline permit or exemption?

No

Q3

Please share any concerns you have with the proposed changes to the Shoreline Master Program.

I am concerned about whether there is monitoring and evaluation of the mitigation. Has past mitigation worked. If not does the county require the developer to correct or further mitigate or pay into a fund so that we are truely achieving no net loss?

Q4

Are there changes to the Shoreline Master Program you would like to see that are not included in the proposed changes? If so, please describe.

As mentioned above - include monitoring and corrective action if needed for mitigation projects. Also, don't rely so heavily on mitigation.... sometimes the right answer is no to premitting development on wetland and shoreline resources.

Exhibit 5

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Last Modified: Wednesday, November 27, 2019 5:27:40 PM
Time Spent: 00:04:24
IP Address: 67.136.217.235

Page 1

Q1

How familiar are you with the existing Clark County Shoreline Master Program?

Familiar

Q2

Have you ever applied for or received a shoreline permit or exemption?

No

Q3

Please share any concerns you have with the proposed changes to the Shoreline Master Program.

Additional improvements are needed to the Shoreline Master Program.

Q4

Are there changes to the Shoreline Master Program you would like to see that are not included in the proposed changes? If so, please describe.

Protect all priority species and habitats from nearby adverse uses, not just point habitats.
Update priority habitat and species lists so they use the current lists published by the Washington State Department of Fish and Wildlife.
Protect isolated Category III wetlands less than 2,500 square feet in area and isolated Category IV 4,350 square feet. Allowing unmitigated impacts to these wetlands results in a loss of shoreline functions.
Strengthen vegetation retention requirements and require vegetation enhancement particularly adjacent to rivers and streams used by Chinook salmon. Vegetation should be retained within 200 feet of Natural shoreline, within 150 feet of Conservancy shorelines, and within 100 feet of all other shorelines except for water dependent uses.

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Last Modified: Thursday, November 28, 2019 2:13:19 PM
Time Spent: 00:07:43
IP Address: 73.240.193.18

Page 1

Q1

How familiar are you with the existing Clark County Shoreline Master Program?

Somewhere in between familiar and not familiar

Q2

Have you ever applied for or received a shoreline permit or exemption?

No

Q3

Please share any concerns you have with the proposed changes to the Shoreline Master Program.

My property @ the NE corner of 83rd St & 212th Ave. backs up to Shanghai Creek. Is this area being considered as part of the proposal?
David Pfeiffer

Q4

Are there changes to the Shoreline Master Program you would like to see that are not included in the proposed changes? If so, please describe.

I would like to see the restrictions reduced for possible future development.

Shoreline Master Program Community Feedback

Open Houses, November 14 and 18, 2019

Ridgefield Administrative & Civic Center and Frontier Middle School

Welcome

Thank you for providing feedback on the first draft of proposed changes to the Clark County Shoreline Master Program (SMP).

We are looking for input from individuals and organizations that have an interest in what happens on the shorelines of Clark County.

Your input will help us understand what you think of the draft proposal and what further revisions might be needed.

1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☐ Not familiar

   ☒ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☒ No

3. Please share any concerns you have with the proposed changes to the Shoreline Master Program.

4.Are there changes to the Shoreline Master Program you would like to see that are not included in the proposed changes? If so, please describe.

Address climate change

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open Houses, November 14 and 18, 2019

Ridgefield Administrative & Civic Center and Frontier Middle School

Welcome

Thank you for providing feedback on the first draft of proposed changes to the Clark County Shoreline Master Program (SMP).

We are looking for input from individuals and organizations that have an interest in what happens on the shorelines of Clark County.

Your input will help us understand what you think of the draft proposal and what further revisions might be needed.

1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☐ Not familiar

   ☒ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☒ No

For other formats, contact the Clark County ADA Office
Voice 564.397.2322 **Fax** 564.397.6165 **Relay** 711 or 800.833.6388 **Email** ADA@clark.wa.gov

(over)

3. Please share any concerns you have with the proposed changes to the Shoreline Master Program.

The Mitigation process has become way too easy.
It should only be allowed in the same reach or watershed only.

4.Are there changes to the Shoreline Master Program you would like to see that are not included in the proposed changes? If so, please describe.

Yes more scrutiny on mitigation.

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open House, September 25, 2019

Dollars Corner Fire Station

Welcome

Thank you for providing feedback on the Clark County Shoreline Master Program (SMP). While we are just starting on our review of the county's SMP, we are looking for input from individuals and organizations that have an interest in what happens on the shorelines of Clark County. Your input is important to this process and your feedback will be included as part of the information guiding updates to the SMP.

1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☐ Not familiar

   Here to learn

   ☑ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☑ No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

4. What is working well with the county's Shoreline Master Program?

5. What could be improved with the county's Shoreline Master Program?

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open House, September 25, 2019

Dollars Corner Fire Station

Welcome

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1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   - [x] Familiar
   - [ ] Not familiar
   - [ ] Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   - [ ] Yes
   - [x] No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

   How the county plans to manage carty Lake

4. What is working well with the county's Shoreline Master Program?

Coordination with local jurisdictions

5. What could be improved with the county's Shoreline Master Program?

Updating to be more compliant with Washington GMA

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open House, September 25, 2019

Dollars Corner Fire Station

Welcome

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1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☐ Not familiar

   ☒ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☒ No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

4. What is working well with the county's Shoreline Master Program?

Not Sure.
Need more info.

5. What could be improved with the county's Shoreline Master Program?

Not Sure.
Need more Info.

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open House, September 25, 2019

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1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☐ Not familiar

   ☑ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☑ No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

4. What is working well with the county's Shoreline Master Program?

5. What could be improved with the county's Shoreline Master Program?

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

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1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☒ Familiar

   ☐ Not familiar

   ☐ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☒ Yes

   ☐ No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

   How serious are you (Clark county) about inforcing the regs?

4. What is working well with the county's Shoreline Master Program?

At is an important start but - county growth expanding rapidly, more focus is needed on water & stream management & protection.

5. What could be improved with the county's Shoreline Master Program?

Better outreach & public

Thank you for sharing your thoughts and feedback!

Shoreline Master Program Community Feedback

Open House, September 25, 2019

Dollars Corner Fire Station

Welcome

Thank you for providing feedback on the Clark County Shoreline Master Program (SMP). While we are just starting on our review of the county's SMP, we are looking for input from individuals and organizations that have an interest in what happens on the shorelines of Clark County. Your input is important to this process and your feedback will be included as part of the information guiding updates to the SMP.

1. How familiar are you with the existing Clark County Shoreline Master Program? (Please check one.)

   ☐ Familiar

   ☒ Not familiar

   ☐ Somewhere in between familiar and not familiar

2. Have you ever applied for, or received, a shoreline permit or exemption? (Please check one.)

   ☐ Yes

   ☒ No

3. What questions do you have about the Shoreline Master Program and/or this Periodic Review?

   None yet - learning

4. What is working well with the county's Shoreline Master Program?

5. What could be improved with the county's Shoreline Master Program?

Thank you for sharing your thoughts and feedback!

From: Kelley Jorgensen
To: Jenna Kay; Brent Davis
Cc: David Morgan; Chris Watson; Kelley Jorgensen
Subject: [Contains External Hyperlinks] RE: Zip shapes for delivery
Date: Thursday, December 5, 2019 4:26:11 PM
Attachments: image001.png
DRAFT Plas Newydd Wapato Valley OHWM Determination 12.5.2019 redux.pdf

---

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Jenna and Brent,

Please find attached our draft report documenting the OHWM determination for Wapato Valley Mitigation and Conservation Bank and Plas Newydd Farm. We do not propose any change to Allen Creek (or Allen Canyon Creek) or Lake Rosannah at this time, so those waterbodies are not detailed in the report.

Please confirm receipt of this PDF, and don't hesitate to contact me about the report, or Chris Watson about the GIS shapefiles.

Thank you for the opportunity to provide input to the process.

Kelley

KELLEY JORGENSEN
President of Conservation
she | her | hers

T 360.857.4087 C 971.285.6874
E kjorgensen@pnfarm.com

PO Box 428
Ridgefield, WA 98642 | www.wapato-valley.com

From: Jenna Kay <Jenna.Kay@clark.wa.gov>
Sent: Thursday, December 5, 2019 10:36 AM
To: Kelley Jorgensen <kjorgensen@pnfarm.com>; Brent Davis <Brent.Davis@clark.wa.gov>
Subject: RE: Zip shapes for delivery

Thanks Kelley. We will follow-up once we have a chance to review and look forward to receiving the additional document.

Jenna

From: Kelley Jorgensen [kjorgensen@pnfarm.com]
Sent: Wednesday, December 04, 2019 4:58 PM
To: Brent Davis; Jenna Kay
Subject: [Contains External Hyperlinks] FW: Zip shapes for delivery

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Brent and Jenna,

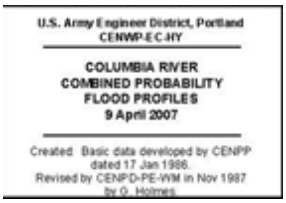
Please find attached the wetland rating unit, OHWM and 100-year flood GIS shapefiles for the Plas

Newydd property.
These are the locations we are proposing updates for the Shoreline Master Plan process.
OHWM delineation technical memo to follow under separate cover.
Please don't hesitate to contact me or Chris Watson if you have any questions.
Thank you for your time and consideration,

Kelley

KELLEY JORGENSEN » *President of Conservation*
she | her | hers
T 360.857.4087 C 971.285.6874 E kjorgensen@pnfarm.com
PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

Please find attached GIS shapefiles:

- 100yr flood zone on the PN Farm property based on the USACE 1% exceedance value at Columbia RM 87 of 26.54' NAVD 88.
  - 
    U.S. Army Engineer District, Portland
    CENWP-EC-HY
    COLUMBIA RIVER
    COMBINED PROBABILITY
    FLOOD PROFILES
    9 April 2007
    Created: Basic data developed by CENPP dated 17 Jan 1986.
    Revised by CENPD-PE-WM in Nov 1987 by G. Holmes.
- Wetland rating units on the Wapato Mitigation and Conservation Bank provided by CEG.
- OHWM from determination.

CHRIS WATSON » *GIS Manager/Project Manager/Geologist*
he | him | his

T 360.857.4040 C 503.332.7231 E cwatson@pnfarm.com
PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

DETERMINING THE ORDINARY HIGH WATER MARK FOR THE WAPATO VALLEY MITIGATION AND CONSERVATION BANK AND PLAS NEWYDD FARM

DECEMBER 2019

PLAS NEWYDD FARM
EST.1941
CONSERVATION PROGRAM

Prepared by
Plas Newydd, LLC
Conservation Program
Ridgefield, Washington

Prepared for
Clark County, WA & Washington IRT

Cover Photos showing diversity of shoreline conditions, clockwise from upper left:

1. Native basalt outcrop with moss scour line, Gee Creek backwater south of the Narrows Levee, Gee Creek approx. RM 2.33
2. Columbia River shoreline with flattened emergent vegetation, approx. RM 87.1
3. Lewis River shoreline with sandy bank wrack line, approx. RM 0.1
4. Gee Creek shoreline vegetation transition, approx. RM 1.95

Suggested citation:
Plas Newydd, Inc. 2019. Determining the Ordinary High Water Mark for the Wapato Valley Mitigation and Conservation Bank. Ridgefield, Washington.

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Attachments

1 INTRODUCTION

Plas Newydd LLC proposes to construct and operate a wetland mitigation and habitat conservation bank, the Wapato Valley Mitigation and Conservation Bank (Wapato Valley or Bank), on privately owned land known as Plas Newydd Farm (PN Farm). The purpose of the Bank is to generate mitigation credits for projects that will have an adverse impact on the aquatic and adjacent terrestrial environment, and that need to compensate for those impacts as a condition of their permits or other regulatory requirements resulting from project impacts. The Bank also serves a critical purpose to conserve an important and rare landscape and the ecological processes that shape and define it, as well as promote biodiversity of native vegetation and wildlife through habitat restoration and protection.

The construction of the 876.32-acre Bank will be done in 4 phases due to size and logistics of grading and in-water work. Construction actions include: removing 100 years of farm infrastructure including fencing, gates, roads, duck blinds, and water pipes; levee and water control structure removal and modification for floodplain reconnection, tidal hydrology and fish passage restoration. Fill will be removed to restore tidal and distributary channel morphology, and ditches will be filled. Invasive reed canary grass and other non-native species will be removed, lowering floodplain elevations to increase inundation and promote native plant communities. Elevations will be modified to increase topographic diversity and support native woody and emergent plant communities. Aquatic habitat complexity will be increased through installation of large wood habitat structures. Oregon white oak habitats will be restored by removing competing tree species that are crowding the oak and competing for light and space, and new Oregon white oak habitat will be constructed to increase acreage of oak savannah and wet prairie.

To support permitting of the bank construction and updates to the Clark County Shorelines Master Plan this assessment documents the state and local shoreline jurisdiction of the Washington Department of Ecology (Ecology), Clark County (County) and the separate federal jurisdiction of the U.S. Army Corps of Engineers (Corps) as it relates to the Ordinary High Water Mark (OHWM) for Section 10 of the Rivers and Harbors Act. Wetlands and waterbodies within the Bank property are documented separately in a 2016 report by Cascade Environmental Group, titled "Plas Newydd Farm Wetlands and Other Waters Delineation Report, prepared for Plas Newydd LLC. Plas Newydd LLC received a letter of concurrence in the form of a jurisdictional determination (JD) from the U.S. Army Corps of Engineers (Corps) dated 6 September 2018. The delineation report and JD are provided under separate cover due to size.

The proposed 876-acre Bank is located wholly on privately owned property, Plas Newydd Farm which is owned by Plas Newydd LLC, in north Clark County, Washington (Figure 1). PN Farm and the Wapato Valley Bank are in Water Resource Inventory Area (WRIA) 27, the Lewis River watershed in the Columbia River basin, within the freshwater tidally influenced portion of the lower floodplain

at the confluence of the Lewis River at River Mile (RM) 87. The Bank is located approximately two-thirds of the distance between the mouth of the Columbia River as it enters the Pacific Ocean (RM 0) and Bonneville Dam (RM 146), which is the most downstream of 14 mainstem dams on the Columbia River. The Bank is situated west of U.S. Interstate 5 (I-5), east of the Columbia River, north of the town of Ridgefield, and south of the town of Woodland; in portions of Sections 1, 2, 11, and Donation Land Claim (DLC) 37[1], and Section 12 in Township 4 North, Range 1 West (Clark County 2015; AINW, Inc. 2013). The situs address of PN Farm and Wapato Valley Bank is 33415 NW Lancaster Road, Ridgefield, Washington, 98642. The Bank encompasses 876.32 acres and is comprised of portions of Clark County tax parcel numbers 217593000, 217798000, and 218003000. The Bank is bordered by the BNSF Railway to the east, the Lewis River to the north, the Columbia River to the west, and Gee Creek and the Ridgefield National Wildlife Refuge (RNWR) to the south.

PN Farm is currently managed for sustainable family forestry, agriculture, and leased duck hunting. The land is topographically diverse and ranges in elevation from about 6 to 80 feet NAVD88. The site is hydrologically complex and influenced by the confluence setting, twice-daily backwater tidal influence from the Columbia River, seasonal flooding, and groundwater and hyporheic interactions. The Bank consists of diked and undiked wetlands (including open water lake, stream, and river channel; mudflat; emergent, low, and high marsh; wet pasture; scrub-shrub; and forested wetland), and uplands (including upland pasture, grassland, mixed deciduous/conifer forest, oak woodland, riparian forest, conifer forest, and dike/levee structure). The site supports biologically diverse habitats and native fish and wildlife species, including rare native plant communities and multiple special-status species.

2 METHODS

This assessment was prepared by Plas Newydd LLC staff. Kelley Jorgensen is the Plas Newydd President of Conservation and lead restoration ecologist responsible for the planning, development, and implemention of aquatic and terrestrial habitat restoration projects on 1000+ acres. She is leading the development and approval of the proposed 876-acre Wapato Valley Wetland Mitigation and Conservation Bank. With over 28 years of experience in the Pacific Northwest in applied ecology, Kelley's career to date has spanned the public, private and non-profit sectors. She combines her expertise in Pacific Northwest watershed ecology, field biology, interdisciplinary restoration approaches, environmental project management, permitting and facilitation to lead the Conservation Program in restoring this dynamic, complex and biodiverse landscape.

Chris Watson, a certified GISP, is Plas Newydd's GIS analyst, field geologist and data manager. His background includes over 20 years in the Pacific Northwest

[1] Sometimes shown as DLC 57, which varies by data source due to Donation Land Claim origin.

permitting and regulatory consulting environments. Chris provides the Conservation Program team with hydrologic and other modeling as well as GIS analytical capabilities. Chris is adept at bringing to bear the correct spatial data and analyses to solve complex and often multifaceted problems. He has a skillset that includes project management, GIS analysis, geologic evaluation and exploration, technical writing, public education support, litigation support, computer simulations and modeling, and database design. Mr. Watson has spent the last six years working on river and habitat restoration projects in the lower Columbia. Chris has been part of over 20 NEPA project teams in Oregon, Washington, Idaho, and Utah.

Sophie Ernst is a field biologist and is a Certified Erosion and Sediment Control Lead, and certified in ArcGIS, with 4 years of environmental data collection and analysis. She is skilled in Real-Time Kinematic (RTK) Global Positioning System (GPS) and other remote sensing data collection and analysis, biotic and abiotic field data collection and analysis, identification of flora and fauna, collection and interpretation of hydrologic data, and use of Python, Bad Elf and Excel. Sophie has a Bachelor of Arts in Environmental Studies from the University of Washington, and a Geographic Information System (GIS) Certificate from Portland Community College.

Hannah Mortensen is a field biologist, is GIS-certified and a licensed Unmanned Aerial Vehicle (UAV, or drone) pilot, with over 4 years of environmental data collection and analysis. She is skilled in Real-Time Kinematic (RTK) Global Positioning System (GPS) and other remote sensing data collection and analysis, 3D modeling, biotic and abiotic field data collection and analysis, identification of flora and fauna, collection and interpretation of hydrologic data, and use of Python, Bad Elf and Excel. Hannah has a Bachelor of Science in Ecology from The Evergreen State College, and a Geographic Information System (GIS) Certificate from Portland Community College.

Karen Adams is a senior wetland ecologist and monitoring lead. She has over 25 years of experience in monitoring the health and status of watershed conditions, specializing in wetlands and aquatic habitats. Her work has focused on developing monitoring plans and protocols, statistical analysis of environmental and experimental data, and reporting. Karen has earned degrees in Environmental Science, Wetlands Biology, and Ecology and Evolutionary Biology, investigating the effects of channel modification for flood management on forested wetlands, and the interactions between native and invasive wetland plant species. She has worked in and around Washington State's salmon bearing ecosystems for the last 10 years for the Washington State Department of Ecology, the Lower Columbia Fish Recovery Board and Plas Newydd LLC.

Documentation, field data collection and hydrologic assessment methods for the OHWM determination are based on from "Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State" (Ecology 2016). Extensive office and field assessments have been conducted

(many are ongoing) over a period of 5+ years (2014-2019) collecting biotic and abiotic data to document pre-project conditions on the 876.32 acre Bank and portions of the roughly 800 acres of Plas Newydd property in forestry outside the Bank. The data provided here is a summary of relevant information helpful to understand the OHWM determination and includes a combination of field indicators and a hydrologic (stream and tidal) assessment conducted for the Lewis River using the stream methodology, field indicators for Lancaster Lake, and a combination for the Columbia River using the marine or tidal methodology of mean higher high water and more traditional fluvial or stream field indicators Lewis River and Gee Creek; both stream and tidal methods in combination are the most useful for delineating tidal fresh waters.
The office assessment provided is focused on the hydrologic assessment, detailed in the next section. PN Conservation Program staff identified 9.2 miles (48,630 lineal feet) of shoreline areas along 4 waterbodies located on or adjacent to PN Farm for delineation of OHWM including the Columbia River, Lewis River, Gee Creek, and Lancaster Lake (Table 1, Figure 2). Additional shoreline areas are located along Allen Creek (aka Allen Canyon Creek) and Lake Rosannah that are within the property boundary, however those areas were not identified for delineation as there are no proposed construction projects that could affect them at this time, nor do they appear to require updates or changes in the current 2019/2020 Clark County Shoreline Masterplan update process.

Table 1. Waterbodies and Shoreline Areas included in Delineation of OHWM

Waterbody	River Miles	Miles of Shoreline	Lineal Feet of Shoreline
Columbia River	87 – 87.3	0.45	2,405
Lewis River	0 – 2.75	4.55	24,045
Gee Creek	0 – 2.4	2.71	14,327
Lancaster Lake	N/A	1.49	7,853
Total	**5.45**	**9.2**	**48,630**

3 FIELD ASSESSMENT

Field visits focused on OHWM data collection were made at multiple locations along the above mentioned shorelines for the purpose of recording field indicators (vegetation, scour lines, wrack lines, flatted vegetation, soil markers, etc.) on the following dates:

- 1/9/2018
- 1/12/2018
- 1/15/2018
- 7/11/2019
- 7/12/2019
- 7/15/2019
- 7/16/2019
- 11/18/2019
- 11/19/2019

- 11/20/2019
- 12/2/2019
- 12/3/2019
- 12/4/2019

Plas Newydd technical staff collected field indicator and topographic elevation data at over 95 points scattered along 9.2 miles of shoreline. Field data points were concentrated in locations where Wapato Valley Bank proposed construction would overlap or approach OHW areas or where field indicators were the most easily discerned. Attachment A includes the field data forms and an overview map showing the locations of the RTK GPS data collection. Species (Latin) names and common names for vegetation discussed here are presented in tabular form in Attachment B. Vegetation, scour lines, bank erosion/channel scour, flattened vegetation from "drainage patterns" (tidal surge or fluvial flows), top of bank, overbank deposits and wrack lines were evident in various locations. Elevations were taken of OHWM features and analysis found patterns indicative of fluvial and/or tidal hydrologic influence, described further in the hydrologic assessment discussion and conclusions. Due to the large size of the shoreline area being delineated, patterns were found during field indicator and elevation data analysis and averages were used to create the OHWM across long stretches of shoreline.

3.1 COLUMBIA RIVER OHWM

Field indicators are ephemeral, dynamic and highly variable in this mainstem lower Columbia River location, influenced by complex hydrodynamics including heavily-managed flows and regulated spill of the Columbia River hydropower system, tidal influence and backwater effects, and confluence effects from the Lewis River (also hydromodified by 3 channels-spanning hydroelectric dams upstream) and the Willamette River and Multnomah channel which enter the Columbia just upstream and across from the PN Farm property. The Columbia River is influenced by snow-melt driven spring freshet flows fed by the Rocky and Cascade mountain ranges which create short term but extreme rises in water surface elevation, sometimes on the order of 15 feet or more of fluctuation during a water year. High water on the Columbia is not typically in winter (which is the average high water for most west Cascade streams and rivers) but instead occurs between April and June.

The PN Farm property along the Columbia River is a rare low-elevation intact tidal surge plain with active erosion and accretion patterns and sand-dominated sediment transport. The shoreline is affected by fluvial flood flows, tidal backwater/slack tide conditions, fetch, and erosive wave action driven by wakes generated from a wide variety of vessel types ranging from very large ocean-going vessels with a deep draft to smaller fishing, pleasure and speed craft (including jet skis) which travel much closer to the shore and generate waves at a much higher frequency. To further complicate matters, soils are very sandy along the Columbia, groundwater hydrology is largely hyporheic and

wetlands have a high degree of upland plants depending upon the microclimate. Combined these elements serve to create a lot of "noise" and variation in elevation in the identification of field indicators.

The Columbia River (Clark County, WA side) shoreline on the western edge of the PN Farm property between approximately RM 87 and 87.3 (and the contiguous open sandy shoreline of the Lewis River confluence area) was surveyed over multiple site visits between January 2018 and December 2019. Field indicators were identified readily during both winter and summer (both seasons with prolonged low water conditions and strong tidal signal) that represent the lower limit of the OHWM including toe of lowest terrace, drainage patterns as shown by flattened vegetation, aquatic plants, and aquatic animals. Lower limit indicators fell within about one vertical foot of each other and were easily averaged. Field indicators for the upper limits were more difficult to discern and varied greatly in elevation due to lack of fixed objects, a site with little topographic relief and heavy wave action from vessel wakes. Upper limit indicators varied by 3 vertical feet and were more difficult to average as a result. See the hydrologic assessment for a discussion of mean higher high water, a datum relevant for this tidally dominated setting. Table 2 lists the dominant species of vegetation identified and their distribution across the OHWM gradient. The list identifies the dominant species identifiable at the time of survey but is not exhaustive.

Table 2. Plant Distribution across Columbia River OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Needle Spikerush, OBL	Reed canarygrass, FACW	Oregon ash, FACW
Softstem Bulrush, OBL	Willow sp., FACW (colonizing)	Willow sp, FACW (mature)
Slough Sedge, OBL	False indigo bush, FAC	Black cottonwood, FAC
Woolgrass, OBL	Red-osier dogwood, FACW	Himalayan blackberry FAC
	Rough cocklebur, FAC	Black hawthorn, FAC

3.2 LEWIS RIVER OHWM

The south shore of the Lewis River between RM 0 and 2.75 along PN Farm property was surveyed at 40 data points in 6 locations between January 2018 and December 2019. Much of shoreline of the Lewis River in the lower 3 miles is dominated by a persistent erosion-resistant clay with naturally steep banks and overlays of intermittent sandy benches. Some shoreline armoring (native basalt – ballast to 1-man rock in size) is also present in patches along the toe of the Lewis River levee between RM 1 up to RM 2 where Allen Creek flows into the Lewis River through twin culverts. Field indicators identified include scour/moss line on rocks, sediment lines on rocks, lack of soil horizons, aquatic plants, aquatic animals, vegetation changes, stain lines on fixed objects, depositional sediment changes, well developed soil horizons, relic floodplain surface, exposed

roots/root scour, bank erosion, wrack lines and benches. Field indicators generally fell within 12-18 inches of each other and were logical when averaged across the 4.5 miles of shoreline surveyed.

Table 3. Plant Distribution across Lewis River OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Sedge sp, OBL	Reed canarygrass, FACW	Oregon ash, FACW
Rush sp, OBL	Red-osier dogwood, FACW	Oregon white oak, FACU/UPL
	Western goldenrod, FACW	Black cottonwood, FAC
		Himalayan blackberry, FAC

3.3 GEE CREEK OHWM

The north shore of Gee Creek between RM 0 and 2.4 along PN Farm property was surveyed at 24 data points in 4 locations between January 2018 and December 2019. The shoreline of Gee Creek is dominated by either a persistent erosion-resistant clay with naturally steep banks or naturally occurring native basalt outcrops. A narrow rock wall canyon also exists about halfway along the surveyed length. Field indicators identified include scour/moss line on rocks, sediment lines on rocks, lack of soil horizons, clean cobbles/boulders, aquatic plants, aquatic animals, vegetation changes, stain lines on fixed objects, depositional sediment changes, well developed soil horizons, relic floodplain surface, exposed roots/root scour, bank erosion, wrack lines and benches. Field indicators generally fell within 12-18 inches of each other and made sense when averaged across the 2.7 miles of shoreline surveyed.

Table 4. Plant Distribution across Gee Creek OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Sedges, OBL	Reed canarygrass, FACW	Oregon ash, FACW
Needle spikerush, OBL	Red-osier dogwood, FACW	Oregon white oak, FACU/UPL
Wapato, OBL	Western goldenrod, FACW	Black cottonwood, FAC
	Moss sp., UPL	Douglas-fir, FACU
	Stonecrop, UPL	Himalayan blackberry FAC
	Willow sp. FACW	Snowberry, FACU

3.4 LANCASTER LAKE OHWM

Lancaster Lake is a perennially ponded impounded area created by a channel spanning dike (the Narrows dike) that isolates a large historic floodplain area

from Gee Creek to the south, and the Lewis River to the north is separated by another levee system. The dike has one small tide gate with a flapper valve that prevents Gee Creek from backwatering into the floodplain and Lancaster Lake, but allows some discharge out of the lake through the tidegate when water surface elevations in Lancaster Lake are higher than Gee Creek. The lake is largely fed by hyporheic groundwater because it is in the Columbia and Lewis River floodplains, and from precipitation and seeps. Water level monitoring inside and outside the levee has demonstrated that Lancaster Lake generally tracks the water levels in the Columbia during spring freshet fluctuations and flood flows from floodplain recharge with delays in both runup and flood recession. The unique floodplain setting creates a challenging location to determine the upper limit of the OHWM towards the extensive associated wetlands within the broad flat floodplain to the north of the lake. The lake is bounded to the east and west by naturally occurring basalt outcrops and bounded to the south by the Narrows levee, which is also armored with native locally sourced basalt levee rock, that show more obvious field indicators for the upper limit of the OHWM.

Twenty-two data points were taken in 4 locations along 1.5 miles of Lancaster Lake shoreline between July and December 2019. Field indicators documented include vegetative changes, sediment deposits, clean cobbles/bedrock, lack of soil horizon, aquatic plants, aquatic animals, and water marks on the shoreline and downed large wood, and a review of time series imagery that captured annual highwater events. From the documented field indicators, the OHWM is a relatively vertically and horizontally wide zone that spans across a gradation of more than four feet between the upper and lower limits. The OHWM was averaged across the upper limit indicator elevations, which generally fell within12 – 18 inches of each other. Table 5 lists the dominant species of vegetation and their distribution across the OHWM gradient. The list identifies the dominant species recorded at the time of survey but is not exhaustive. Attachment A includes a map of locations of the data points and field data forms.

Table 5. Plant Distribution across Lancaster Lake OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Wapato, OBL	Reed Canarygrass, FACW	Oregon White Oak, FACU
Polygonum Species, OBL	Salix Sp, FACW	Douglas-Fir, FACU
Reed Canarygrass, FACW	Douglas Spirea, FACW	Vine Maple, FAC
Bull Rush, OBL	Oregon Ash, FACW	Himalayan blackberry, FAC
Rough cocklebur, FAC	Herb Robert, FACU	Scot's Broom, NI
Sparganium sp., OBL	Birdsfoot trefoil, FACU	Licorice fern, NI
		Camas, FACW

4 HYDROLOGIC ASSESSMENT METHODS

This section summarizes the methods, data, and results used in hydrologic assessments of the Wapato Valley project and PN Farm shorelines areas. As the location has both stream (fluvial) and tidal freshwater shoreline areas, this report includes hydrologic assessments of each. The hydrologic assessments were performed in conjunction with and supplementary to OHWM field assessment of the same shorelines, described above.

Wapato Valley lies in the floodplain at the confluence of the Lewis River WRIA 27 with the mainstem Columbia River at RM 87. Wapato Valley is located in the freshwater tidal zone and experiences a daily tidal range of 2–4 feet on average (NOAA 2011). Due to the complexity of the hydrologic conditions at Wapato Valley, it cannot be classified as simply "high energy" or "low energy." PN Farm includes 9.2 miles of shoreline (Wapato Valley includes subset of that) (Table 1). Lancaster Lake has no fluvial in-flow with shorelines mainly affected by a subdued reflection in water surface level of that in the Columbia River. Gee Creek has shorelines with both a backwater area that is open and punctuated with abrupt hard-rock islands and a constricted channel bounded by mostly erosion-resistant consolidated clay or bedrock shore. Flow in Gee Creek is in both directions up and downstream depending mainly on the Columbia River WSL and tides. The Columbia River shoreline within Wapato Valley transitions from an aggrading shore near the mouth of Gee Creek to an eroding shoreline at the mouth of the Lewis River. Shores on the Lewis River portion of Wapato Valley exhibit high energy erosion characteristics near the mouth with lower energy chrematistics upstream.

WRIA 27 encompasses over 1,300 square miles and drains the western slope of the Cascade Mountain range, emptying into the Columbia River at river mile 87 (Corps 2014). Downstream flow on the Lewis River is regulated by the three upstream hydroelectric dams and reservoir systems, fish protection instream flow rules, and various water management strategies (Ecology 2016a).

The Columbia River is approximately 1,243 miles in length and drains over 258,000 square miles in seven states, and one Canadian province. Flow in the Columbia River is regulated by 14 major dams in the main stem and 46 in its tributaries (NRC 2004). Flows in the lower Columbia River are highly modified by the upstream water control structures, the geographic extent and complexity of its basin, water management practices, power generation, and other factors. Columbia River shorelines within Wapato Valley are directly affected by dynamically changing WSL and flows dictated by daily tides, commercial ship traffic, and upriver spill control facilitating power generation, agriculture needs, flood control, and fish migration. Fluctuations also occur from year to year based on snow pack, precipitation levels, and local climate changes.

5 STREAM HYDROLOGIC ASSESSMENT

The stream and tidal hydrology assessment methods provided by the Washington Department of Ecology in Publication no. 16-06-029 (Ecology 2016) analyze stream flow data from proximal or surrogate stream gages. The goal of these analyses is to provide context and to capture the flow range also referred to as "bookend" values. Context can be useful in spotting trends or events that may otherwise obscure the indicators in the field, as is the case along the shorelines of the rivers and streams within Wapato Valley. Conversely, analyzing the recent and historic flows can help in planning field efforts around a time when indicators are most likely to be found. The flow range or "bookend" data is useful in bracketing elevation ranges to inform on-site OHWM field assessments and cross-checking field-driven determination results.

5.1 STEP 1 AND 2: USE GAGE DATA TO APPROXIMATE UPPER AND LOWER EXTREMES FOR OHW FLOWS AND CORRELATE TO STAGE

The nearest gage on the Lewis River is USGS 14220500 located in Ariel, WA at 45.95194° N, 122.5628° W. The Ariel, WA gage is approximately 18 miles upstream from Wapato Valley and has been recording from July 1,1909 until the present (USGS 2019) (Figure 3). The channel at the gage location is approximately 235 feet wide at a stage of 10 feet. The upstream dams were finalized in 1958; consequently, the analysis uses data from 1958 to present as it most accurately reflects current flow conditions.

5.1.1 Generate the upper bookends by estimating the two-year peak and minimum peak flow

Using the downloaded dataset, the calculated median is 24,800 cubic feet per second (cfs) corresponding to a stage of 11.8 feet. The minimum peak flow is 9,670 cfs corresponding to a stage of 6.54 feet. The chart method results were cross-checked with the spreadsheet method and found to match (Figure 4 and Table 6).

Table 6. Maximum peak annual discharge data 1958–2017 Lewis River (aka "spreadsheet method").

Date	cfs	Stage (ft)
1958-02-12	18,300	10.52
1959-01-24	32,800	15.12
1959-10-12	21,400	11.33
1960-11-24	48,200	19.3
1961-12-20	11,900	7.72
1962-11-20	75,500	25.7
1964-01-25	17,700	9.98
1964-12-22	44,000	17.49
1966-08-01	11,900	7.76
1966-12-13	50,500	19.12

Date	cfs	Stage (ft)
1968-02-23	31,100	14.02
1968-11-11	21,000	11.03
1970-01-23	41,800	16.96
1971-01-25	23,300	11.76
1972-03-13	36,400	15.55
1972-12-24	18,000	9.99
1974-01-15	59,600	21.13
1975-01-14	22,400	11.46
1975-12-04	64,500	22.63
1976-12-02	11,800	7.61
1977-12-02	71,900	24.38
1978-11-15	11,800	7.62
1980-01-12	12,000	7.71
1980-12-26	53,700	19.93
1982-02-20	40,700	16.67
1983-01-07	27,000	12.78
1983-11-17	17,100	9.5
1985-06-07	22,100	11.29
1986-02-24	27,700	13.06
1986-11-24	12,100	7.53
1987-12-10	12,300	7.61
1989-02-06	11,700	7.51
1990-01-10	42,000	16.85
1990-11-25	39,600	16.23
1992-01-30	12,600	7.68
1993-04-03	12,000	7.49
1994-01-08	11,800	7.45
1995-02-20	26,600	12.56
1996-02-08	86,400	27.38
1997-01-01	34,100	14.92
1997-11-21	12,200	7.63
1998-12-29	35,900	15.43
1999-12-15	35,700	15.37
2001-05-14	9,670	6.54
2001-12-17	14,700	8.6
2003-01-31	49,300	18.98
2004-01-29	11,700	7.44
2005-01-17	16,500	9.3
2006-01-11	29,900	13.68
2006-11-06	39,900	16.54

Date	cfs	Stage (ft)
2007-12-04	18,200	9.89
2009-01-07	40,300	16.63
2010-01-05	12,700	7.79
2011-01-16	35,400	15.22
2011-12-29	17,900	9.66
2012-11-20	22,900	11.4
2014-03-09	26,400	12.53
2014-11-27	16,700	9.25
2015-12-11	31,700	14.14
2017-03-16	26,300	12.48
Peak High (median)	**2,4800**	**--**
Peak Low (minimum)	**9,670**	**--**

5.1.2 Refine the Range

To refine the vertical range, the upper limit or "bookend" flow is reduced to a flow value that is exceeded at least once each year in 60 percent of years. A plot and table of the daily mean discharge and stage were pulled for 2002–2017 with 16 years represented. The calculated value using the iterative method in the spreadsheet was 16,400 cfs. A flow 16,400 cfs meets the criteria of being exceeded in 60% of the years in the analysis data set. The 16,400 cfs peak flow, which corresponds to a stage of 9.15 feet, was exceeded 10 out of the 16 years or 62.5% of the years in the analysis dataset (Table 3 and Figure 3).

Table 7. Number of times 16,400 cfs was exceeded in each year 2002–2017.

Year	Exceedance Count
2002	0
2003	3
2004	0
2005	0
2006	9
2007	1
2008	1
2009	4
2010	0
2011	349
2012	4
2013	0
2014	5
2015	12
2016	0
2017	6

The lower limit or "bookend" value was raised slightly to 10,900 cfs corresponding to a stage of 6.95 feet. This adjustment was made to reduce the number of long duration exceedance events of previous value. The correlation of discharge to stage was done in both the spreadsheet and graphically. A correlation of discharge and stage is shown in Figure 5.

5.1.3 Step 3: Compare recent events to OHWM bookends

To identify recent discharge or flow events that may have left fresh indicators on the Wapato Valley site, daily gage data for the last 12 months was reviewed. It was determined that the lower bookend value was exceeded twice in the last 12 months with a stage of approximately 7.75 feet (Figure 6).

5.1.4 Stream assessment conclusions

Given the location of the Wapato Valley at the confluence of the Columbia and Lewis rivers, the distance (18 miles) downstream from the Ariel, WA gage, and the dynamic and complex nature of the site, the hydrologic stream assessment in this case is useful only as context for upstream basin contributions, but is not indicative of the holistic picture of the hydrologic conditions or influences on shoreline OHW conditions. In addition, the Lewis River hydrology at the Wapato Valley location is dominated and obscured by flood flows and tidal backwater flows from the mainstem Columbia River. The stream assessment does however clearly give a couple of windows of time (December 19–21 and 30–31, 2018) that we can use to correlate with tidal station data from the tidal assessment to focus the field assessment on the most probable local elevations.

6 TIDAL HYDROLOGIC ASSESSMENT

This hydrologic assessment is intended to be used in conjunction with the stream hydrologic assessment above to inform the OHWM determination at Wapato Valley. The tidal hydrology assessment methods provided in Ecology (2016b) help focus the field assessment by providing a range of elevations on the ground where field indicators are most likely to be found. The OHWM in most cases is based on observable field indicators and is always above the mean higher high water (MHHW). Tidal information should not be the sole basis for an OHWM determination; however, in locations where field indicators are missing or cannot be found at certain times of year, tidal data (MHHW) may be the only option for establishing the OHWM reliably and consistently (Ecology 2016; RCW 90.58.030(2)(c)). The OHW delineation document is conspicuously missing guidance on the very large area of freshwater tidal influence on the lower Columbia River.

6.1 STEPS 1–3: LOCATE AN APPROPRIATE STATION AND IDENTIFY TIDAL DATUMS

Wapato Valley is located at RM 87 on the Columbia River. The St. Helens, OR tidal station, ID 9439201, is located at RM 86. For the purposes of this assessment, all elevations from the St. Helens station will be given in Columbia River Datum (CRD) which is 4.28 feet less than NAVD 88 at this location. The MHHW at the St. Helens station is reported as 5.28 feet, which equates to 9.56 feet NAVD 88. The vertical offset of Wapato Valley from the St. Helens station is +0.2 feet, giving Wapato Valley a MHHW elevation of 9.76 feet NAVD 88 (NOAA 2011) (Table 4).

Table 8. Local Datum Comparisons to MHHW at St. Helens Tidal Station.

CRD (ft)	NAVD 88 +4.28 (ft)	Wapato Valley Upriver Offset +0.2 (ft NAVD 88)
5.28	9.56	9.76

It should be noted that MHHW is calculated on tidal epochs. A tidal epoch is the specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water, etc.) for tidal datums. The present National Tidal Datum Epoch (NTDE) is 1983 through 2001 and is actively considered for revision every 20–25 years. The MHHW listed above for Wapato Valley is based on an epoch that ended in 2001 (NOAA 2011).

In the stream assessment, periods of peak flow were identified that have a higher probability of corresponding with the formation of OHWM indicators. When the St. Helens station data is correlated with the peak flow periods (December 19–21 and 30–31, 2018) identified in the stream assessment, water surface elevations from the St. Helens station are shown to peak from 5.5–8.3 feet CRD (9.98–12.78 feet NAVD 88). These hybrid bookends prove useful in identifying the OHWM on the Columbia and Lewis River shorelines at the Wapato Valley location.

6.2 TIDAL ASSESSMENT CONCLUSIONS

Given the hybridized fluvial-tidal nature and complex riverine setting at the confluence of the Columbia and Lewis rivers, and the tidal epoch date range from which the published MHHW was derived, the tidal assessment places the bookends between 5.5–8.3 feet CRD (9.98–12.78 feet NAVD 88) on the Lewis River shoreline portions of the Wapato Valley and between 2.05–5.28 feet CRD (6.53–9.76 feet NAVD 88) on the Columbia River shoreline sections of the site. As noted previously, the tidal assessment is meant to guide and supplement the field indicators assessment of the OHWM determination.

Table 9. Hydrologic assessment "bookend" OHWM elevation ranges.

Shoreline Location	Probable Low (CRD)	Probable Low (NAVD 88)	Probable High (CRD)	Probable High (NAVD 88)
Lewis River	**5.5**	**9.98**	**8.3**	**12.78**
Columbia River	**2.05**	**6.53**	**5.28**	**9.76**

7 CONCLUSIONS

The OHWM determination for the following four waterbodies located on or adjacent to the Plas Newydd LLC property pertaining to Plas Newydd Farm and Wapato Valley Bank, based on the analysis documented in this report through field indicators and hydrologic assessment are as follows:

Table 10. OHWM Results for Plas Newydd Farm/Wapato Valley in NAVD88

Columbia River	Lewis River	Gee Creek	Lancaster Lake
9.76 (MHHW)	**11.8**	**11.8**	**10.57**

8 REFERENCES

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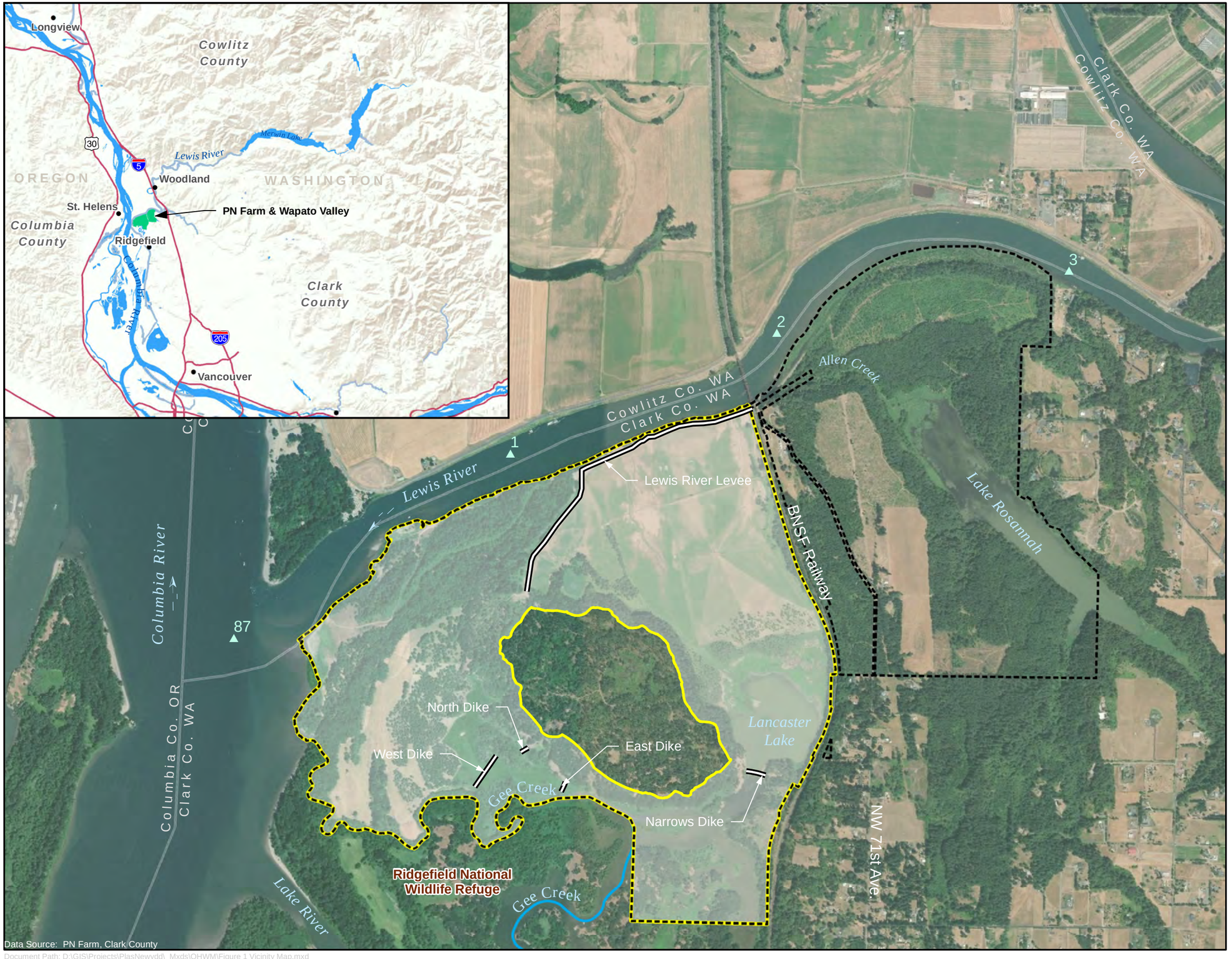
FIGURES

Figure 1. Property Overview & Vicinity

Plas Newydd, LLC
Conservation Program



Data Source: PN Farm, Clark County

Document Path: D:\GIS\Projects\PlasNewydd_Mxds\OHWM\Figure 1 Vicinity Map.mxd

N
W E
S

- Property Boundary
- Wapato Valley Mitigation and Conservation Bank
- Dike or Levee
- River Mile Marker

0 1,500 3,000
Feet

0 250 500
Meters

PLAS NEWYDD FARM
EST. 1941
CONSERVATION PROGRAM

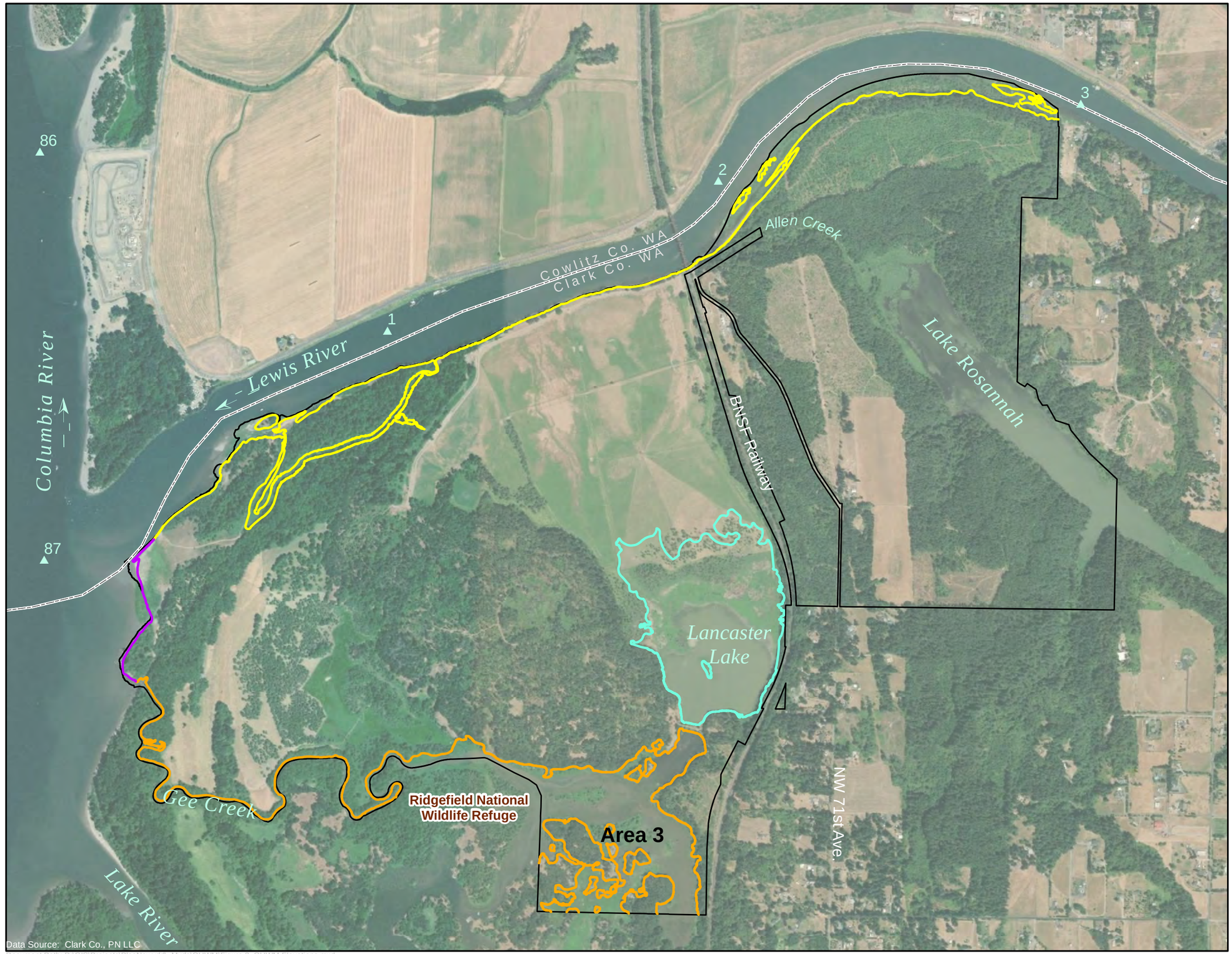
OHWM Determination

Photo: GeoTerra, 8/16/2015
River Stage: ~7.25' NAVD 88

Date: 12/5/2019

Figure 2. OHWM Elevations

Wapato Valley
Mitigation and Conservation Bank



N
W E
S

OHWM Elevation (NAVD 88)

- 9.76 - Columbia River
- 11.8 - Lewis River
- 11.8 - Gee Creek
- 10.57 - Lancaster Lake

0 1,000 2,000
Feet

0 250 500
Meters

PLAS NEWYDD FARM
EST. 1941
CONSERVATION PROGRAM

OHWM Determination

Data Source: Clark Co., PN LLC
Photo: Digital Globe, 8/01/2018
River Stage: ~9.0' NAVD 88
Date: 12/5/2019

Document Path: D:\GIS\Projects\PlasNewydd_Mxds\OHWM\Figure 2_OHWM Elevations.mxd

Figure 3.
Location of the nearest tidal station and stream gage to Plas Newydd Farm and Wapato Valley.

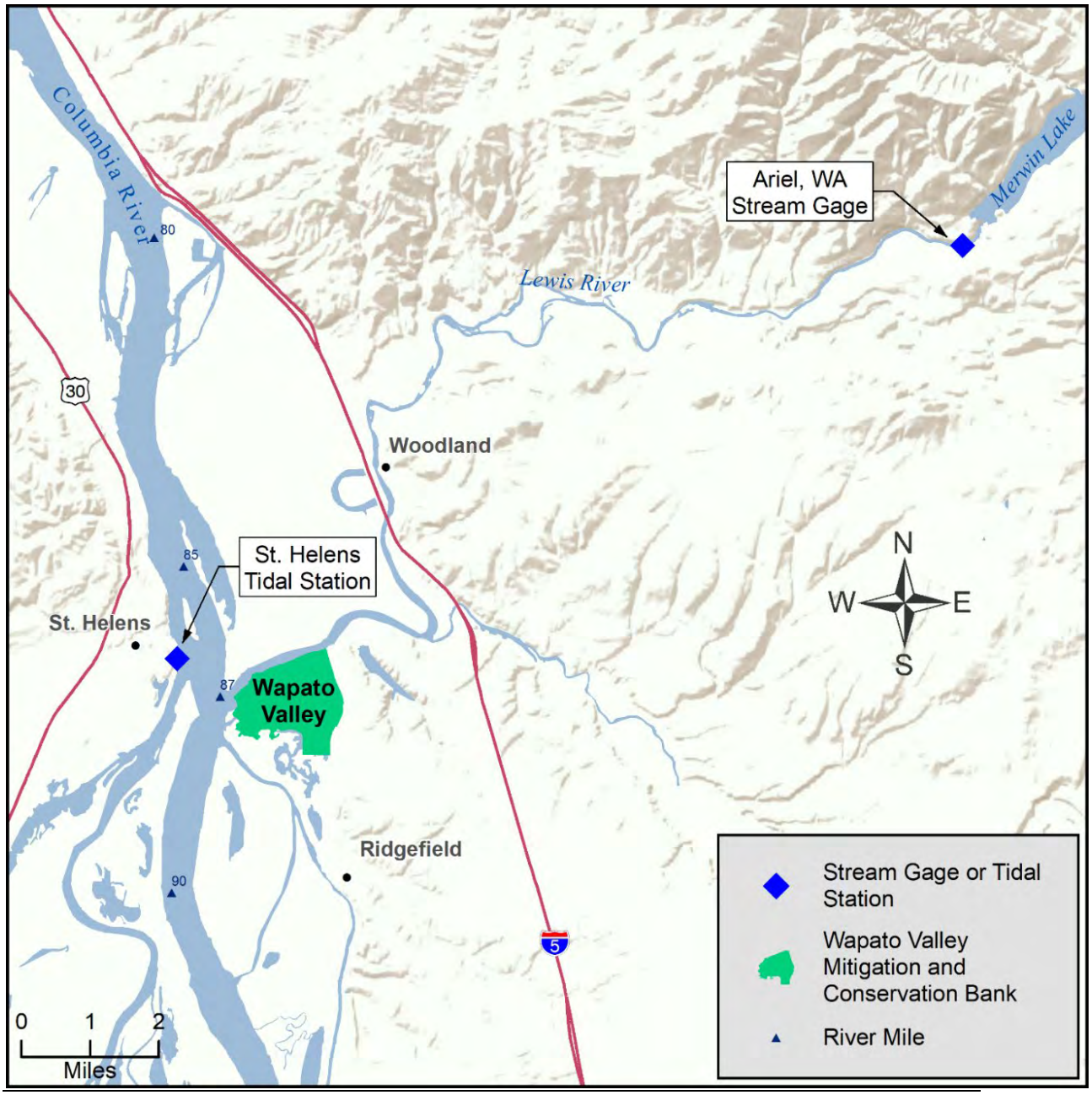


Figure 4.
Hydrograph of the maximum peak annual discharge data for the Lewis River 2-year and 1.01-year peak flows depicted (aka "chart method".

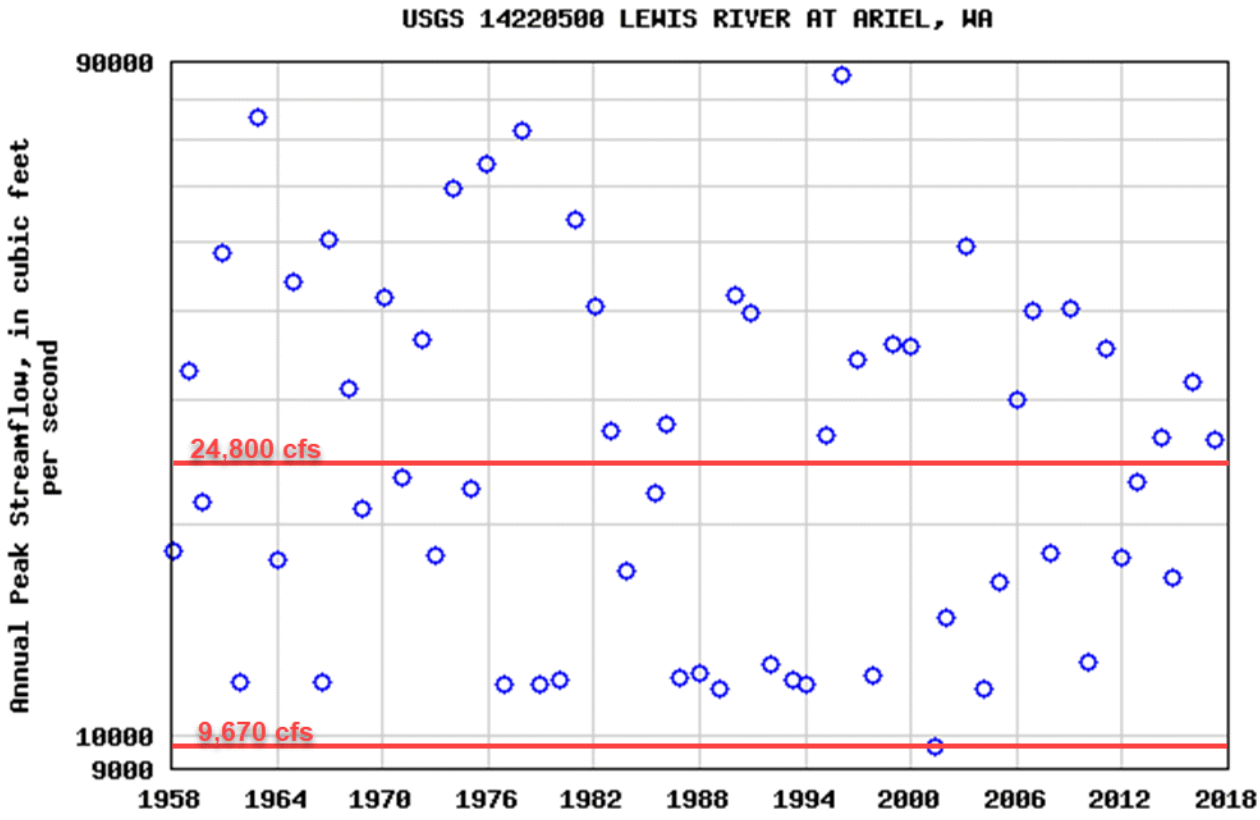


Figure 5.
Stage for the determined flow range values plotted on aligned discharge and stage graphs.

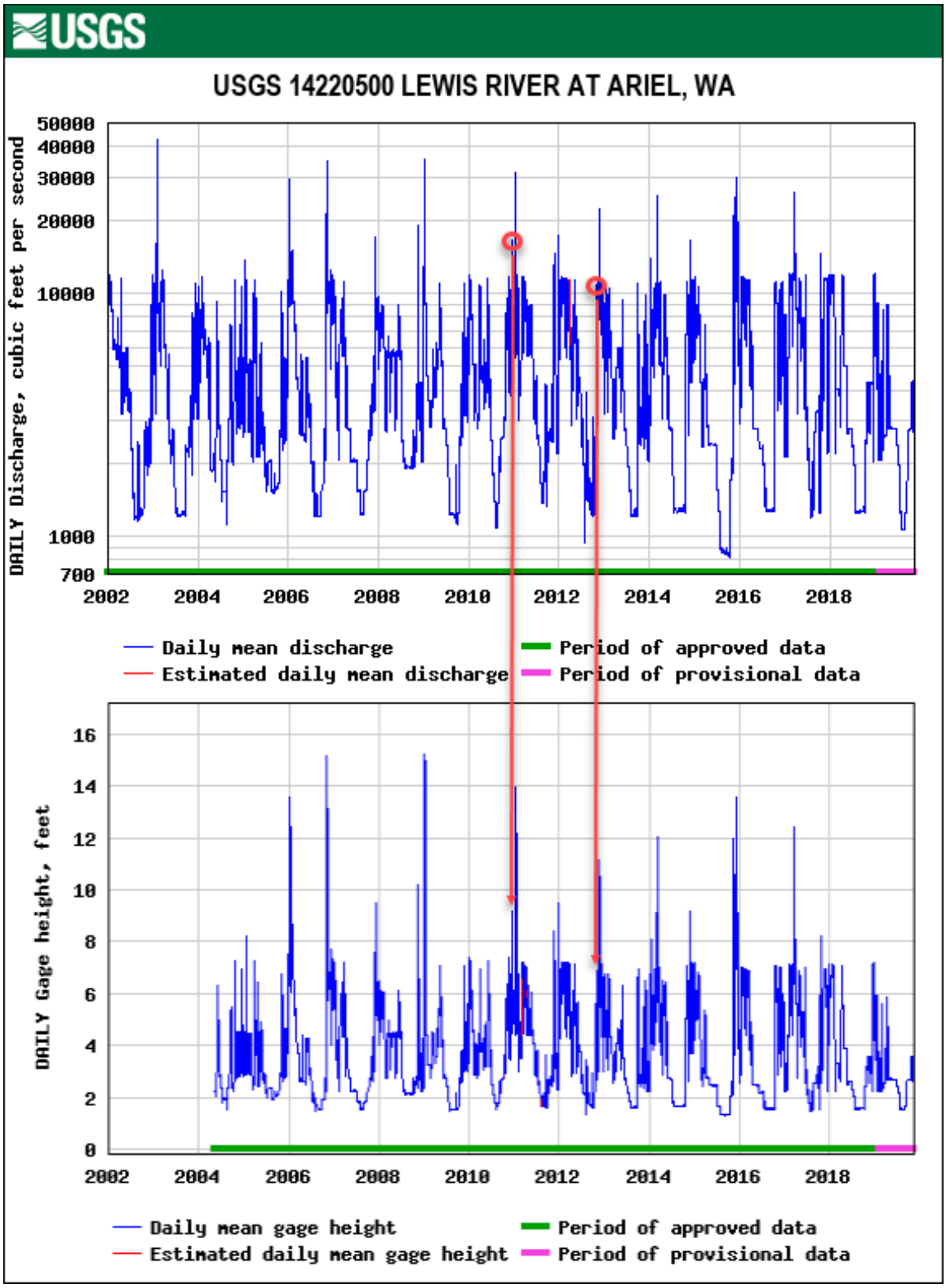
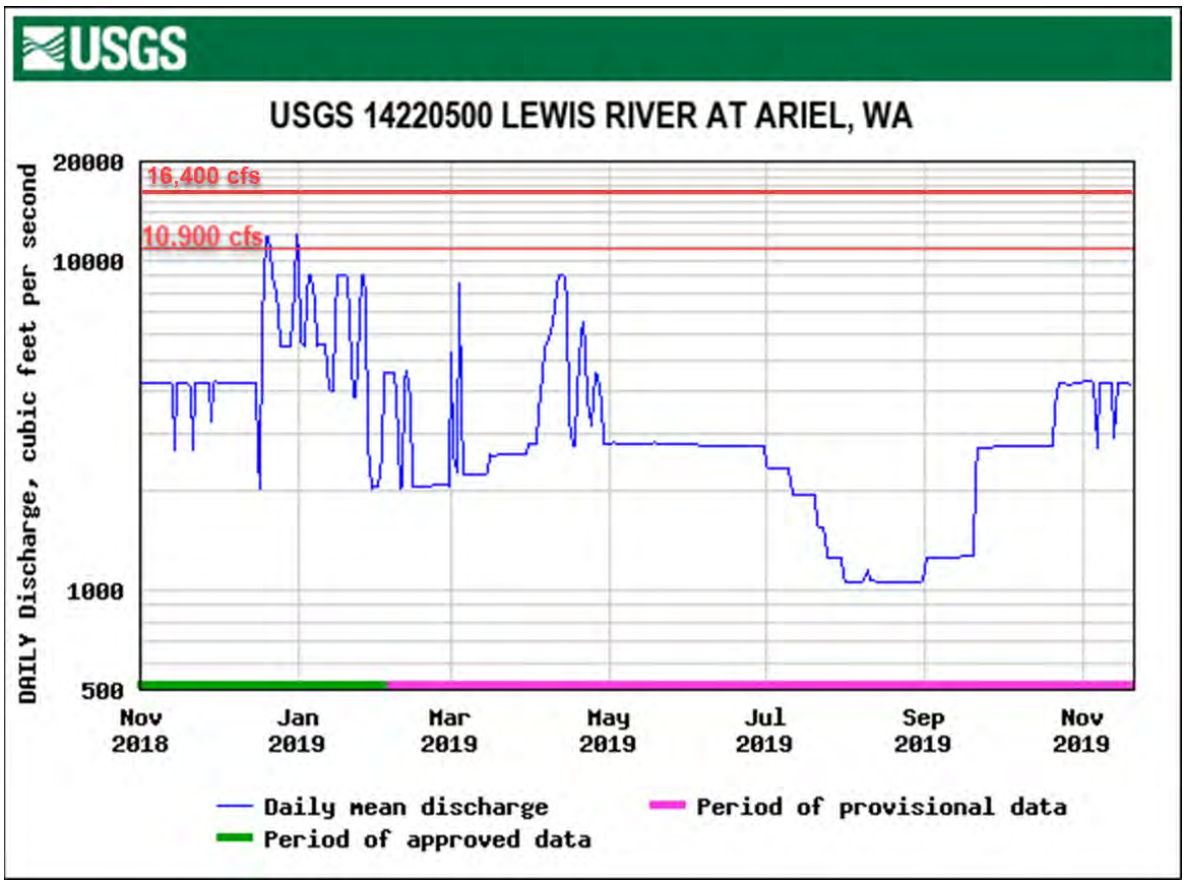


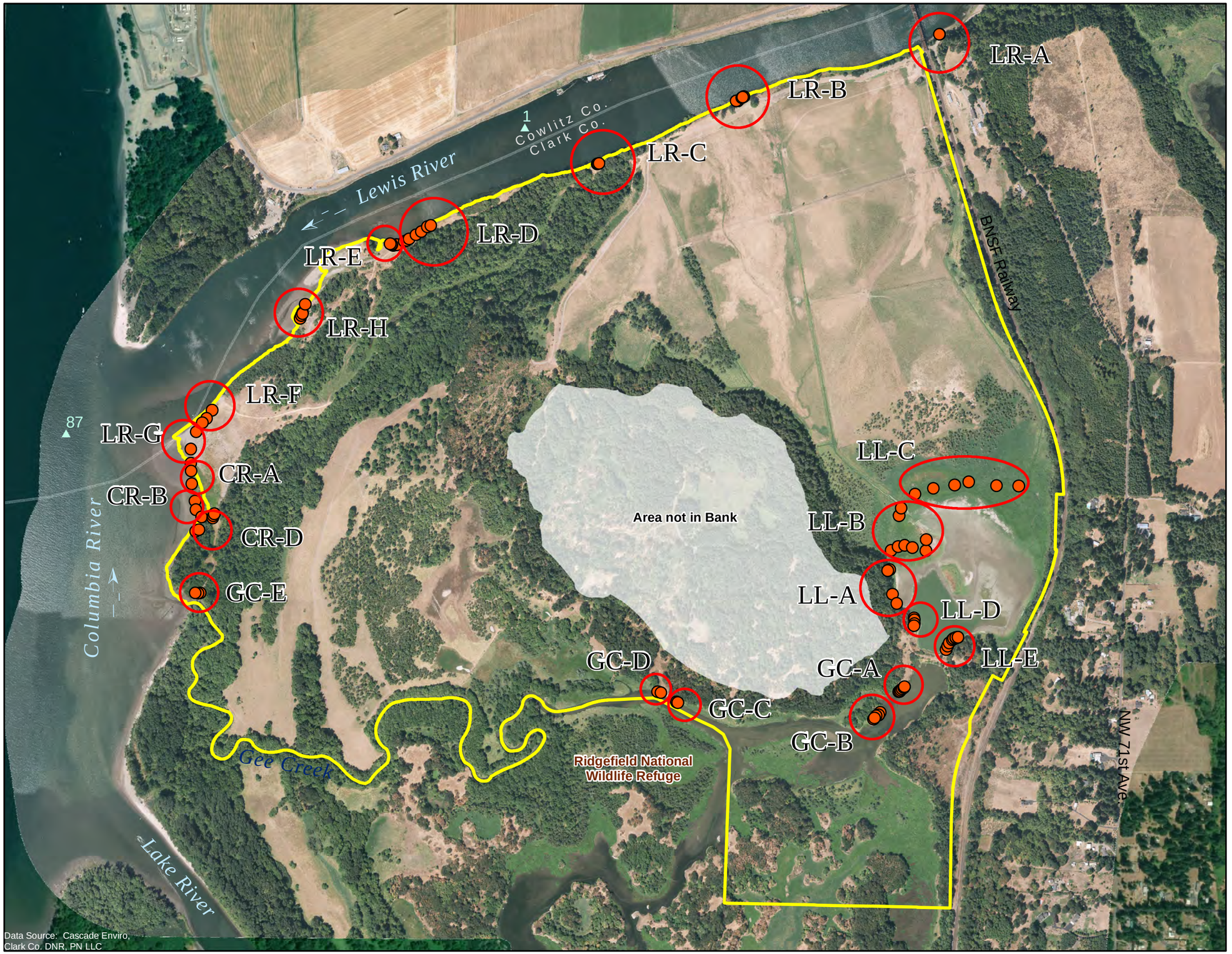
Figure 6.
Daily discharge plotted with refined OHWM bookend limits from refined analysis.



ATTACHMENTS

ATTACHMENT A

FIELD DATA FORMS AND MAPS



Data Source: Cascade Enviro, Clark Co. DNR, PN LLC

Ordinary High Water Locations

Wapato Valley
Mitigation and Conservation Bank

N
W E
S

- Field Data Points
- Bank Area

LL - Lancaster Lake
GC - Gee Creek
LR - Lewis River
CR - Columbia River

0 1,000 2,000
Feet

0 250 500
Meters

PLAS NEWYDD FARM
EST. 1941
CONSERVATION PROGRAM

Photo: GeoTerra, 8/16/2015
River Stage: ~7.25' NAVD 88

Date: 12/5/2019

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley Dias Newydd Farm
Location:	Columbia River
Description:	45.85184, -122.777552 points: CR-A-(1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

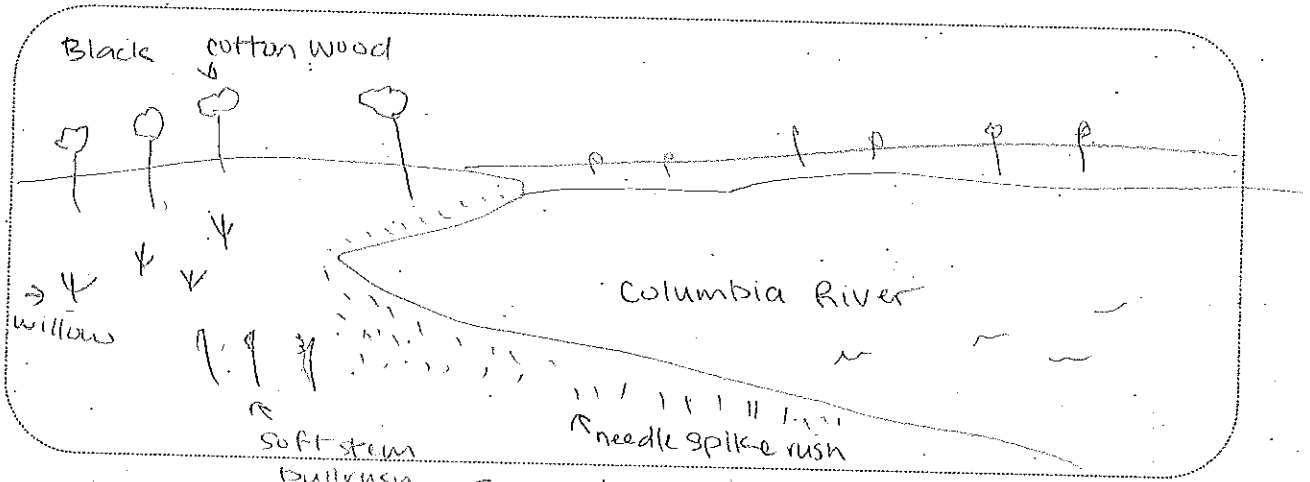
Date of site visit:	20 Nov 2019			
Time of site visit:	11:10			
Weather conditions:	Full Sun			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Bonneville Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: Opposite side on Oregon side	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: upstream	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver chews	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



The spike rush is flatten, the edge of OHWM is the soft stem bull rush

Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour o Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ✓ Aquatic plants	o Exposed roots/root scour ✓ Drainage patterns, as shown by flattened vegetation ✓ Aquatic animals o Algal mats o Iron staining

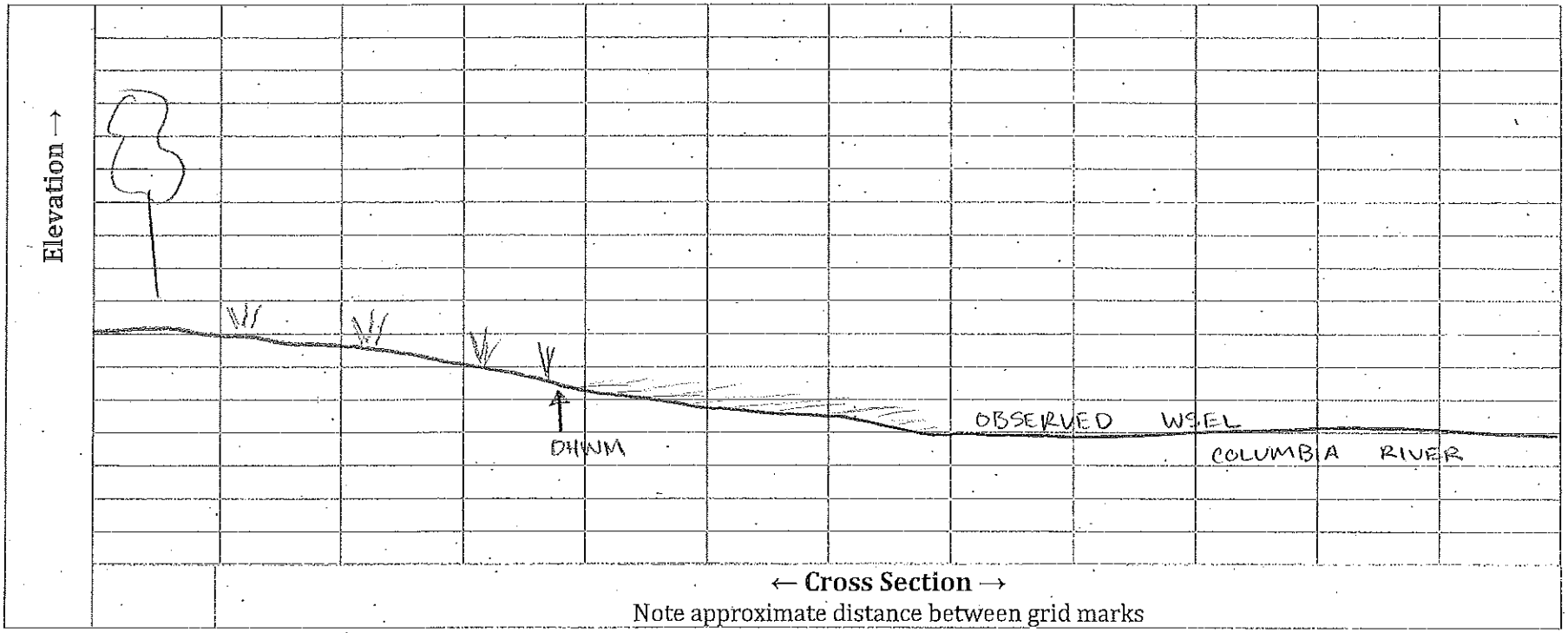
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank x Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	x Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry (Red canary) o Nootka rose o Maidenhair and lady fern o Blackberries soft stem o Dunegrasses bull rush	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. x Darker stain lines on fixed objects o Exposed roots/root scour. x Drainage patterns, as evidenced by flattened vegetation x Weathered and buried driftwood
Above OHWM	o Hillslope toe x Terraces or alluvium with an organic horizon or other developed soil horizons x Relic floodplain surface x Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine willow o Quaking aspen o Vine maple (lakes) o Blackberries Black cottonwood	o Lighter or no staining on fixed objects o Overbank deposits

Notes

The needle spikerush is flatted. The soft stem bull rush is the edge of the OHWM.



Below [redacted] OHWM		At/Straddling OHWM		Above OHWM	
needle spikerush	OBL	reed canarygrass	FACW	sand bar willow	FACW
wapato	OBL	willow sp.	FACW	Oregon ash	FACW
woolsedge	OBL			reed canarygrass	FACW
rice cutgrass	OBL				


20 Nov 2019
Photo Direction: S
WSEL: 8.51ft NAVD88
Exhibit 5
GP-A-(1-3)
OHWM: Flattened vegetation

Appendix A: Field data form

General Information

Site/Project Name/Owner: Wapato Valley / Pias Newgadd Farm
Location: Columbia River
Description: 45.850831, -122.777069 points: CR-B-(1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

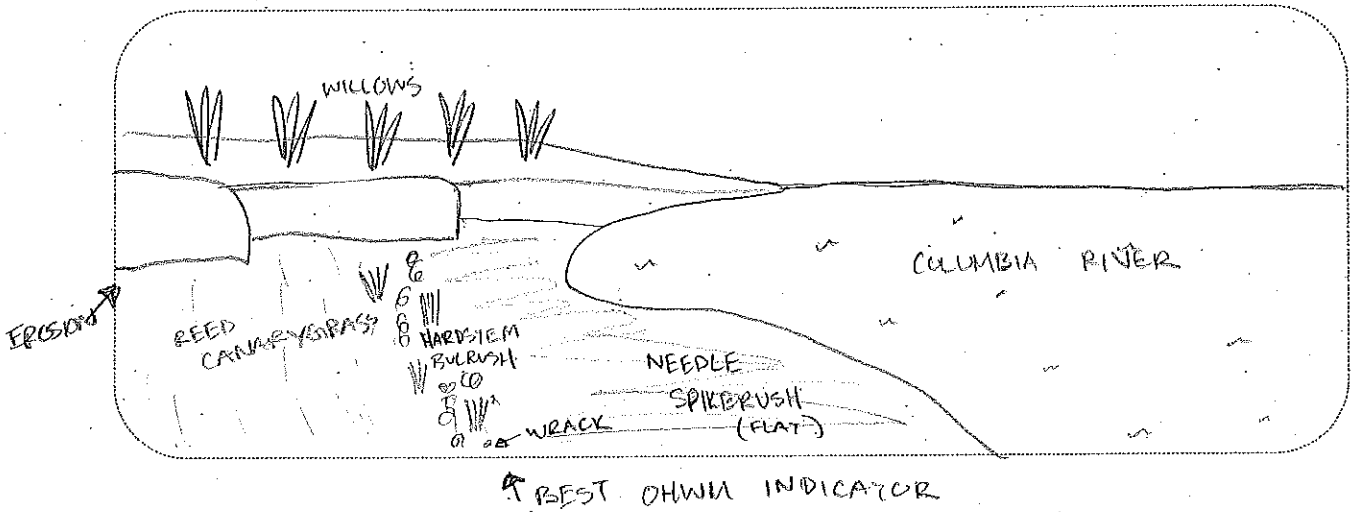
Date of site visit:	11-20-2019			
Time of site visit:	11:30			
Weather conditions:	full sun			
Watershed development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Bonneville Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: opposite shore	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe:	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: fresh chewed sticks	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour o Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	o Exposed roots/root scour ☒ Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

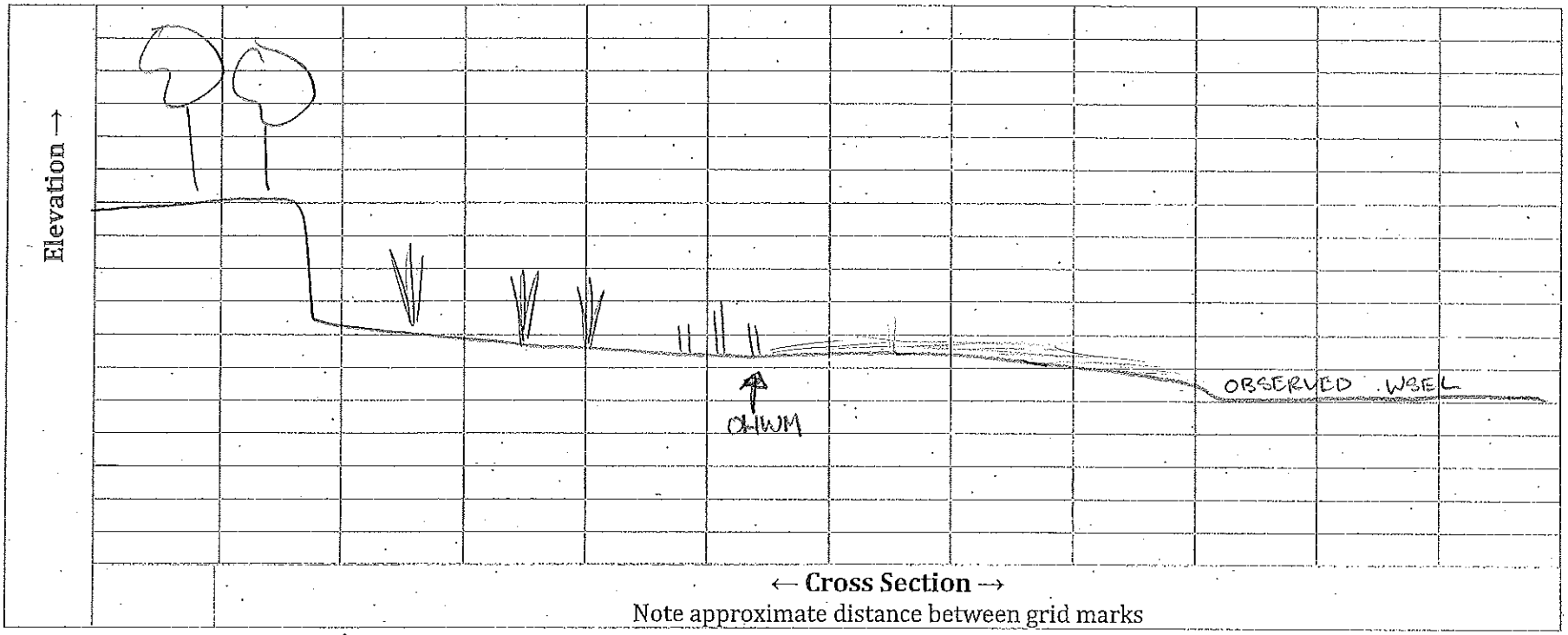
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	○ Top of bank ✓ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ✓ Benches	○ Willows ○ Western red cedar ○ Vine maple (streams) ○ Black cottonwood ○ Red alder ✓ reed canarygrass ○ Salmonberry ○ Nootka rose ○ Maidenhair and lady fern ○ Blackberries ○ Dunegrasses ✓ wool sedge	✓ Sediment lines on vegetation or other fixed objects ○ Change from channel deposits to older alluvium. ✓ Darker stain lines on fixed objects ○ Exposed roots/root scour. ✓ Drainage patterns, as evidenced by flattened vegetation ✓ Weathered and buried driftwood
Above OHWM	✓ Hillslope toe ✓ Terraces or alluvium with an organic horizon or other developed soil horizons ✓ Relic floodplain surface ✓ Well developed soil A andB horizons/duff layer	○ Indian plum ○ Red alder ✓ willows ○ Western red cedar ○ Douglas fir ✓ Oregon ash ○ Western hemlock ○ Ponderosa pine ○ Oregon white oak ○ Coast pine ○ Quaking aspen ○ Vine maple (lakes) ○ Blackberries	✓ Lighter or no staining on fixed objects ✓ Overbank deposits

Notes

The best OHWM is the wool sedge. The needle spike rush is flatten and below the OHWM



Plant Distribution Across OHWM Gradient					
Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
needle spikerush	OBL	woolsedge	OBL	sand bar willow	FACW
wapato	OBL	rice cutgrass	OBL	black cottonwood	NI
				reed canarygrass	FACW
				rough cocklebur	FAC


20 Nov 2019
Photo Direction: N
WSEL: 8.51ft NAVD88
Exhibit 5
GP-B-(1-3)
OHWM: Flattened vegetation

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley/ Plas Nelsydd Farm
Location:	Columbia River
Description:	45.849933, -122.777538 points: CR-D-(1-5)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

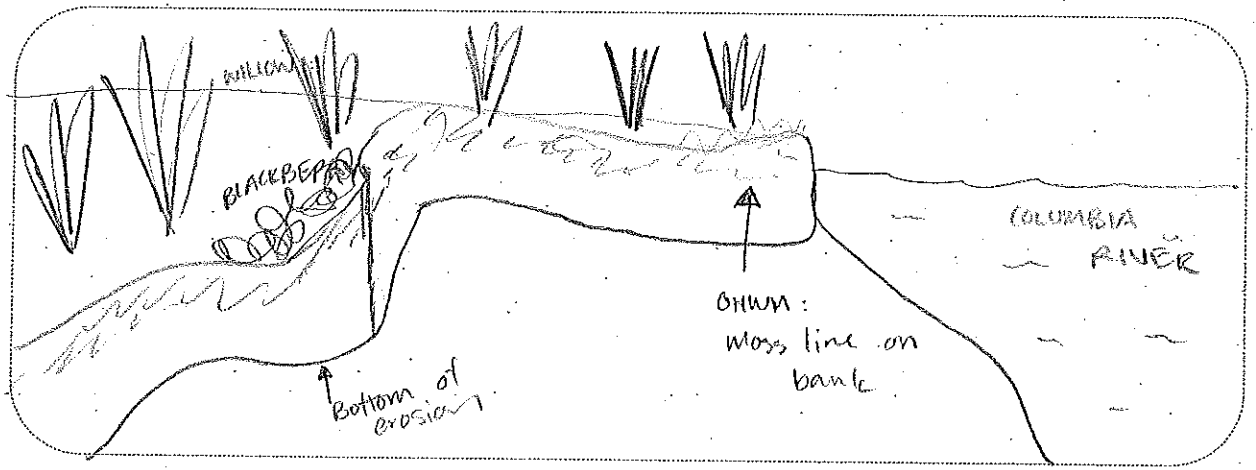
Date of site visit:	12-4-2019			
Time of site visit:	12:25			
Weather conditions:	sun			
Watershed development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Bonneville Dam	
Bank armoring at the site?	No ⊗	Yes ○	Describe: opposite shore	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe:	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ⊗	Yes ○	Describe:	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars ⊗ Scour line o Clean cobbles/boulders. ⊗ Bank erosion/scour ⊗ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ⊗ Aquatic plants	⊗ Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation o Aquatic animals o Algal mats o Iron staining

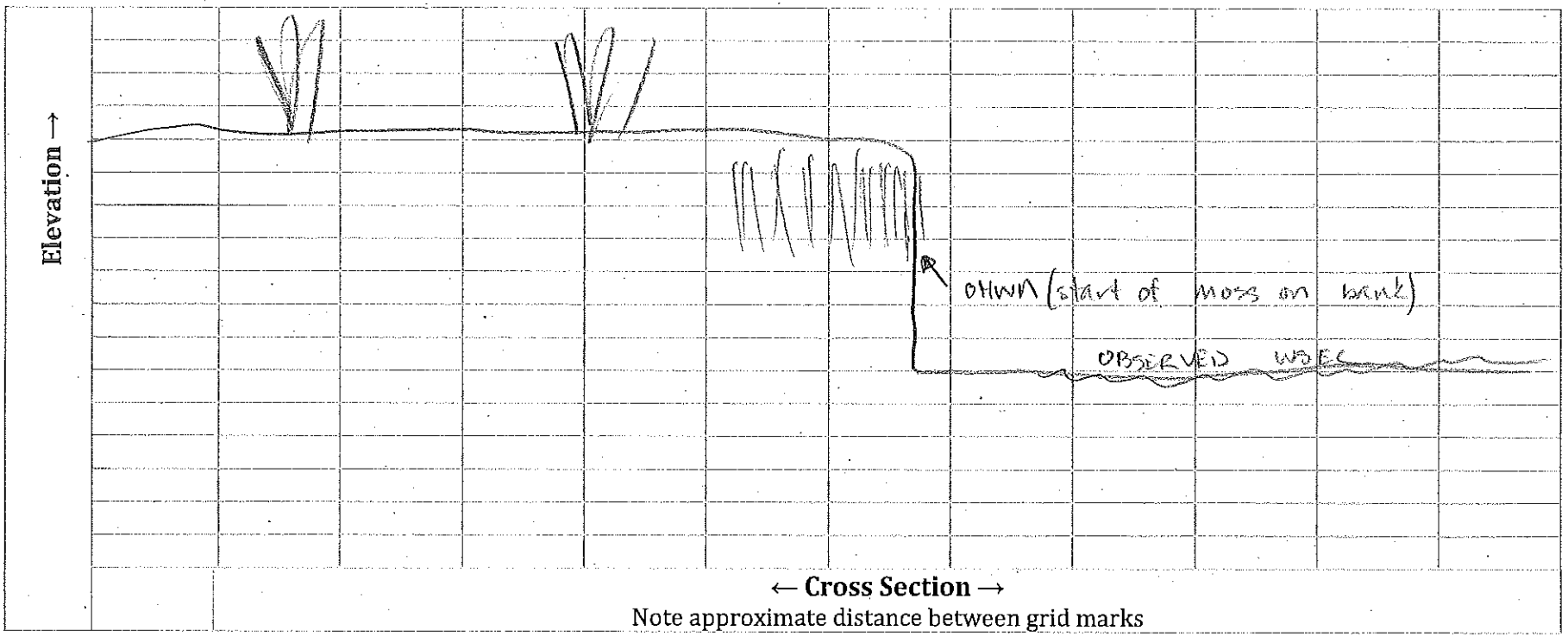
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ☒ Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry moss o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects ☒ Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons ☒ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum dogwood o Red alder o Western red cedar o Douglas fir o Western hemlock willow o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ☒ Blackberries	☒ Lighter or no staining on fixed objects o Overbank deposits

Notes

The best indicator of the OHWM at this location is the extent that moss can grow on the steeply eroded riverbanks.



Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
Plant Distribution Across OHWM Gradient					
reed canarygrass	FACW	moss sp.	NI	Pacific willow	FACW
needle spikerush	OBL	himalayan blackberry	FACU	red-osier dogwood	FACW
				reed canarygrass	FACW
				himalayan blackberry	FACU
				black hawthorne	FAC


4 Dec 2019
Photo Direction: E
WSEL: 8.61ft NAVD88
Exhibit 5
GR-D-(1-5)
OHWM: Moss on upper limit
133

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Pias Nprwydd Farm
Location:	Gee Creek
Description:	45.84164168, -122.75082
	points: GC-A-(1-9)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

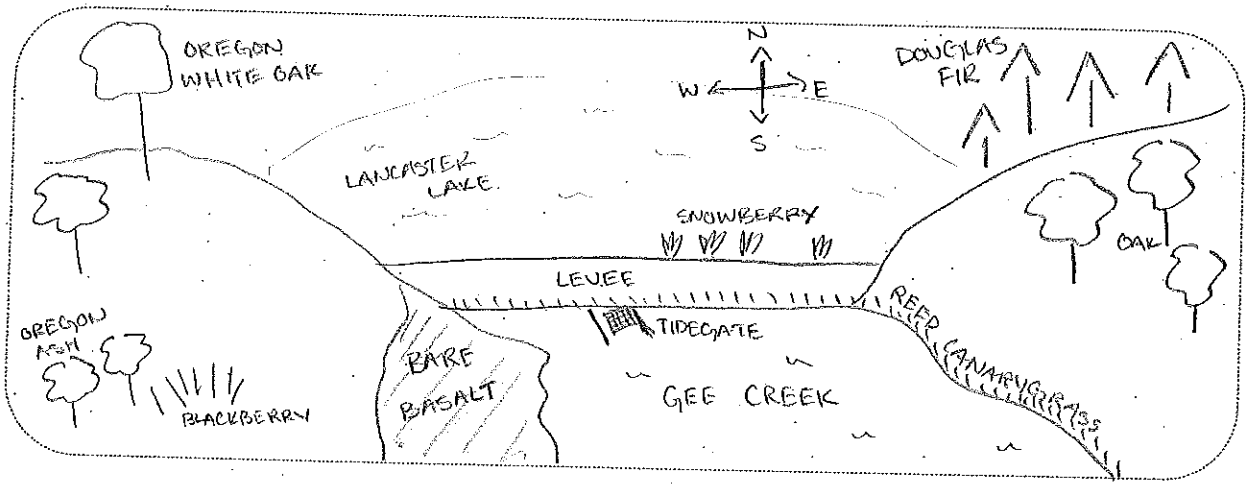
Date of site visit:	11-18-2019			
Time of site visit:	15:50			
Weather conditions:	light rain			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ○	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Gee Creek bridge construction	
Bank armoring at the site?	No ○	Yes ⊗	Describe: Basalt bluffs act as natural armoring.	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: Gee Creek upstream of site	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Levee w/ tidegate to north blocks tide to Lancaster Lake	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Channels and lodges.	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line ø Clean cobbles/boulders. o Bank erosion/scour ø Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ø Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ø Aquatic animals o Algal mats o Iron staining

[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

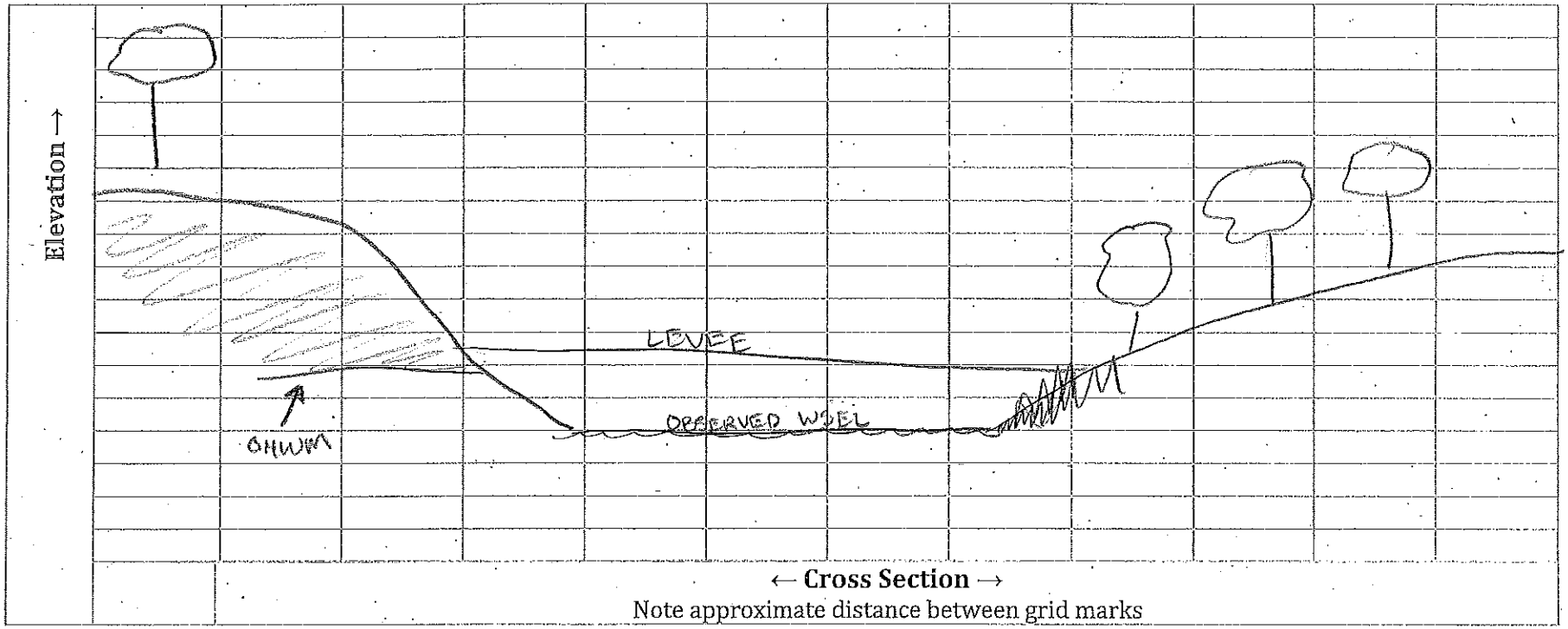
	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder ☒ break in moss/stonecrop to bare rock on bluffs o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	☒ Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder ☒ Oregon ash o Western red cedar ☒ Douglas fir o Western hemlock o Ponderosa pine ☒ Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ☒ Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

The basalt rocks below the OHWM have very little to no vegetation on them

GC-A

Exhibit 5



Plant Distribution Across OHWM Gradient

Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
coon's tail	OBL	bare basalt		moss sp.	not listed
Eurasian watermilfoil	OBL	reed canarygrass	FACW	wormleaf stonecrop	not listed
				reed canarygrass	FACW
				hairy cat's ear	FACU
				cheatgrass	not listed
				camas	FACW
				Oregon ash	FACW
				Oregon white oak	FACU


18 Nov 2019
Photo Direction: N
WSEL: 7.01ft NAVD88
Exhibit 5
GC-A-(1-9)
OHWM: Break in stonecrop/moss

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley/ Plas Newydd Farm
Location:	Gee Creek
Description:	45.845491, -122.751942 points: GC-B-(1-7)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

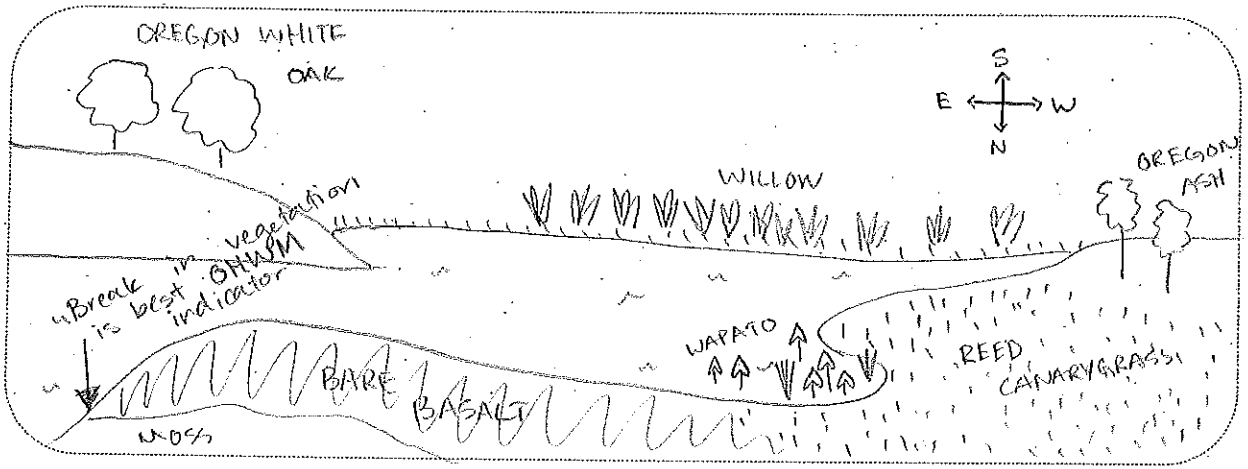
Date of site visit:	11-19-2009			
Time of site visit:	10:00			
Weather conditions:	overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Gee Creek bridge construction	
Bank armoring at the site?	No ○	Yes ⊗	Describe: Basalt bluffs act as natural armoring.	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: Gee Creek upstream of site	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Levee w/ tidegate to north blocks tide to Lancaster Lake.	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Channels and lodges.	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line ⊗ Clean cobbles/boulders. o Bank erosion/scour ⊗ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ⊗ Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ⊗ Aquatic animals ⊗ Algal mats o Iron staining

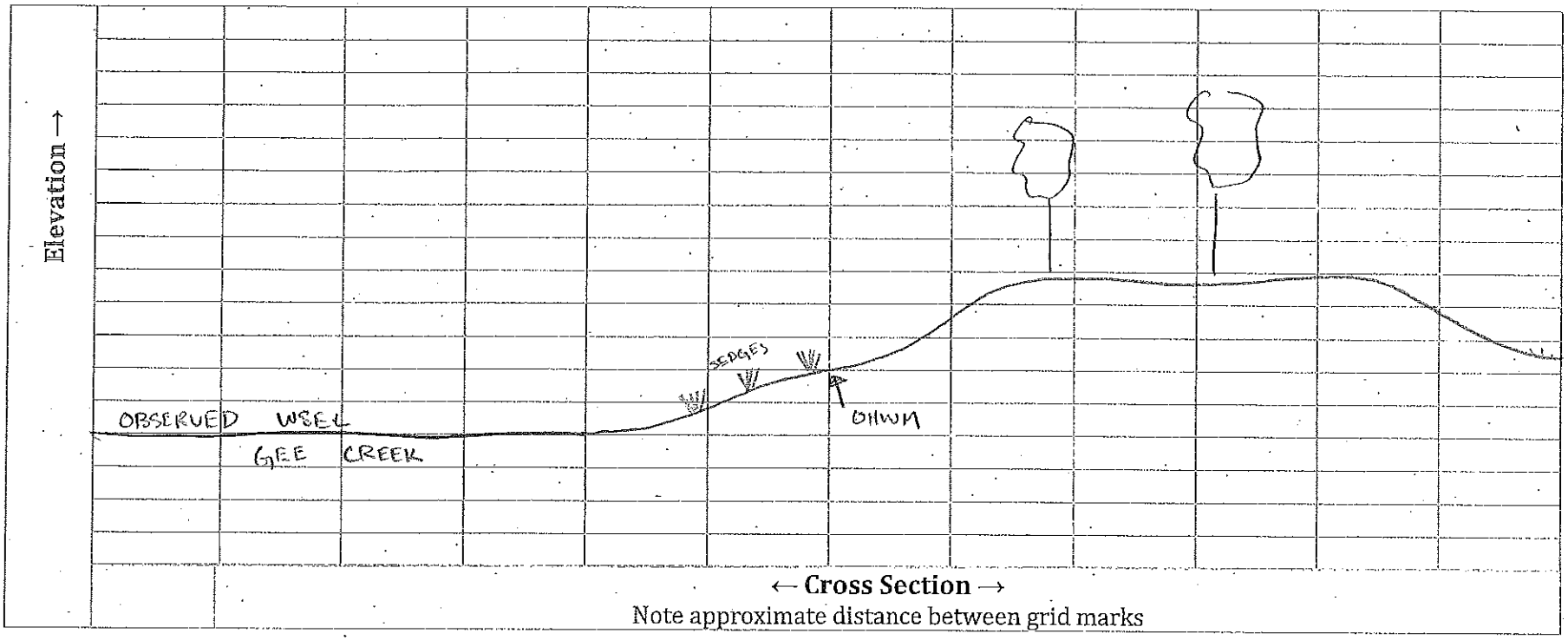
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	☒ Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons ☒ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder ☒ Oregon ash o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ☒ Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

The high water line is visible on basalt bluffs where there is a break in moss growth. The nearby backwater area of Gee Creek is slightly higher and has filled in with sediment. It contains Oregon ash trees and a thick herb layer of reed canarygrass and native sedges. The top of the basalt bluff has very little soil and contains patches of Himalaya blackberry and snowberry. Upstream of the project site a construction project has Gee Creek dewatered for culvert replacement.



Plant Distribution Across OHWM Gradient

Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
wapato	OBL	reed canarygrass	FACW	Oregon ash	FACW
needle spikerush	OBL			snowberry	FACU
hardstem bulrush	NI			himalaya blackberry	FACU
slough sedge	OBL				


19 Nov 2019
Photo Direction: W
WSEL: 8.87ft NAVD88
OHWM: Vegetation change from wapato and sedge to upland vegetation

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley Plas Wemyadel Farm
Location:	Lee Creek
Description:	45.845924, -122.759277 points: GC-C-(1-2)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

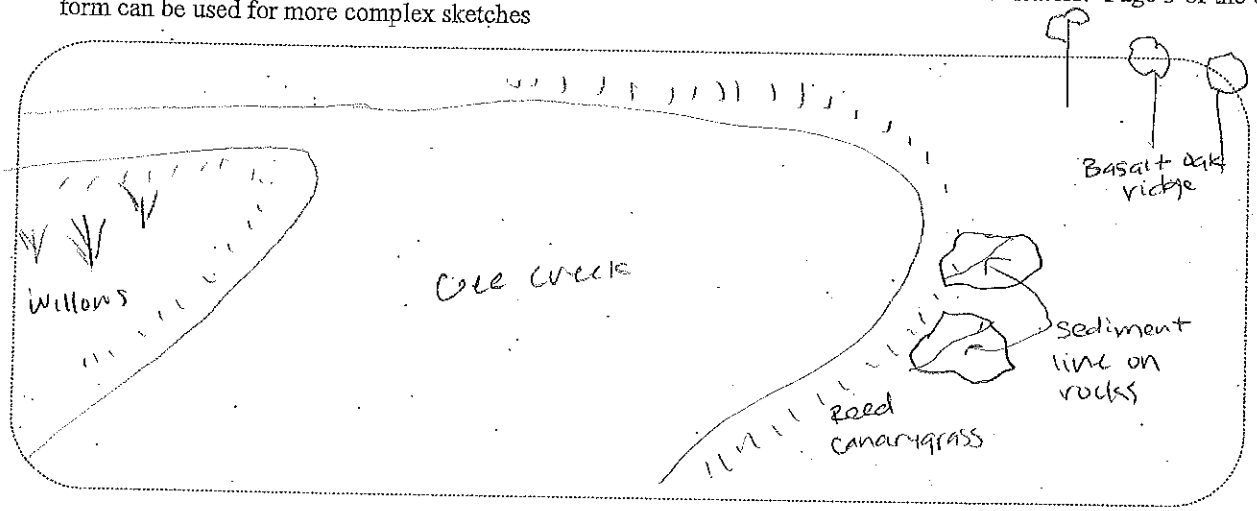
Date of site visit:	20 Nov 2019			
Time of site visit:	14:50			
Weather conditions:	Full Sun			
Watershed development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: culverts	
Bank armoring at the site?	No ⊗	Yes ○	Describe:	
Bank armoring up or downstream?	No ⊗	Yes ○	Describe:	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe:	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver Chews	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour x Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage x Aquatic plants Reed canarygrass	o Exposed roots/root scour x Drainage patterns, as shown by flattened vegetation x Aquatic animals o Algal mats o Iron staining

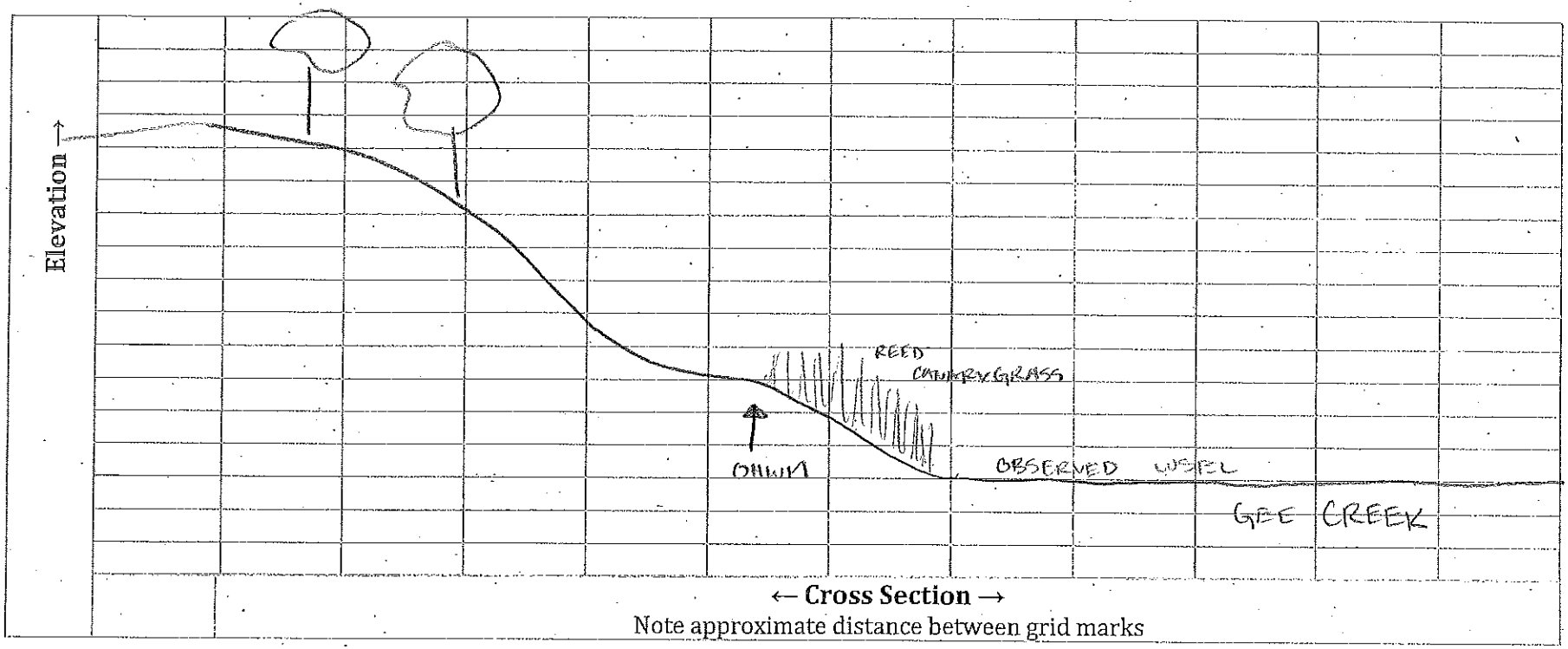
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	☒ Top of bank ☒ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder reed o Salmonberry canary o Nootka rose o Maidenhair and lady fern o Blackberries Oregon o Dunegrasses ash	☒ Sediment lines on vegetation or other fixed objects ☒ Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine ☒ Oregon white oak o Coast pine Oregon o Quaking aspen ash o Vine maple (lakes) o Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

Rocks on the edge of creek have a sediment line at the OHWM



Below		Plant Distribution Across OHWM Gradient			
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
wapato	OBL	reed canarygrass	FACW	Oregon white oak	FACU
hardstem bulrush	N1			Oregon ash	FACW
reed canarygrass	FACW			snowberry	FACU


20 Nov 2019
Photo Direction: E
WSEL: 7.49ft NAVD88
Exhibit 5
GC-C-(1-2)
OHWM: Sediment line on rocks

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley Pigs Newgold Farm
Location:	Gee Creek
Description:	45.8460163, -122.7600009 points: GC-D-(1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

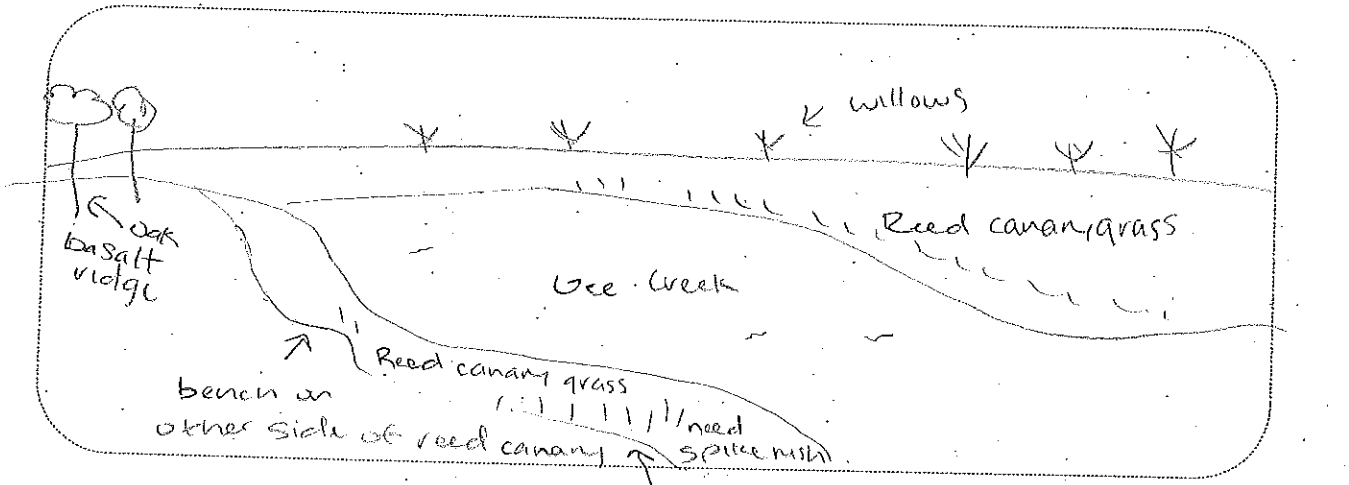
Date of site visit:	20 Nov 2019			
Time of site visit:	14:37			
Weather conditions:	Full sun			
Watershed development:	Highly developed O		Mod. Developed ⊗	Undeveloped O
Reach development:	Highly developed O		Mod. Developed ⊗	Undeveloped O
Recent site disturbance?	No ⊗	Yes O	Describe:	
Upstream flow control devices?	No O	Yes ⊗	Describe: culverts	
Bank armoring at the site?	No ⊗	Yes O	Describe:	
Bank armoring up or downstream?	No ⊗	Yes O	Describe:	
Observable tidal backwater?	No O	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No O	Yes ⊗	Describe: Pilings	
Animals grazing in riparian zone?	No ⊗	Yes O	Describe:	
Observable beaver activity?	No O	Yes ⊗	Describe: Beaver chews	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line ☒ Clean cobbles/boulders. o Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants reed canary grass needle spikerush	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

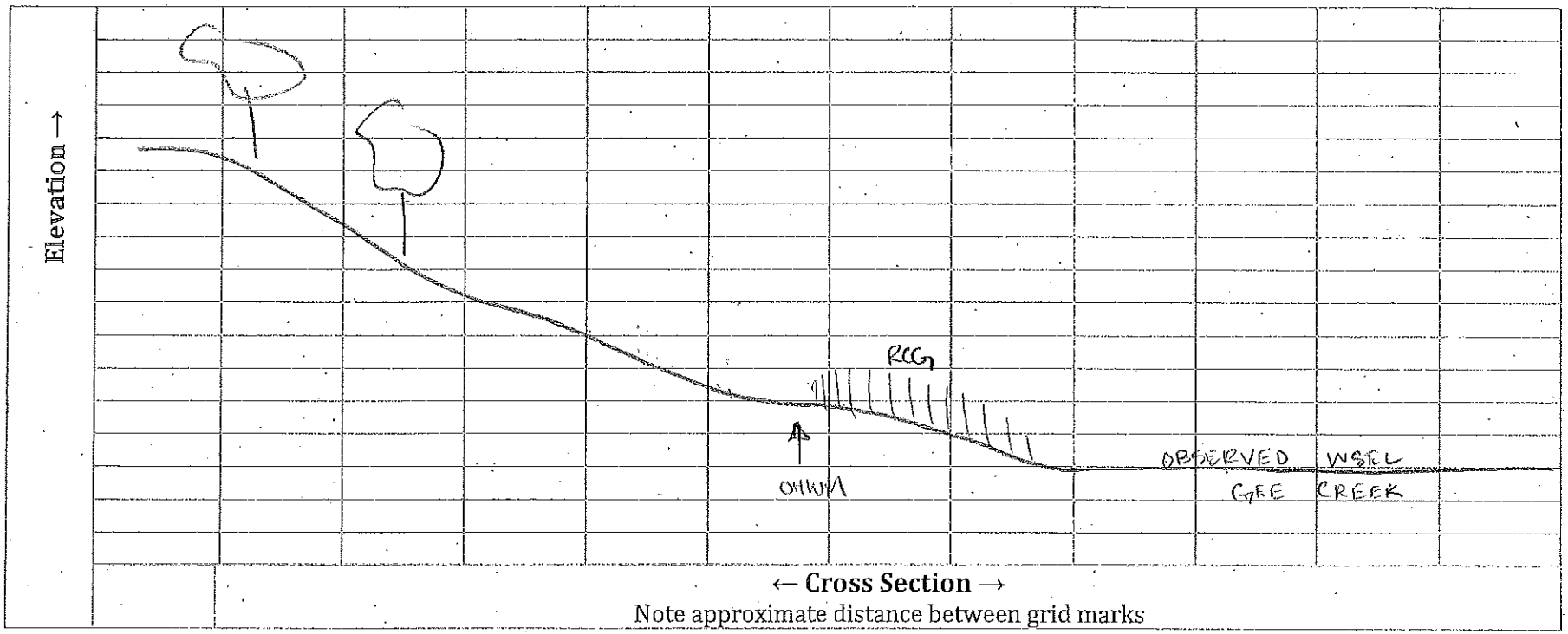
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

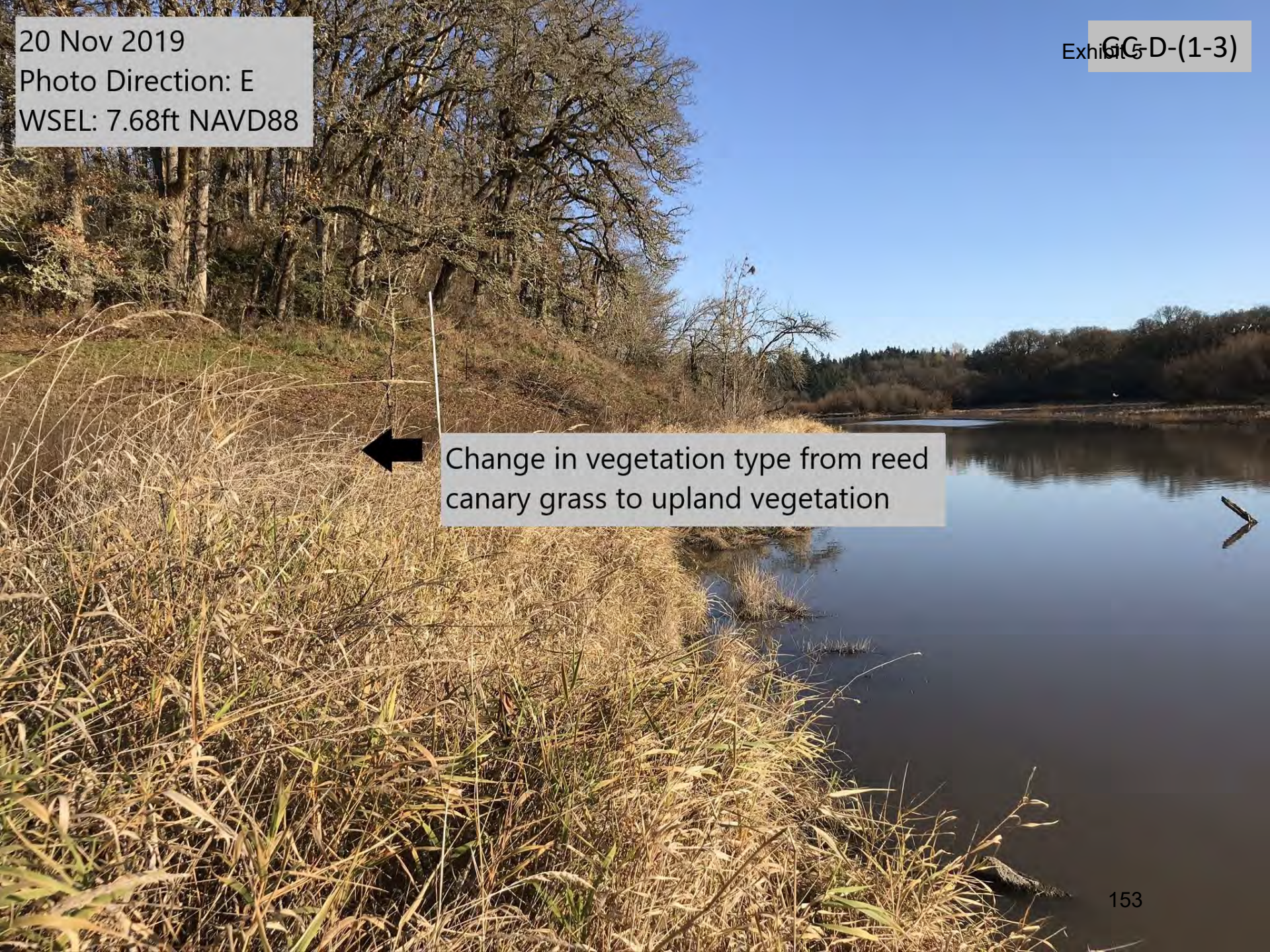
	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	☒ Top of bank ☒ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ☒ Benches	○ Willows ○ Western red cedar ○ Vine maple (streams) ○ Black cottonwood ○ Red alder ○ Salmonberry ○ Nootka rose oregon ash ○ Maidenhair and lady fern ○ Blackberries ○ Dunegrasses reed canarygrass	○ Sediment lines on vegetation or other fixed objects ☒ Change from channel deposits to older alluvium. ○ Darker stain lines on fixed objects ○ Exposed roots/root scour. ○ Drainage patterns, as evidenced by flattened vegetation ○ Weathered and buried driftwood
Above OHWM	☒ Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons ○ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	○ Indian plum ○ Red alder ○ Western red cedar ○ Douglas fir ○ Western hemlock ○ Ponderosa pine ☒ Oregon white oak ○ Coast pine oregon ○ Quaking aspen ash ○ Vine maple (lakes) ○ Blackberries	○ Lighter or no staining on fixed objects ○ Overbank deposits

Notes

There is vegetation below the OHWM such as reed canary grass and needle spikerush. The edge of the OHWM has a clear area of less vegetation



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
reed canarygrass	FACW	Oregon ash	FACW	Oregon ash	FACW
needle spikerush	OBL	reed canarygrass	FACW	Oregon white oak	FACU


20 Nov 2019
Photo Direction: E
WSEL: 7.68ft NAVD88
Exhibit 5 GC-D-(1-3)
Change in vegetation type from reed canary grass to upland vegetation

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley/ Plas Newydd Farm
Location:	Gee Creek
Description:	45.848399 - 122.777329 points: G, C - E - (1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

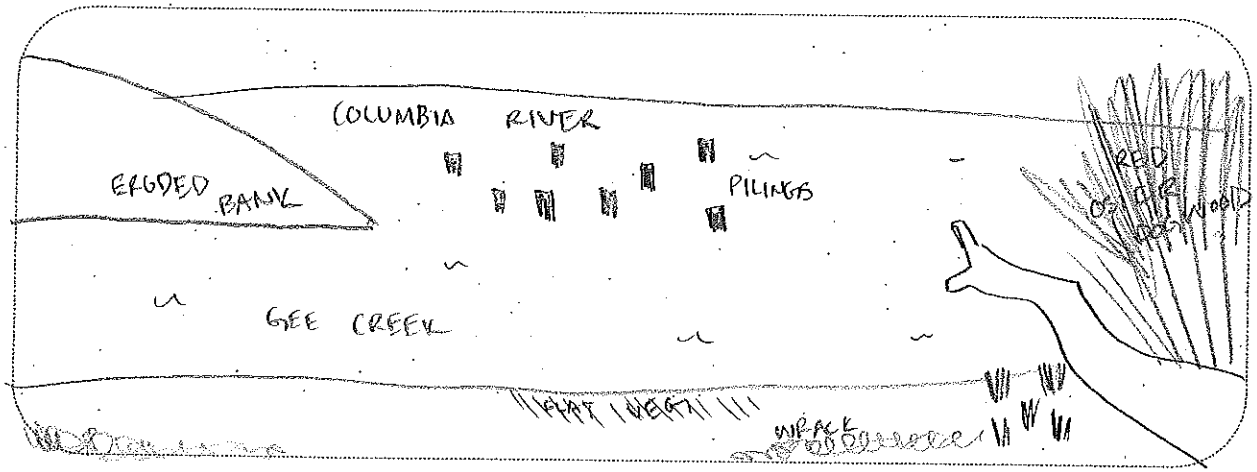
Date of site visit:	12 - 3 - 2019			
Time of site visit:	10:00			
Weather conditions:	Full sun			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe:	
Bank armoring at the site?	No ⊗	Yes ○	Describe:	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe:	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: pilings in Columbia River	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ⊗	Yes ○	Describe:	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

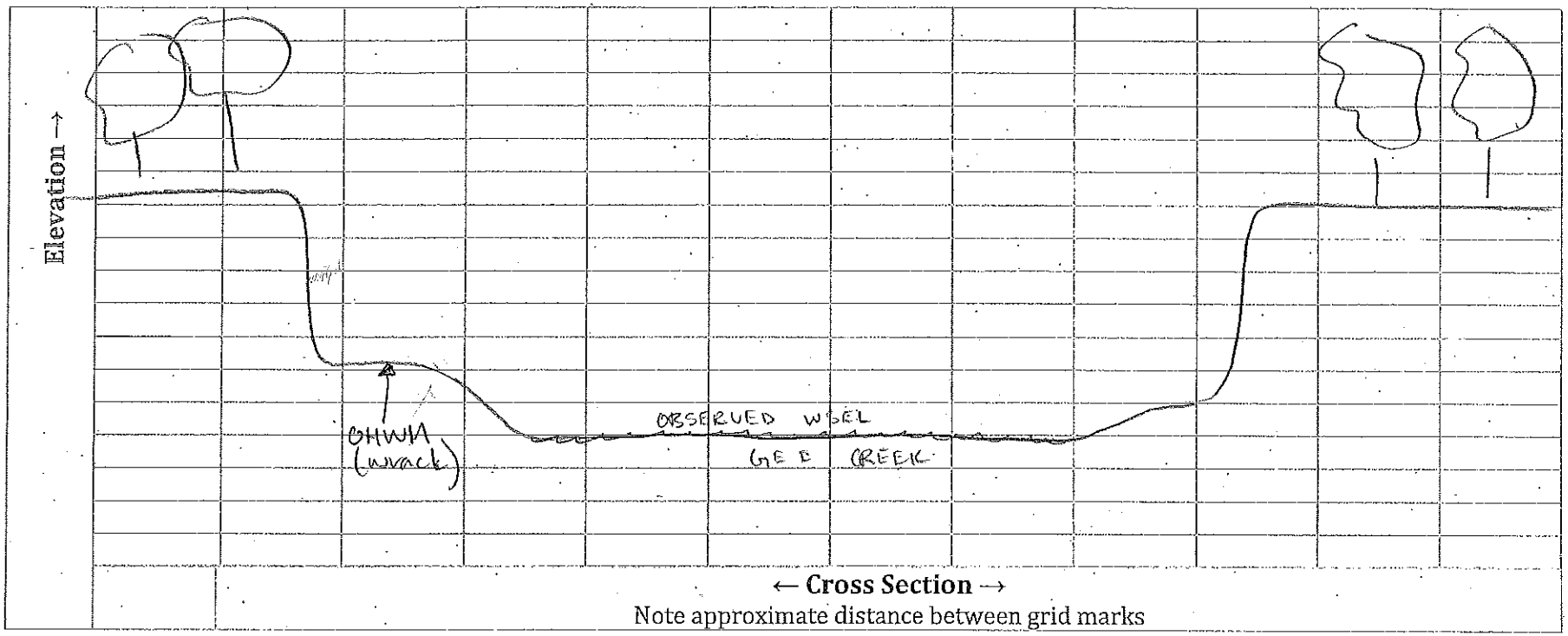
	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. ø Bank erosion/scour o Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage o Aquatic plants	o Exposed roots/root scour ø Drainage patterns, as shown by flattened vegetation ø Aquatic animals o Algal mats o Iron staining

[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ☒ Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder ☒ (cover abundant) o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation ☒ Weathered and buried driftwood
Above OHWM	o Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons ☒ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder ☒ Oregon ash o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ☒ Blackberries	☒ Lighter or no staining on fixed objects o Overbank deposits

Notes



Below	Plant Distribution Across OHWM Gradient			
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
none		slough sedge	OBL	Oregon ash	FACW
		reed canarygrass	FACW	himalaya blackberry	FACU
				reed canarygrass	FACW
				red-osier dogwood	FACW


3 Dec 2019
Photo Direction: S
WSEL: 8.39ft NAVD88
Exhibit 5
GG E-(1-3)
OHWM: Wrack line

Appendix A: Field data form

General Information

Site/Project Name/Owner: Wapato Valley/Pias Newfield LLC
Location: Lancaster Lake
Description: 45.8489606, -122.751122 points: LL-A-(1-4)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

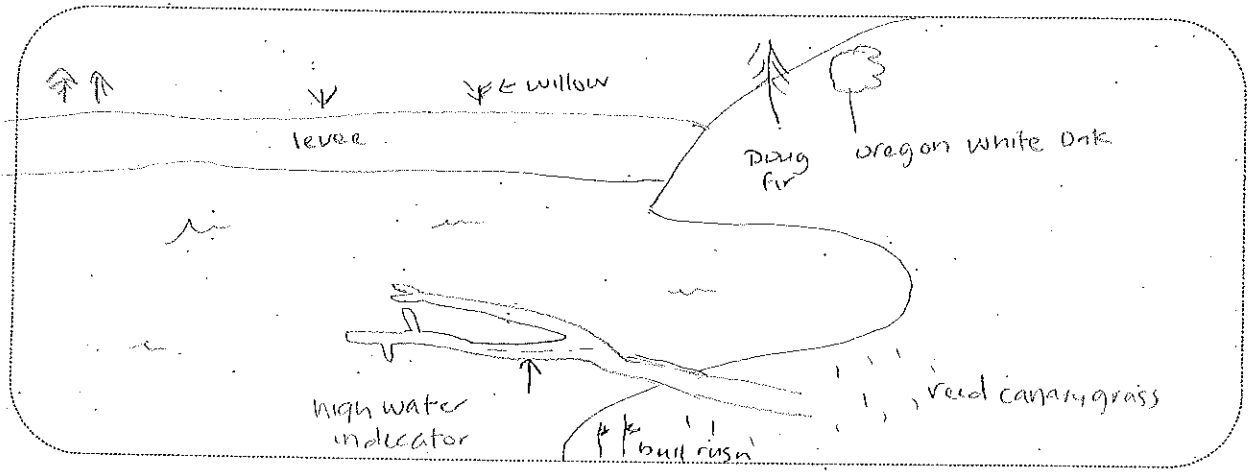
Date of site visit:	Nov 19 2019			
Time of site visit:	11:23			
Weather conditions:	Over cast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: levee with tide gate	
Bank armoring at the site?	No ○	Yes ⊗	Describe: levee	
Bank armoring up or downstream?	No ⊗	Yes ○	Describe: lake is impounded	
Observable tidal backwater?	No ⊗	Yes ○		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: levee and tide gate	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver channels	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour o Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage o Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation x Aquatic animals o Algal mats o Iron staining

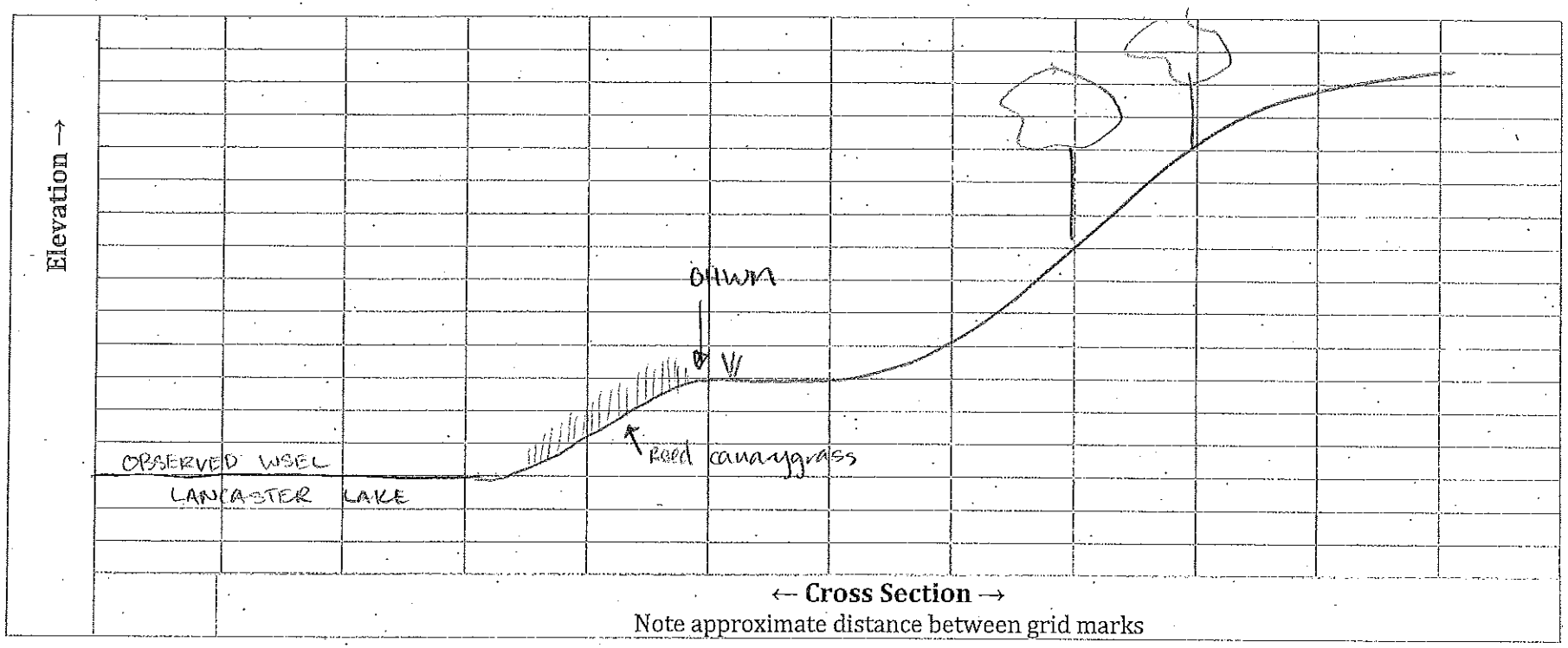
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank x Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses reed canary grass	x Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. x Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	x Hillslope toe x Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface x Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar x Douglas fir o Western hemlock o Ponderosa pine x Oregon white oak o Coast pine o Quaking aspen x Vine maple (lakes) x Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

Impounded lake. A tree fell over and there is sediment staining at OHWM. Vegetation consists of reed canarygrass and soft rush



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
reed canarygrass	FACW	reed canarygrass	FACW	Oregon white oak	FACU
slough sedge	OBL			Oregon ash	FACW
				Scott's broom	NI
				licorice fern	NI


19 Nov 2019
Photo Direction: S
WSEL: 8.70ft NAVD88
Exhibit 5
LL-A-(1-4)
OHWM: Sediment line on tree

Appendix A: Field data form

General Information

Site/Project Name/Owner: Wapato Valley/Plas Mwydd LLC
Location: Lancaster Lake
Description: 45.850023 -122.750232
points: LL-B-(1-8)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

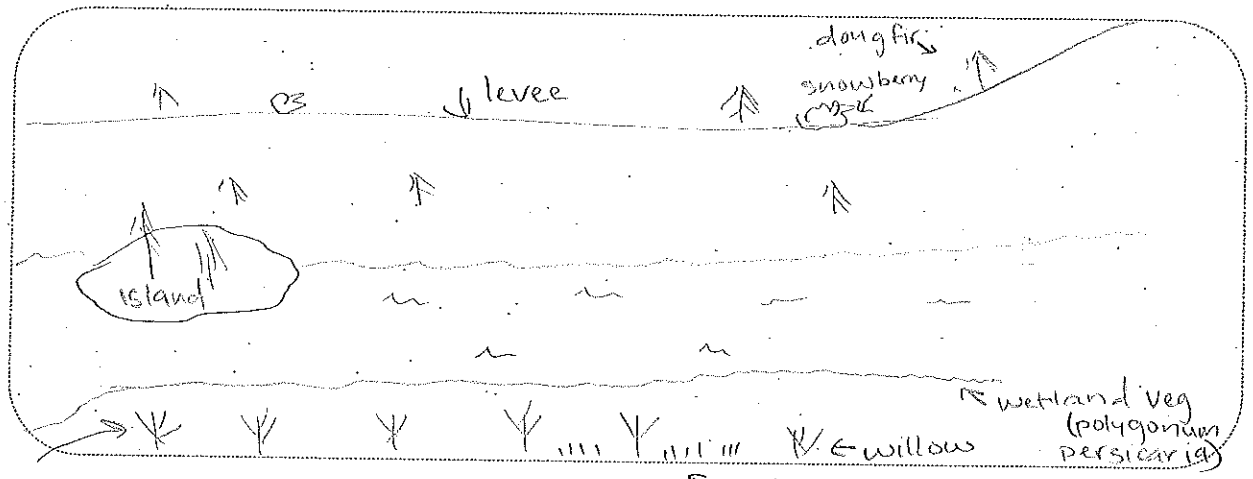
Date of site visit:	Nov 19 2019			
Time of site visit:	10:43			
Weather conditions:	overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: tide gate	
Bank armoring at the site?	No ○	Yes ⊗	Describe: Levee with tide gate	
Bank armoring up or downstream?	No ⊗	Yes ○	Describe: lake is impounded	
Observable tidal backwater?	No ⊗	Yes ○		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: levee and tide gate	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver channel	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



willows are site OHWM indicators

Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour o Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage x Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation x Aquatic animals o Algal mats o Iron staining

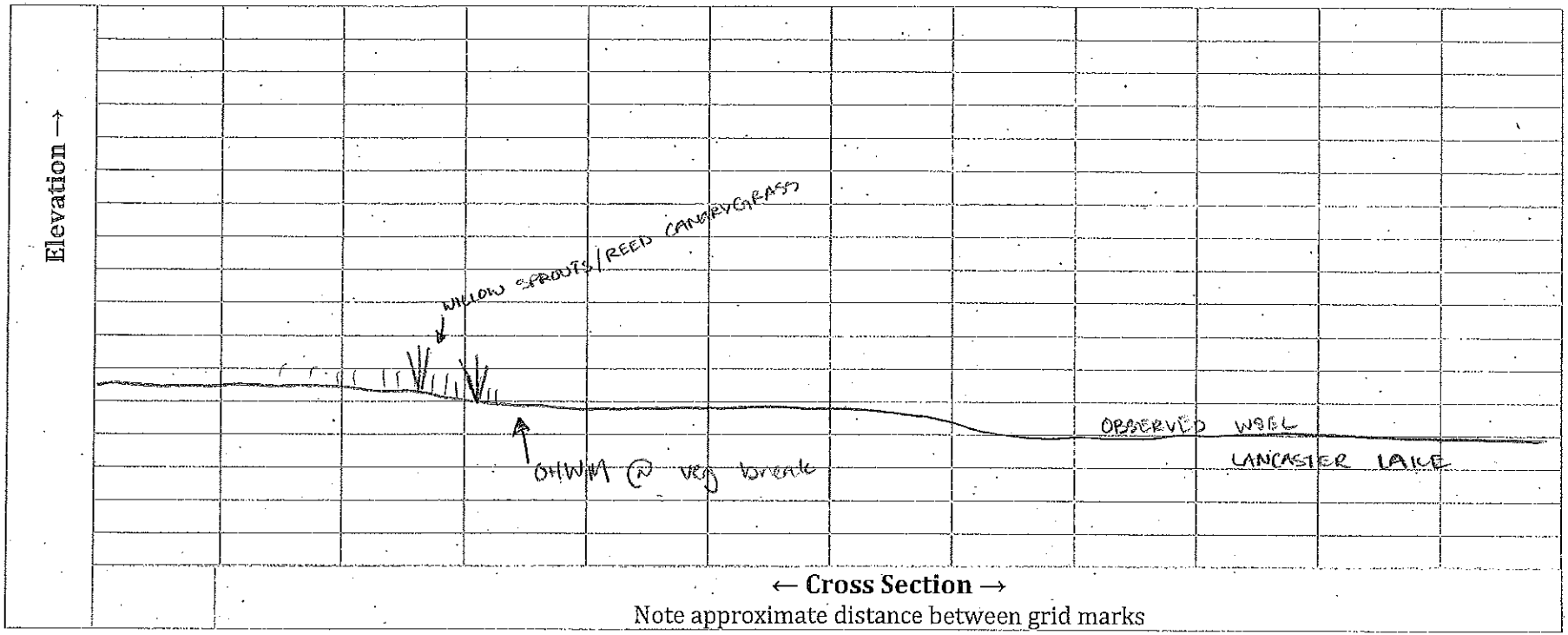
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	x Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	x Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons x Relic floodplain surface x Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar x Douglas fir o Western hemlock o Ponderosa pine x Oregon white oak o Coast pine o Quaking aspen x Vine maple (lakes) x Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

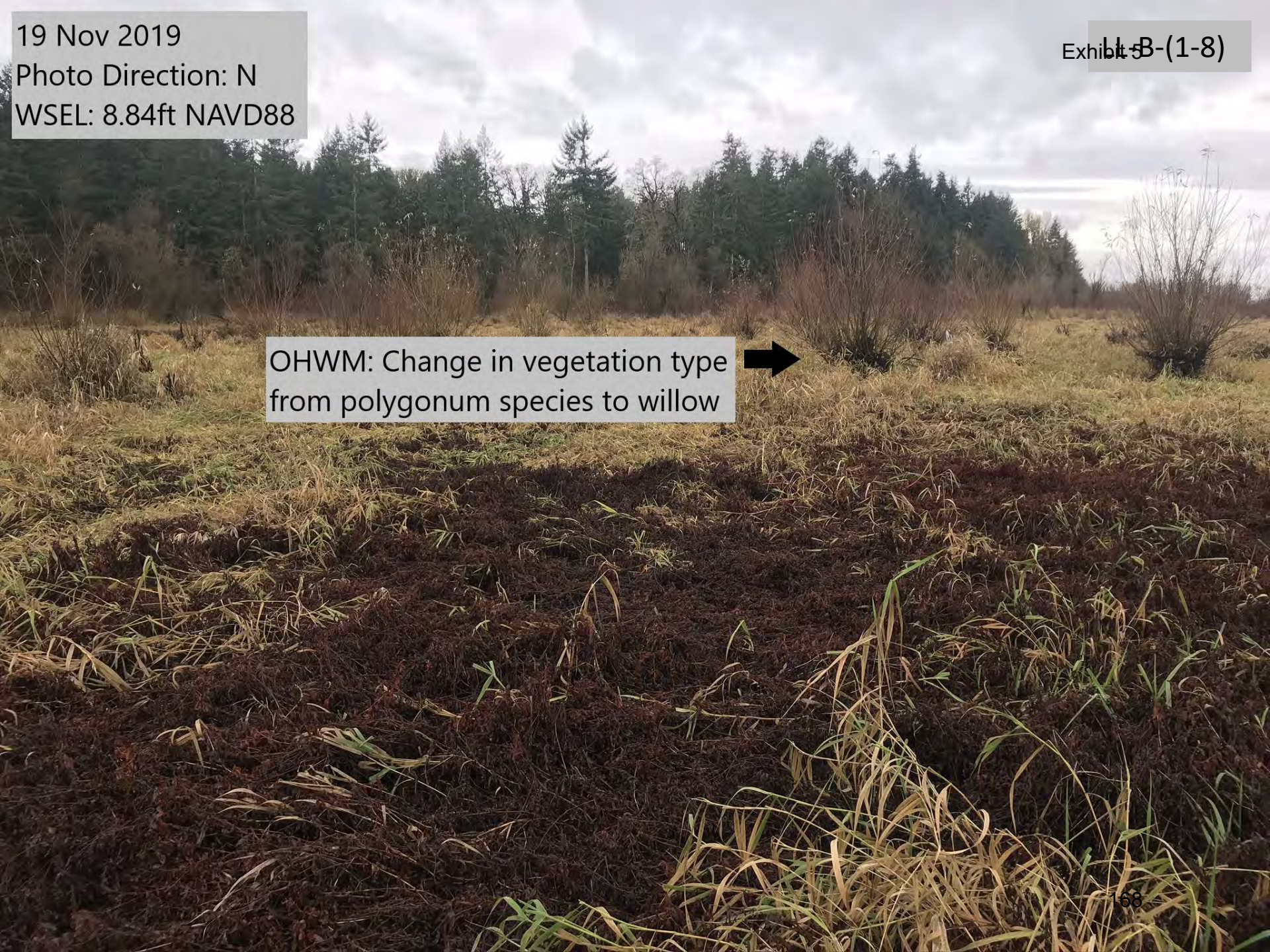
Notes

This is an impounded lake. There is a break in vegetation habitats. Polygonums is at lower elevation and reed canary grass and willows are at higher elevations indicating OHWM



Below OHWM		At/Straddling OHWM		Above OHWM	
spotted ladysthumb	FACW	reed canarygrass	FACW	willows (mature)	FACW
nodding beggarstick	OBL	willow (sprouts)	FACW	reed canarygrass	FACW
wapato	OBL				

Plant Distribution Across OHWM Gradient


19 Nov 2019
Photo Direction: N
WSEL: 8.84ft NAVD88
Exhibit 5
LL-B-(1-8)
OHWM: Change in vegetation type from polygonum species to willow

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lancaster Lake
Description:	45.85181, -122.7480898
	points: LL-C-(1-6)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

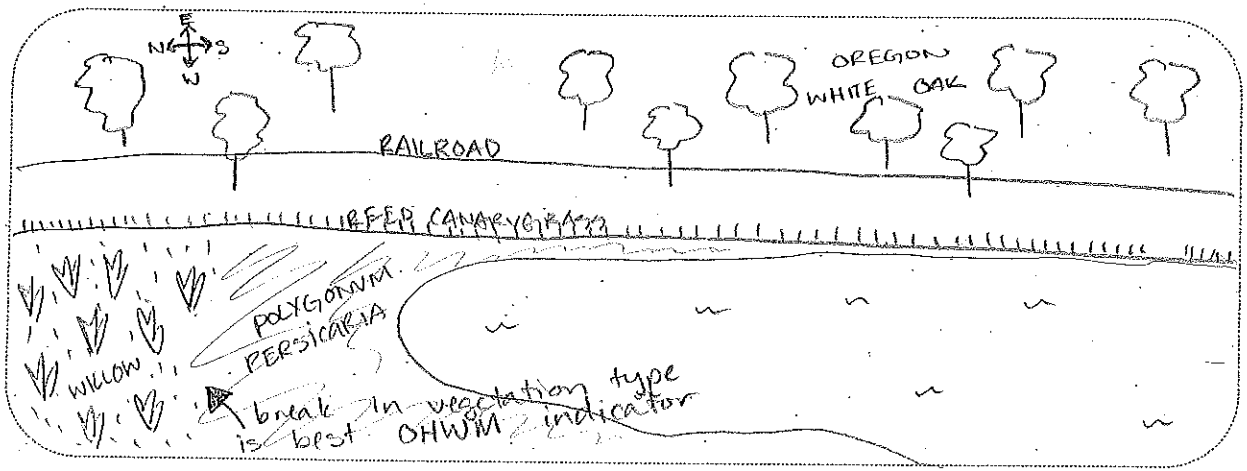
Date of site visit:	11-19-2019			
Time of site visit:	11:05			
Weather conditions:	overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ⊗	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Levee w/ tidegate water control structure that block tidal influence.	
Bank armoring at the site?	No ○	Yes ⊗	Describe: Levee is armored	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: Levee and parts of Gee Creek upstream	
Observable tidal backwater?	No ⊗	Yes ○		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Levee w/ tidegate	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Several channels, lodges and a small dam.	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	○ Sediment bars ○ Scour line ○ Clean cobbles/boulders. ○ Bank erosion/scour ○ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: ○ Willows ☒ Polygonum ○ Black cottonwood persicaria ○ Japanese knotweed + other ○ Skunk cabbage wetland ☒ Aquatic plants species	○ Exposed roots/root scour ○ Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals ○ Algal mats ○ Iron staining

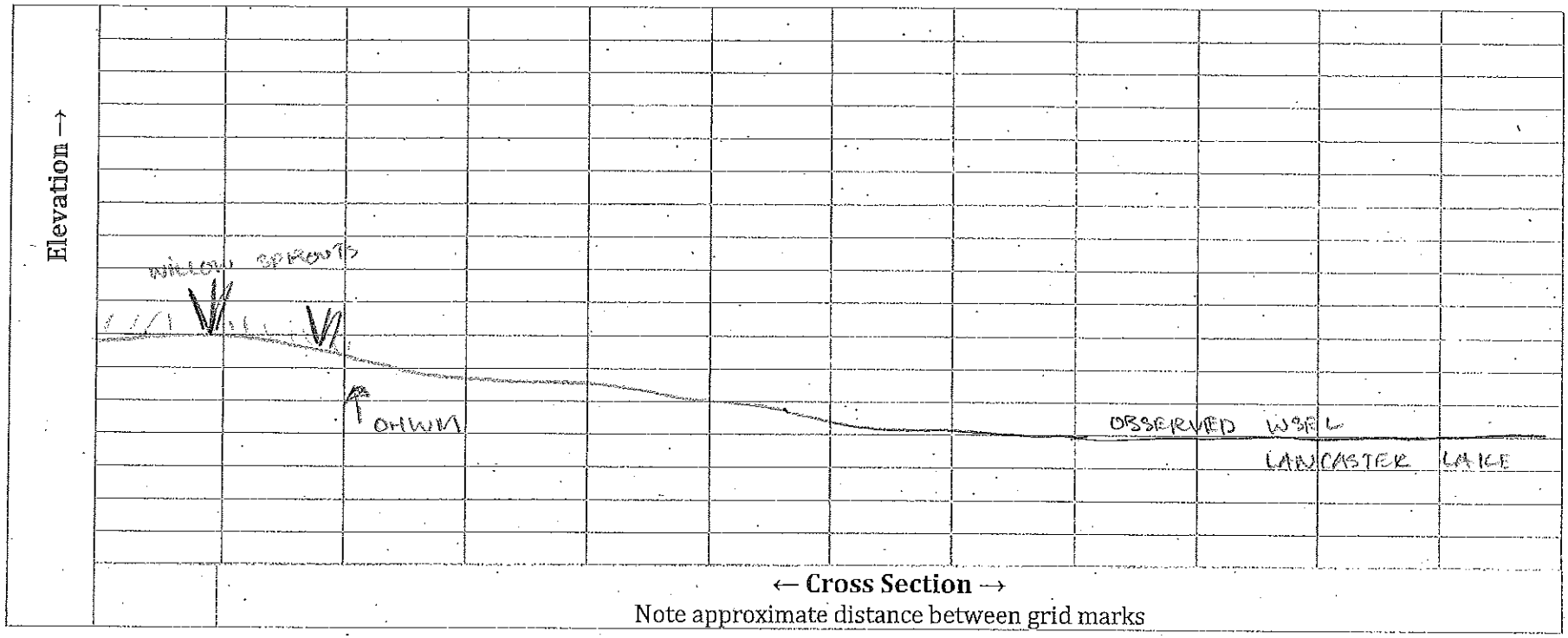
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	⊗ Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder * Red canarygrass o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	⊗ Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface ⊗ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder * Oregon ash o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine ⊗ Oregon white oak o Coast pine o Quaking aspen ⊗ Vine maple (lakes) ⊗ Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

Lancaster Lake is impounded at its southern end where it drains into Gee Creek but is blocked from tidal influence. Beaver have created many channels, lodges and a dam. Water from adjacent farm fields drains into the lake via ditches on the northeast and northwest points of the lake.



Plant Distribution Across OHWM Gradient					
Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
spotted ladysthumb	FACW	reed canarygrass	FACW	willow (mature)	FACW
nodding beggarstick	OBL	willow (sprouts)	FACW	reed canarygrass	FACW
wapato	OBL				


19 Nov 2019
Photo Direction: E
WSEL: 8.72ft NAVD88
Exhibit 5
LL-C-(1-6)
OHWM: Change in vegetation type from polygonum species to willow

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lancaster Lake
Description:	45.8480893, -122.7504188
points:	LL-D-(1-4)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

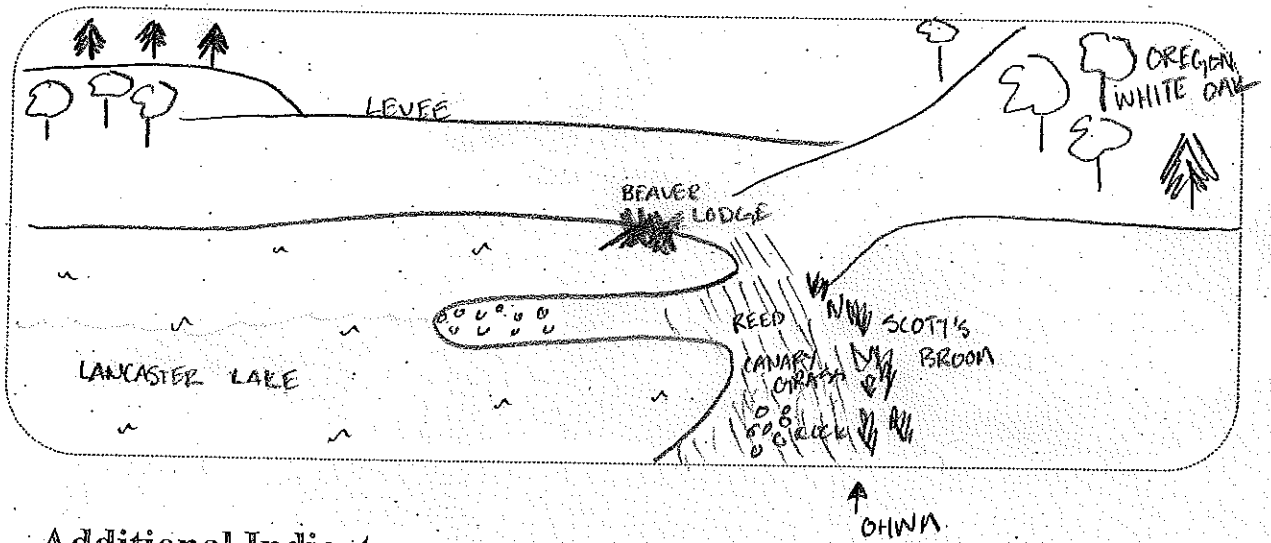
Date of site visit:	12-4-2019			
Time of site visit:	11:30			
Weather conditions:	sun			
Watershed development:	Highly developed ○		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ○		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe:	tidegate between lake and Gee Creek
Bank armoring at the site?	No ○	Yes ⊗	Describe:	levee w/ tidegate
Bank armoring up or downstream?	No ⊗	Yes ○	Describe:	lake is impounded
Observable tidal backwater?	No ⊗	Yes ○		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe:	levee and tidegate
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe:	beaver lodges and channel

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line ☒ Clean cobbles/boulders. o Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

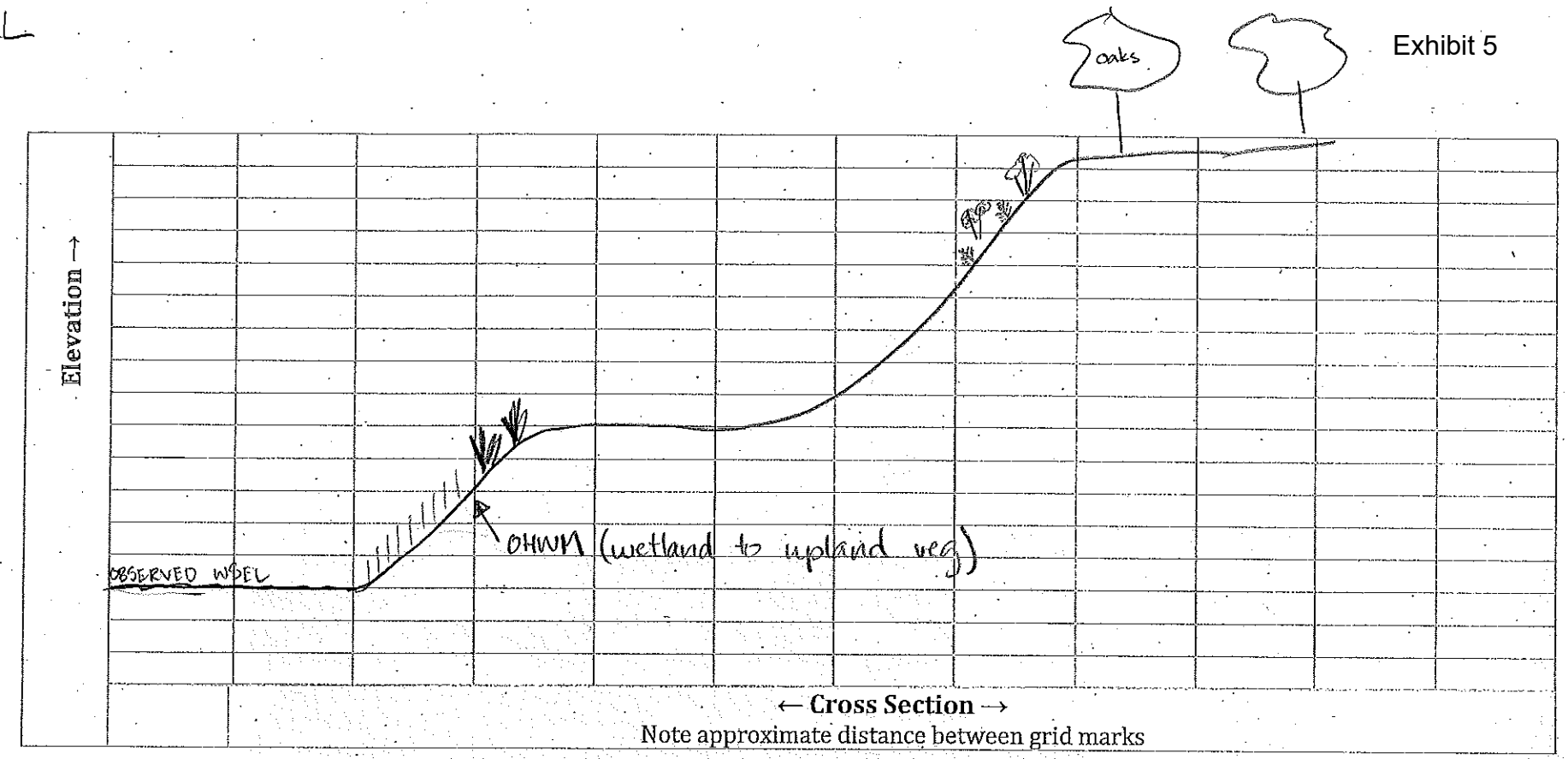
	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder * reed o Salmonberry canarygrass o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	ø Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface o Well developed soil A andB horizons/duff layer	o Indian plum *Scotb o Red alder o Western red cedar broom o Douglas fir o Western hemlock * cam's o Ponderosa pine ø Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ø Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

The best indicator here is the break between more water tolerant reed canarygrass and upland Scott's broom.

LL

Exhibit 5

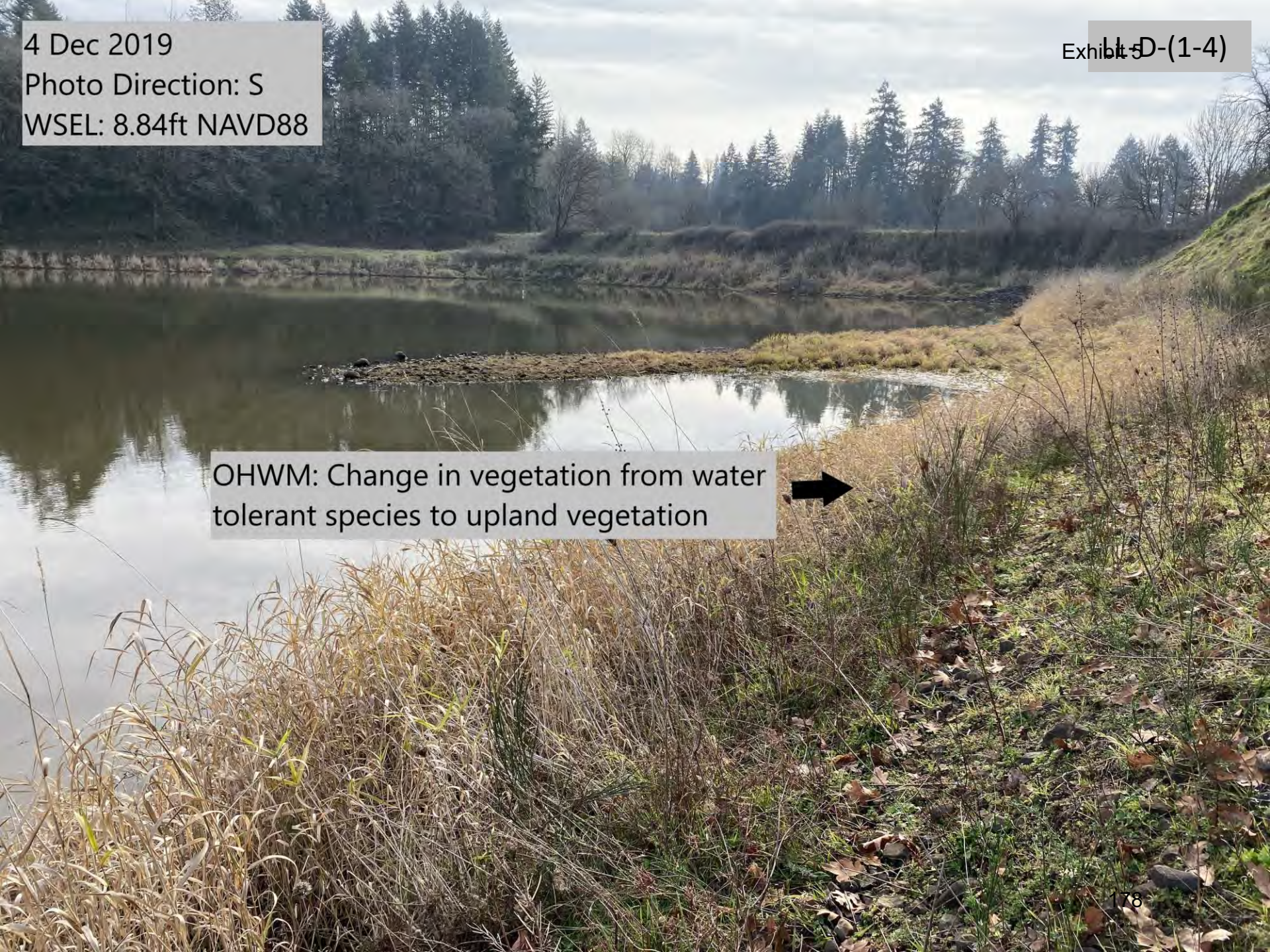


Below [redacted]e OHWM		At/Straddling OHWM		Above OHWM	
rough cocklebur	FAC	reed canarygrass	FACW	Scott's broom	NI
reed canarygrass	FACW	Robert geranium	FACU	queen Anne's lace	UPL
		birdsfoot trefoil	FACU	licorice fern	NI
		Scott's broom	NI	Oregon white oak	FACU
				Douglas fir	FACU
				oxeye daisy	FACU
				camas	FACW
				snowberry	FACU
				shiny geranium	NI
				barnyard grass	FAC

Plant Distribution Across OHWM Gradient

159

177


4 Dec 2019
Photo Direction: S
WSEL: 8.84ft NAVD88
Exhibit 5
LL-D-(1-4)
OHWM: Change in vegetation from water tolerant species to upland vegetation

Appendix A: Field data form

General Information

Site/Project	Wapato Valley
Name/Owner:	Plas Newpald Farm
Location:	Lewis River
Description:	45.8636632, -122.7508188
	points: LR-A-(1-2)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

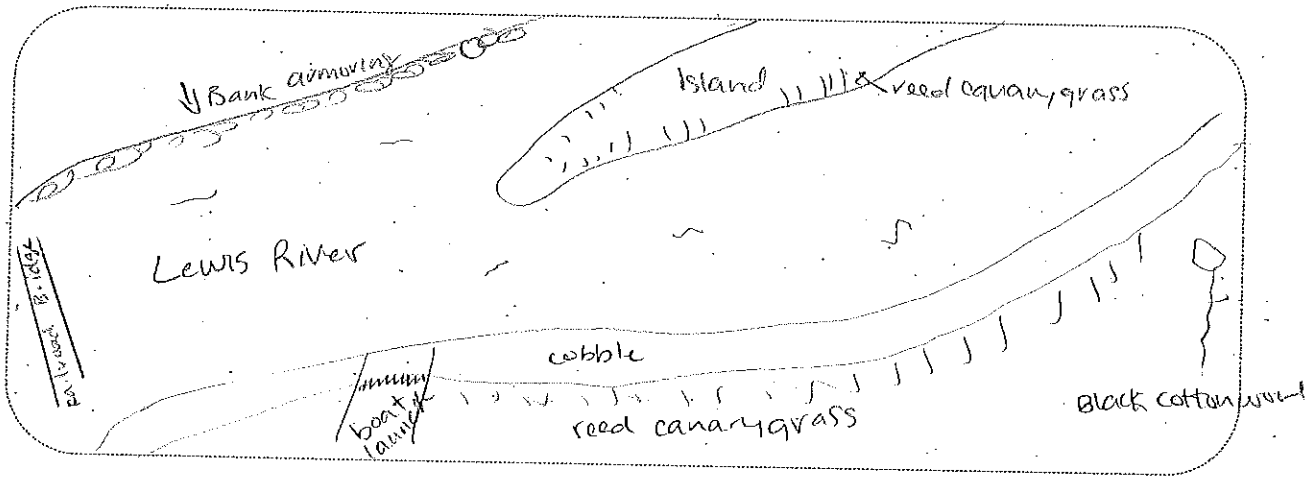
Date of site visit:	20 Nov 2019			
Time of site visit:	15:39			
Weather conditions:	Full Sun			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Merwin Dam/Bonneville Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: rock armoring	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: Both up and down stream	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Railroad embankments/ pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: beaver chews	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation Aquatic animals o Algal mats o Iron staining

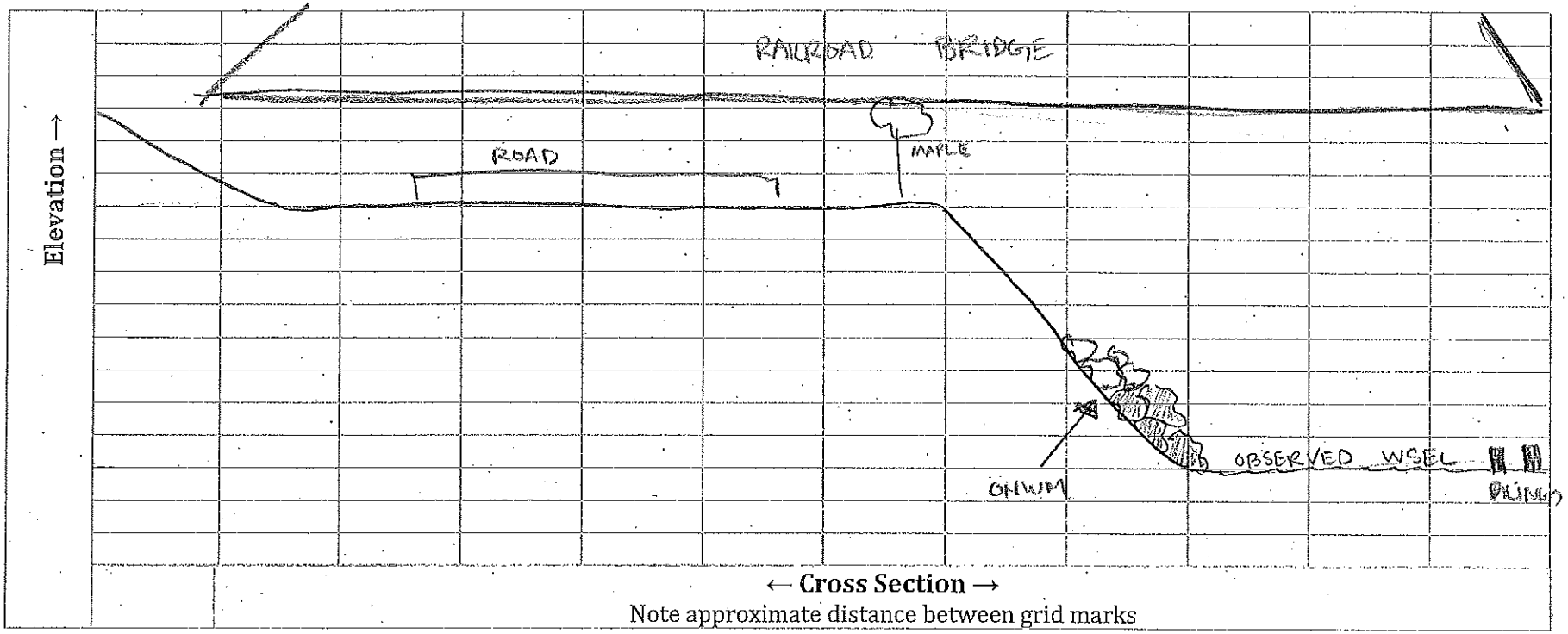
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank ☒ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries red o Dunegrasses cannygrass	☒ Sediment lines on vegetation or other fixed objects ☒ Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons o Relic floodplain surface o Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine black cottonwood o Quaking aspen o Vine maple (lakes) ☒ Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

At this site the vegetation break along the shoreline and sediment deposits on riprap and a boat launch were used as the best OHWM indicators.



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
reed canarygrass	FACW	red-osier dogwood	FACW	himalaya blackberry	FACU
slough sedge	OBL	willow sp.	FACW	black cottonwood	NI
purple loosestrife	OBL	spirea	FACW	moss sp.	NI
woolly sedge	OBL	pennyroyal	OBL	western dock	FACW
sneezeweed	FACW			bigleaf maple	FACU
				queen Anne's lace	FACU


20 Nov 2019
Photo Direction: W
WSEL: 7.16ft NAVD88
Exhibit 5
LRA-(1-2)
OHWM: Sediment line on rocks

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lewis River
Description:	45.8619055, -122.757252
	points: LR-B-(1-6)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

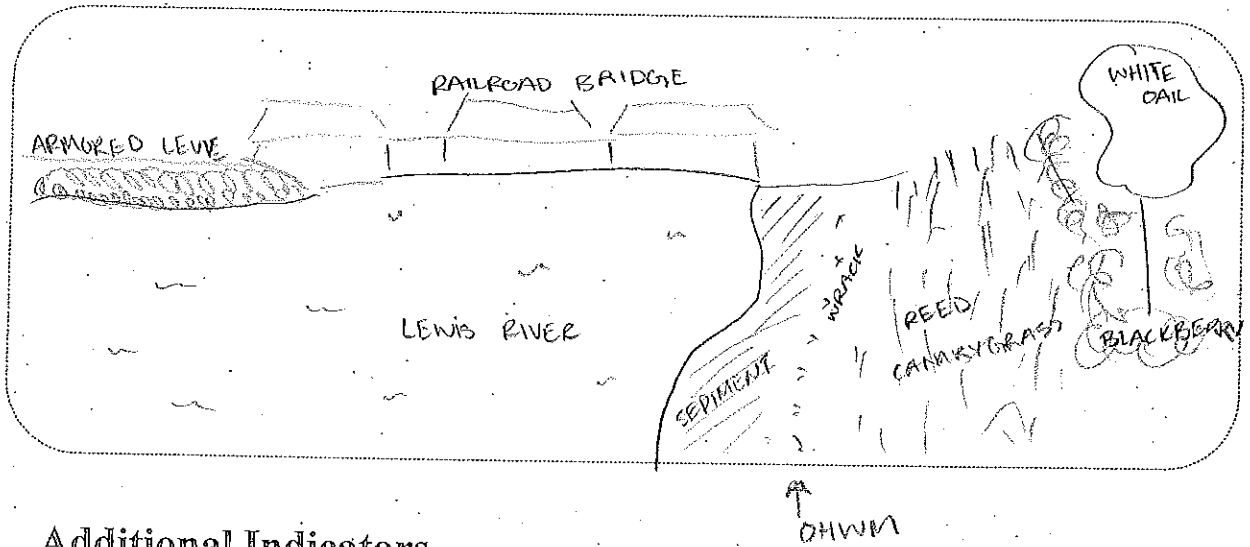
Date of site visit:	11-20-2019			
Time of site visit:	15:30			
Weather conditions:	full sun			
Watershed development:	Highly developed ⊘		Mod. Developed O	Undeveloped O
Reach development:	Highly developed ⊘		Mod. Developed O	Undeveloped O
Recent site disturbance?	No ⊘	Yes O	Describe:	
Upstream flow control devices?	No O	Yes ⊘	Describe: Merwin Dam	
Bank armoring at the site?	No O	Yes ⊘	Describe: Riprap on both sides	
Bank armoring up or downstream?	No O	Yes ⊘	Describe: both sides up and down	
Observable tidal backwater?	No O	Yes ⊘		
In-water structures? (i.e. bridge pilings, railroad embankments)	No O	Yes ⊘	Describe: railroad bridge, pilings	
Animals grazing in riparian zone?	No ⊘	Yes O	Describe:	
Observable beaver activity?	No ⊘	Yes O	Describe:	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. o Bank erosion/scour ø Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage o Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ø Aquatic animals o Algal mats o Iron staining

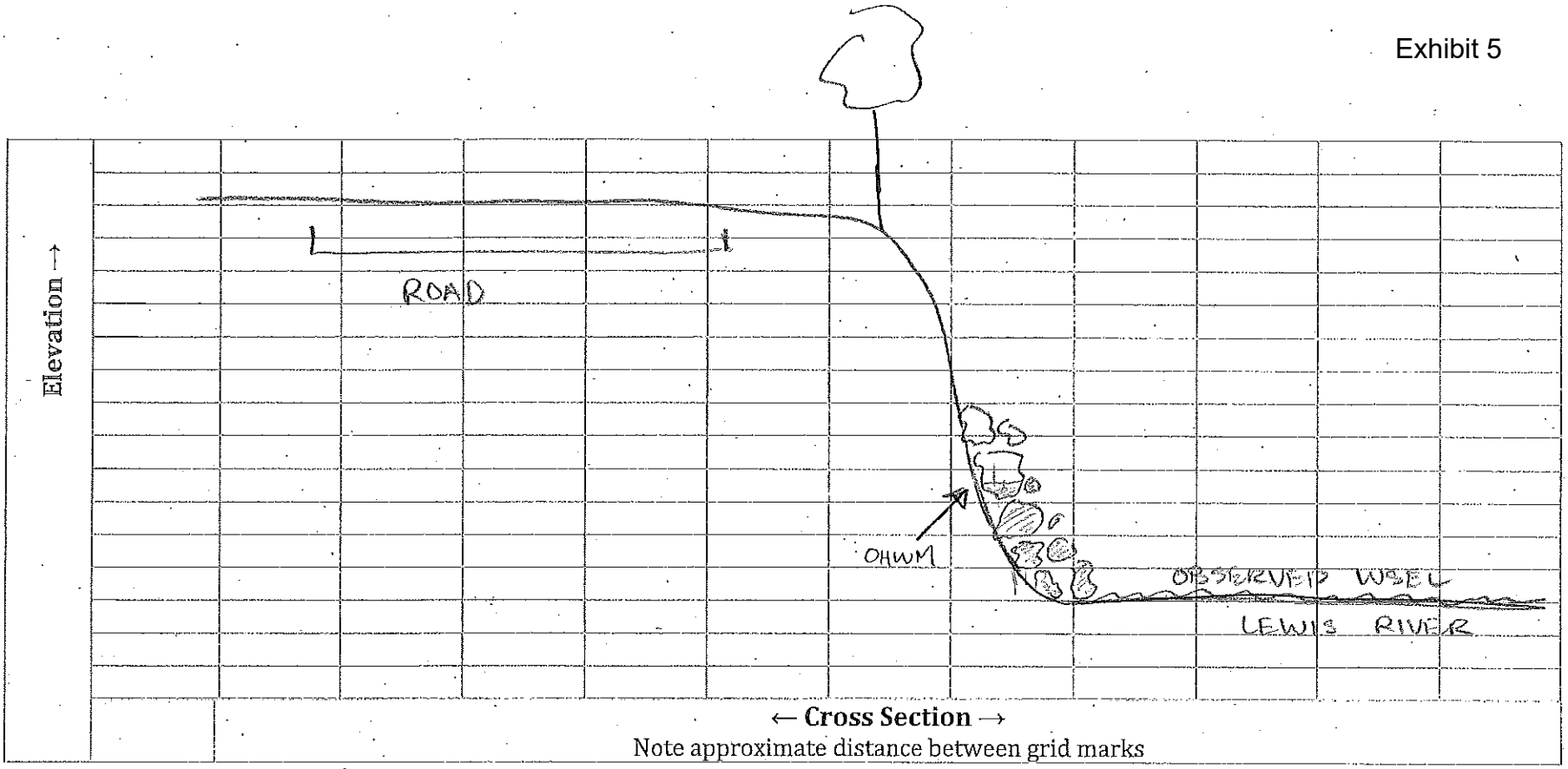
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) o Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder * reed canarygrass? o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	☒ Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation o Weathered and buried driftwood
Above OHWM	o Hillslope toe o Terraces or alluvium with an organic horizon or other developed soil horizons ☒ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine ☒ Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ☒ Blackberries	☒ Lighter or no staining on fixed objects o Overbank deposits

Notes

At this site sediment deposits on cobble and riprap were used, along with wrack on the sandy parts of the shoreline and the lowest extent of some native sedges.



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
bare cobble or riprap		reed canarygrass	FACW	black cottonwood	NI
				Oregon white oak	FACU
				himalaya blackberry	FACU


20 Nov 2019
Photo Direction: SW
WSEL: 7.24ft NAVD88
Exhibit 5
LRB-(1-6)
OHWM: Sediment line on rocks

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lewis River
Description:	45.800006, -122.762723
	points: LR-C-(1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

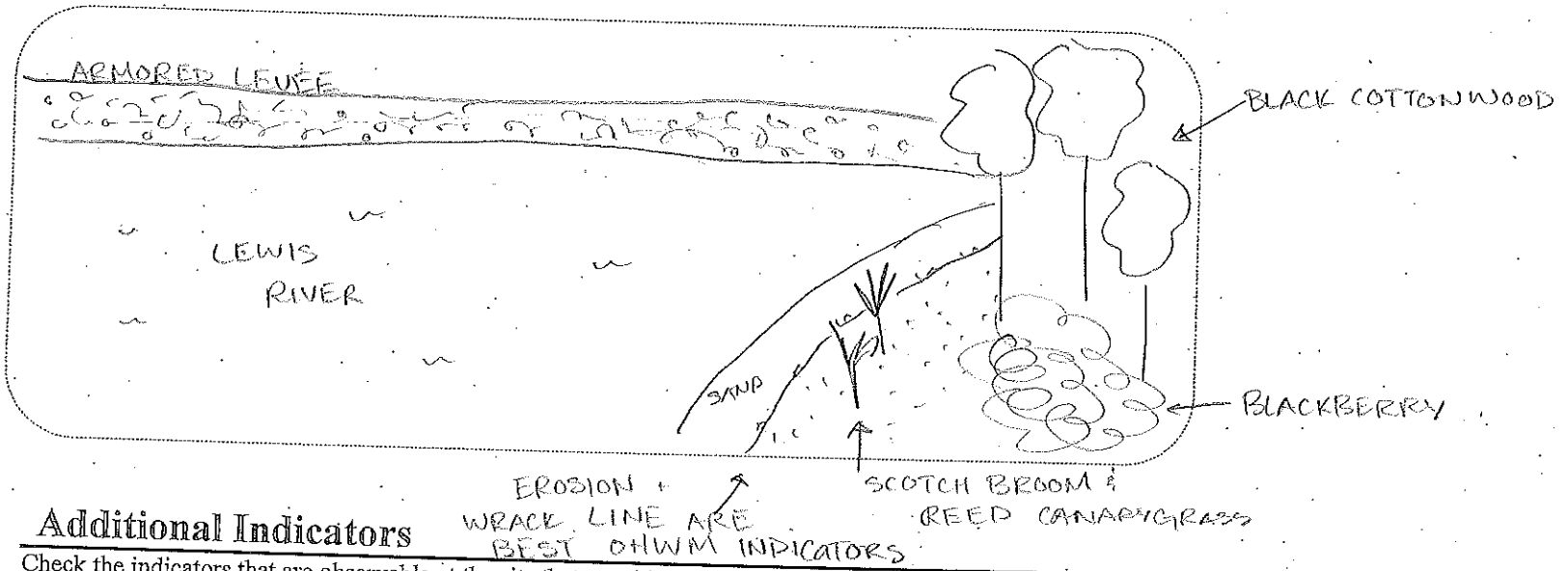
Date of site visit:	11-19-2019			
Time of site visit:	15:35			
Weather conditions:	Overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ○	Yes ⊗	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Merwin Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: opposite (north) shoreline	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: north shoreline	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Railroad bridge, wood habitat structures, pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: fresh beaver chewed logs	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	○ Sediment bars ☒ Scour line ○ Clean cobbles/boulders. ☒ Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: ○ Willows ○ Black cottonwood ○ Japanese knotweed ○ Skunk cabbage ☒ Aquatic plants	☒ Exposed roots/root scour ○ Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals ○ Algal mats ○ Iron staining

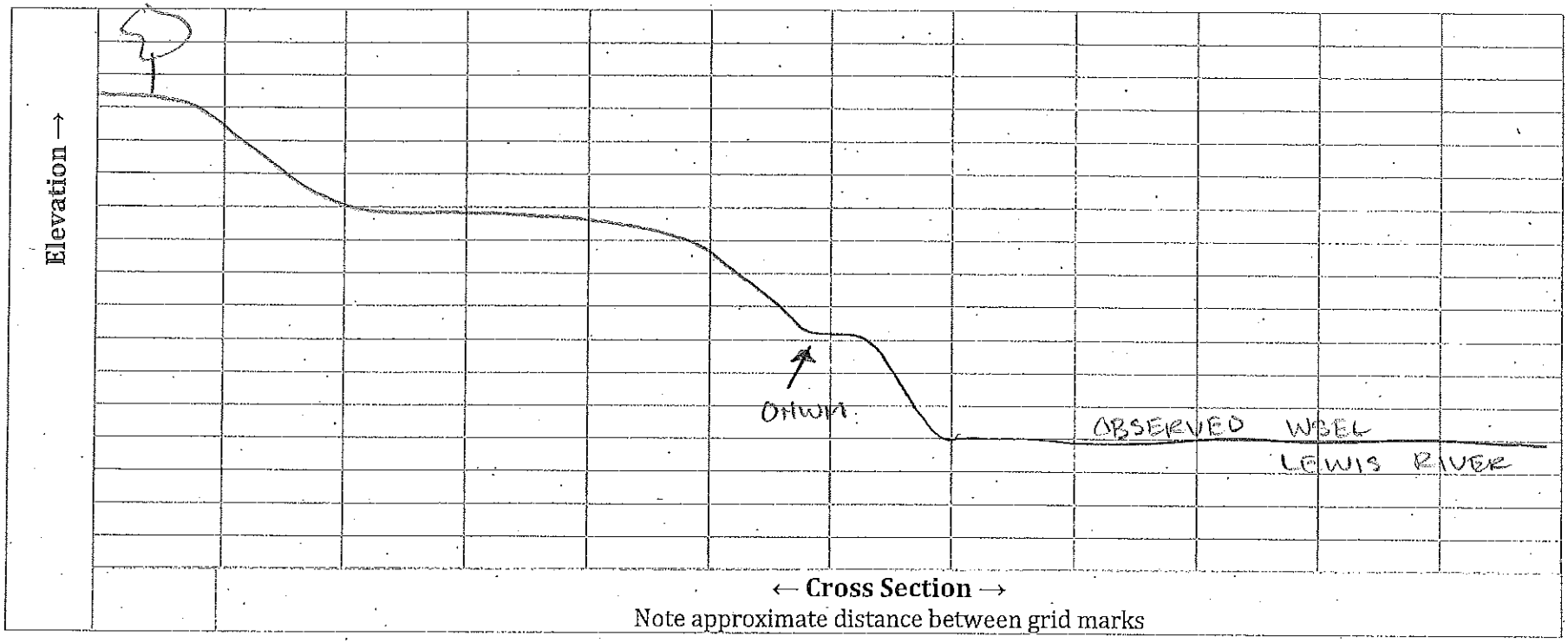
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank ⊗ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ⊗ Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder ⊗ Red osier o Salmonberry dogwood o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	⊗ Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ⊗ Darker stain lines on fixed objects ⊗ Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation ⊗ Weathered and buried driftwood
Above OHWM	⊗ Hillslope toe ⊗ Terraces or alluvium with an organic horizon or other developed soil horizons ⊗ Relic floodplain surface ⊗ Well developed soil A andB horizons/duff layer	o Indian plum ⊗ Oregon o Red alder ash o Western red cedar ⊗ Black o Douglas fir cottonwood o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) ⊗ Blackberries	⊗ Lighter or no staining on fixed objects o Overbank deposits

Notes

This survey site was along the Lewis shoreline at the inlet of a side channel. OHWM indicators included bank erosion lines and wrack buildup along the base of the eroded shore.



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
veed canarygrass	FACW	veed canarygrass	FACW	veed canarygrass	FACW
				himalaya blackberry	FACU
				black cottonwood	N1


19 Nov 2019
Photo Direction: SW
WSEL: 7.34ft NAVD88
OHWM: Wrack buildup and benches

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lewis River
Description:	45.857777, -122.769953
	points: LR-D-(1-7)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

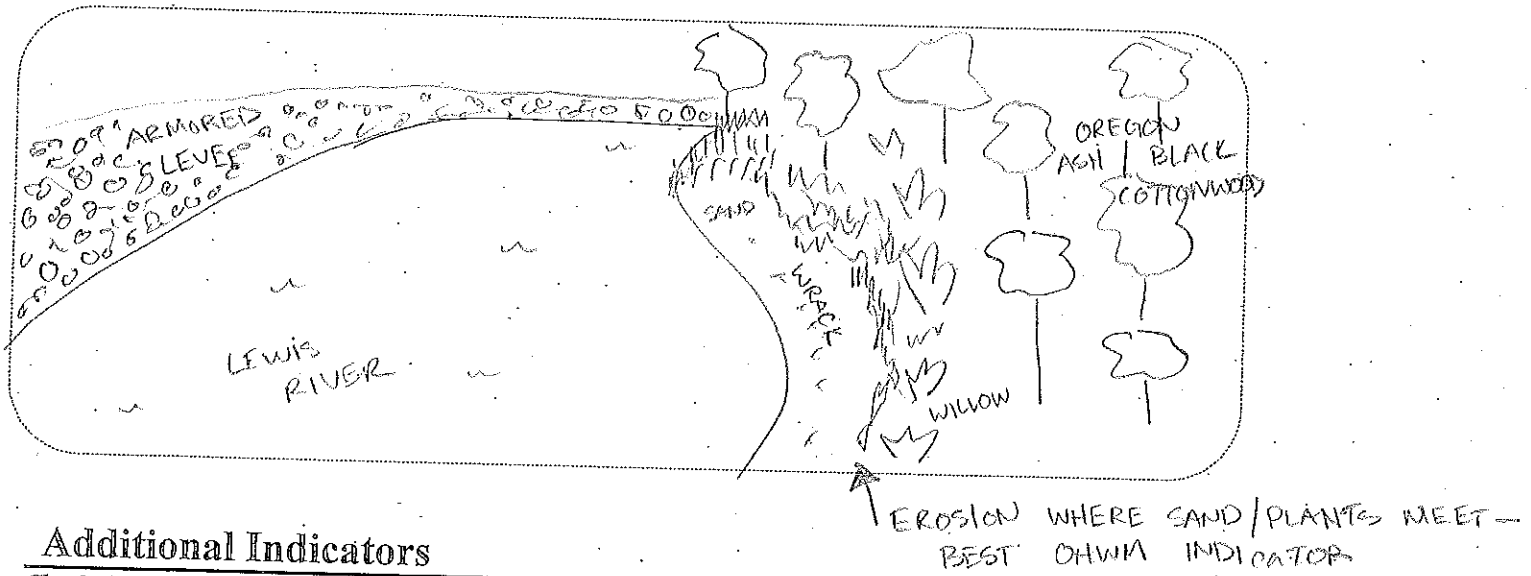
Date of site visit:	11-19-2019			
Time of site visit:	15:00			
Weather conditions:	overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Merwin Dam / Bonneville Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: On opposite (north) shoreline.	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: upstream both sides	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Railroad bridge, wood habitat structures, pilings	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver chewed sticks	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. ☒ Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	☒ Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

[24] Refer to Chapter 4 for a more complete description of indicators.

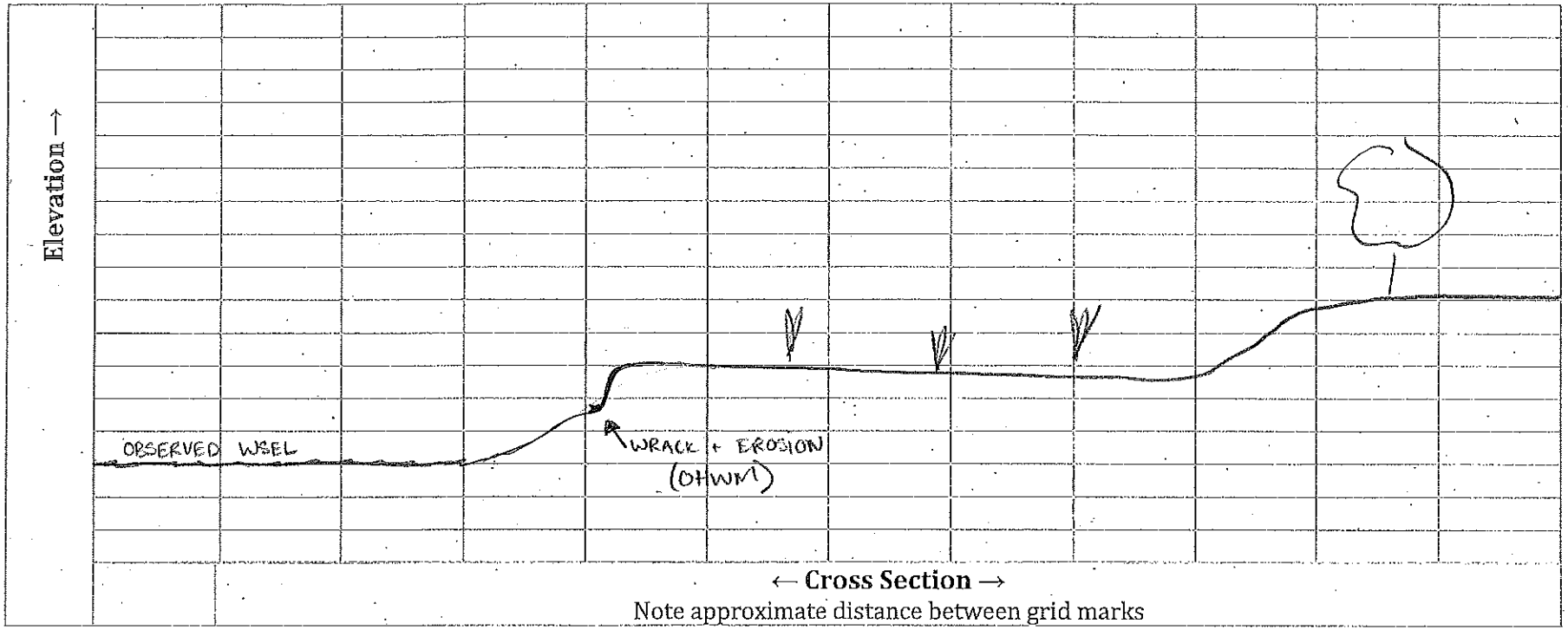
[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank ø Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ø Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder ø reed o Salmonberry canarygrass o Nootka rose o Maidenhair and lady fern o Blackberries ø western o Dunegrasses goldentop	ø Sediment lines on vegetation or other fixed objects → wrack deposited on sand ø Change from channel deposits to older alluvium. ø Darker stain lines on fixed objects ø Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation ø Weathered and buried driftwood
Above OHWM	o Hillslope toe ø Terraces or alluvium with an organic horizon or other developed soil horizons ø Relic floodplain surface ø Well developed soil A andB horizons/duff layer	o Indian plum ø Oregon o Red alder ash o Western red cedar o Douglas fir o Western hemlock ø Black cottonwood o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) o Blackberries	ø Lighter or no staining on fixed objects o Overbank deposits

Notes

The best OHWM indicator at this site was where there was a break due to erosion between the sandy shoreline and native sedges.

LR-D



Below OHWM		At/Straddling OHWM		Above OHWM	
Plant Distribution Across OHWM Gradient					
reed canarygrass	FACW	reed canarygrass	FACW	bentgrass sp.	FAC
western goldentop	FACW	western goldentop	FACW	western goldentop	FACW
		slough sedge	OBL	sand bar willow	FACW
				sneezeweed	FACW
				Oregon ash	FACW
				black cottonwood	NI
				sheep sorrel	FACU


19 Nov 2019
Photo Direction: NE
WSEL: 7.57ft NAVD88
OHWM: Erosion and wrack buildup

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley Plas Newydd Farm
Location:	Lewis River
Description:	45.857695, -122.770411 points: LR-E-(1-7)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

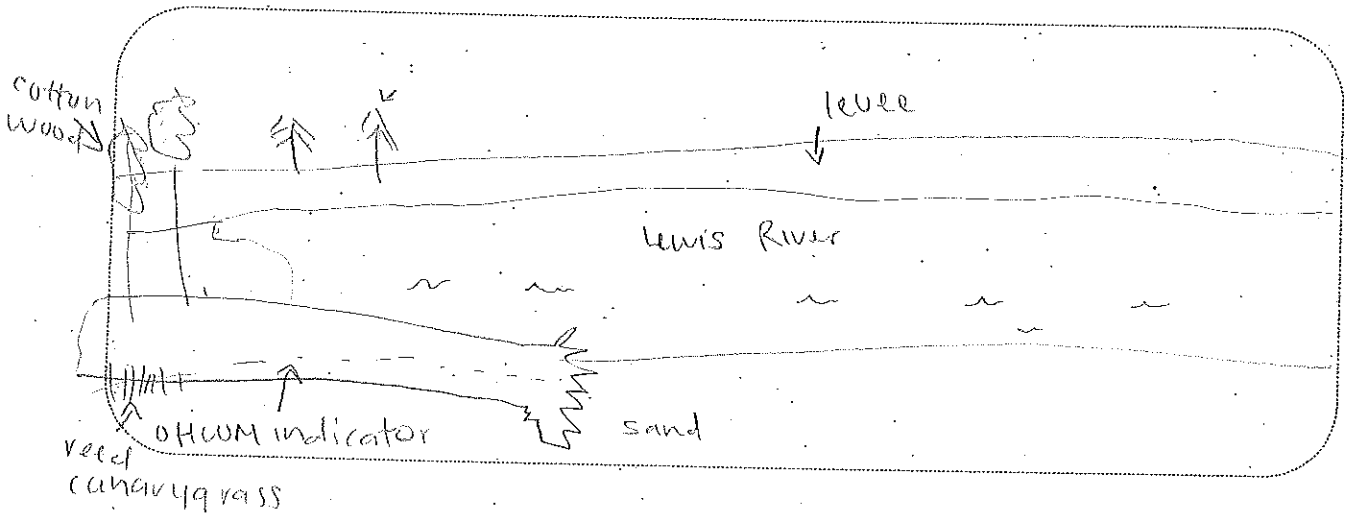
Date of site visit:	Nov 19 2019			
Time of site visit:	15:13			
Weather conditions:	Overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Merwin Dam/Bonneville Dam	
Bank armoring at the site?	No ○	Yes ⊗	Describe: on opposite (North) shoreline	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe: upstream both sides	
Observable tidal backwater?	No ○	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: Railroad bridge, wood habitat structures, piling	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ○	Yes ⊗	Describe: Beaver chewed sticks	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	☒ Sediment bars ☒ Scour line o Clean cobbles/boulders. ☒ Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	☒ Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

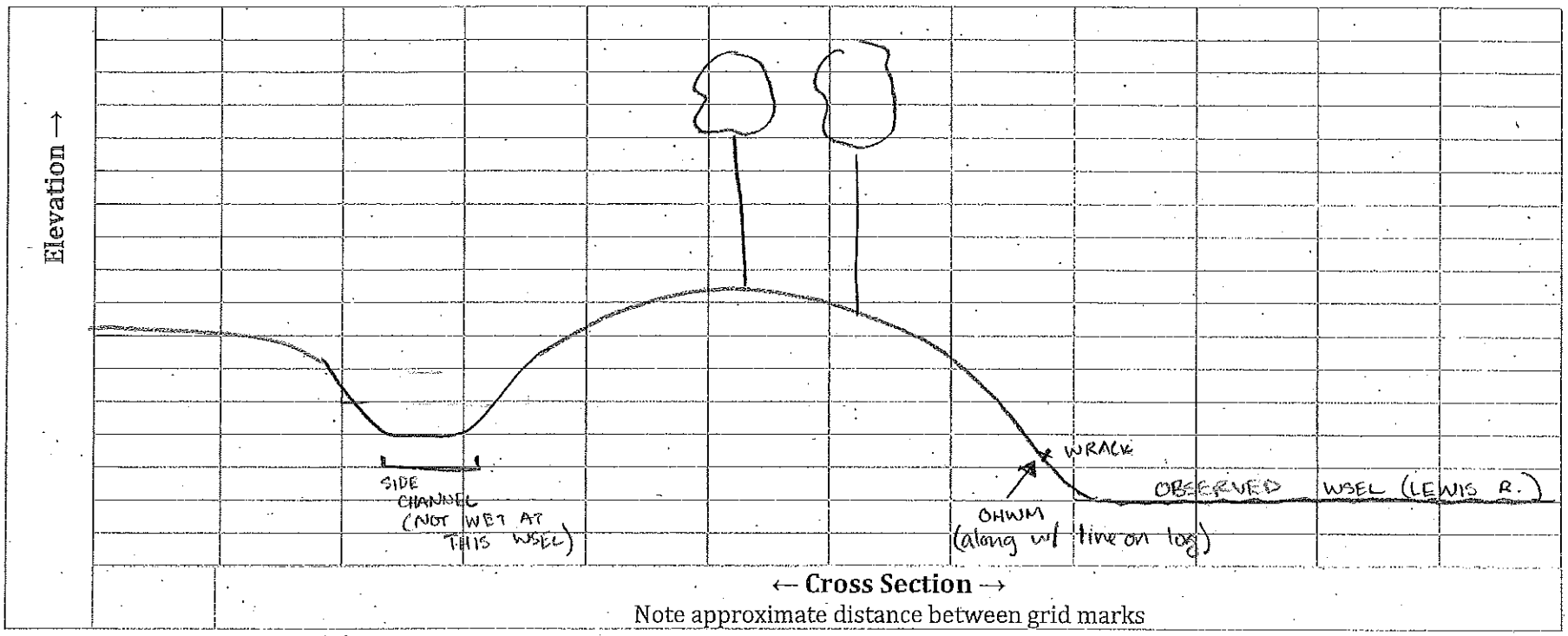
	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank ☒ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ☒ Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry reed canary o Nootka rose grass o Maidenhair and lady fern o Blackberries o Dunegrasses goldenrod	☒ Sediment lines on vegetation or other fixed objects ☒ Change from channel deposits to older alluvium. ☒ Darker stain lines on fixed objects ☒ Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation ☒ Weathered and buried driftwood
Above OHWM	o Hillslope toe ☒ Terraces or alluvium with an organic horizon or other developed soil horizons ☒ Relic floodplain surface ☒ Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir willow o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine oregon Ash o Quaking aspen o Vine maple (lakes) o Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Notes

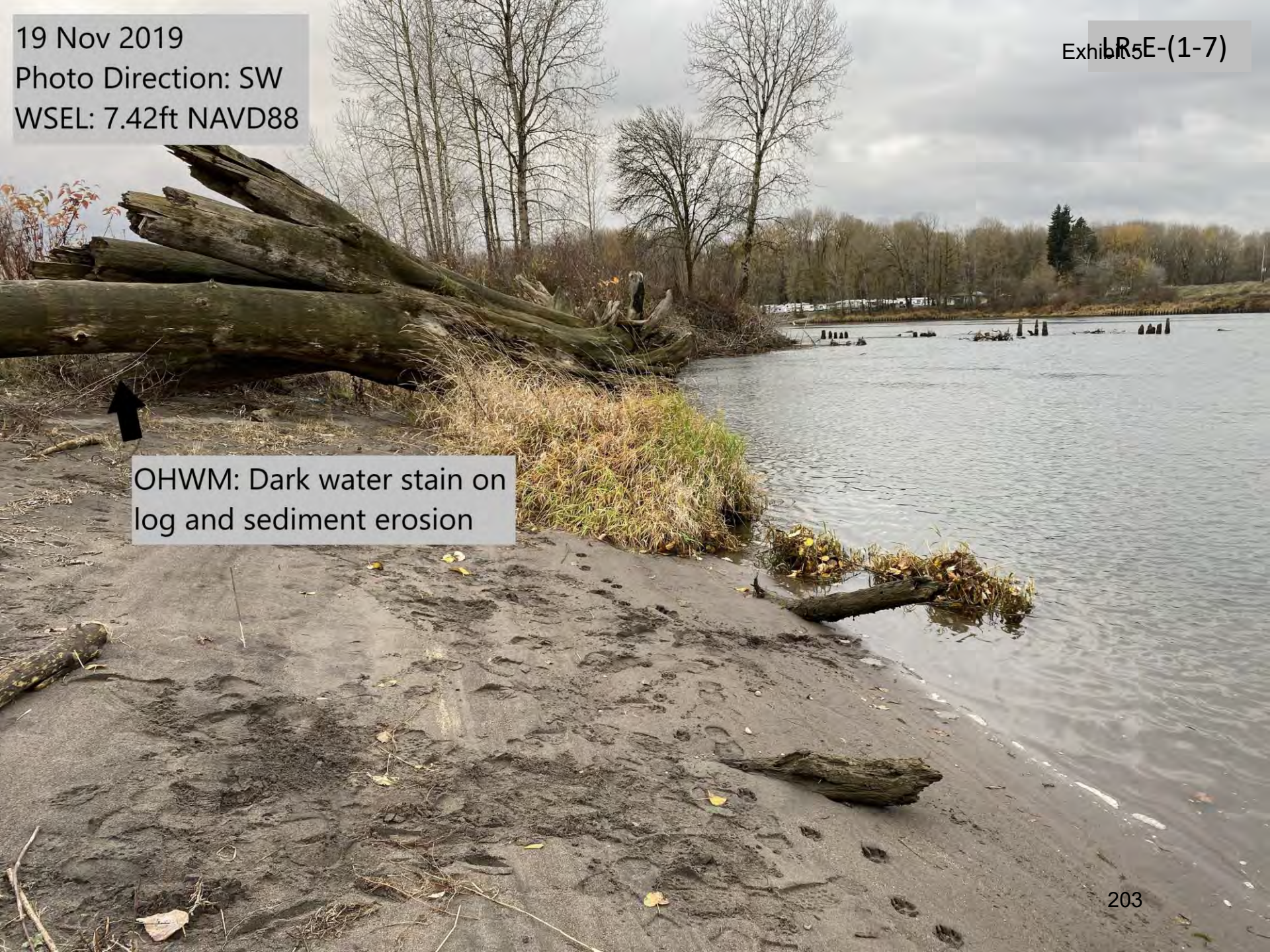
OHWM indicators at this site included dark water stains on a large log and erosion along the river shoreline.

LR - E

Exhibit 5



Below	Plant Distribution Across OHWM Gradient				
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
reed canarygrass	FACW	sheep sorrel	FACU	sand bar willows	FACW
		bentgrass spp.	FAC	Oregon ash	FACW
		red-osier dogwood	FACW	Himalayan blackberry	FACU
		spirea	FACW	black cottonwood	
		western goldentop	FACW	dovefoot geranium	
		reed canarygrass	FACW	slough sedge	OBL
		slough sedge	OBL		


19 Nov 2019
Photo Direction: SW
WSEL: 7.42ft NAVD88
OHWM: Dark water stain on log and sediment erosion

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lewis River
Description:	45.85357, -122.776643 points: LR-F-(1-3)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

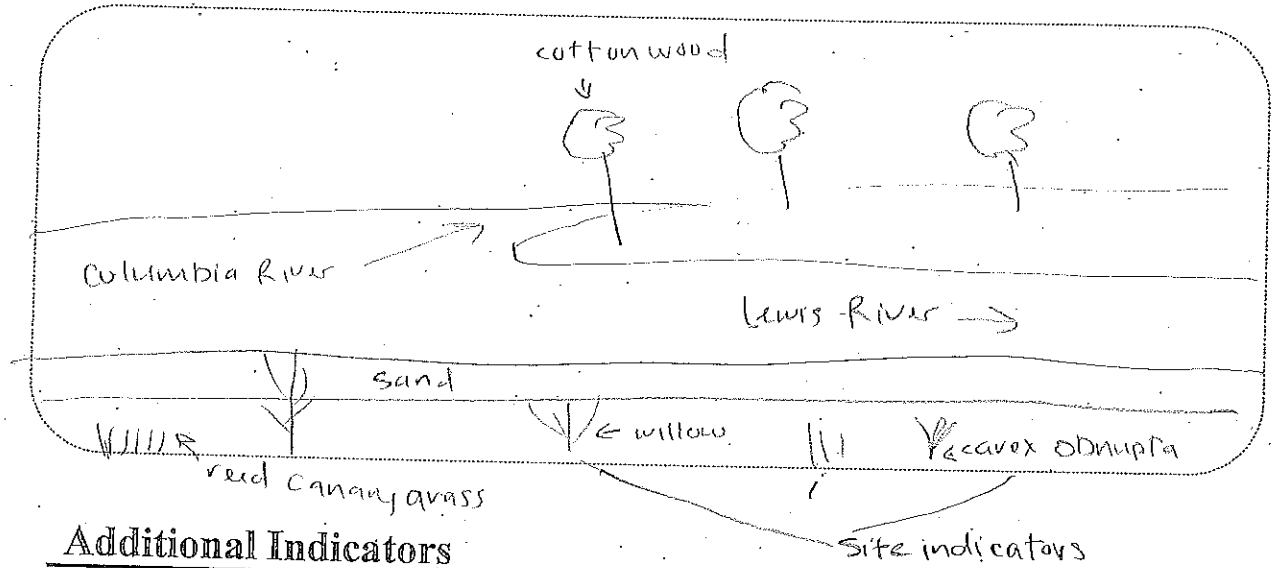
Date of site visit:	20 Nov 2019			
Time of site visit:	10:42			
Weather conditions:	Full Sun			
Watershed development:	Highly developed ⊗		Mod. Developed O	Undeveloped O
Reach development:	Highly developed ⊗		Mod. Developed O	Undeveloped O
Recent site disturbance?	No ⊗	Yes O	Describe:	
Upstream flow control devices?	No O	Yes ⊗	Describe: Merwin Dam / Bonneville Dam	
Bank armoring at the site?	No ⊗	Yes O	Describe:	
Bank armoring up or downstream?	No O	Yes ⊗	Describe: upstream	
Observable tidal backwater?	No O	Yes ⊗		
In-water structures? (i.e. bridge pilings, railroad embankments)	No O	Yes ⊗	Describe: Pilings upstream	
Animals grazing in riparian zone?	No ⊗	Yes O	Describe:	
Observable beaver activity?	No O	Yes ⊗	Describe: Beaver chews	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	o Sediment bars o Scour line o Clean cobbles/boulders. ☒ Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	☒ Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

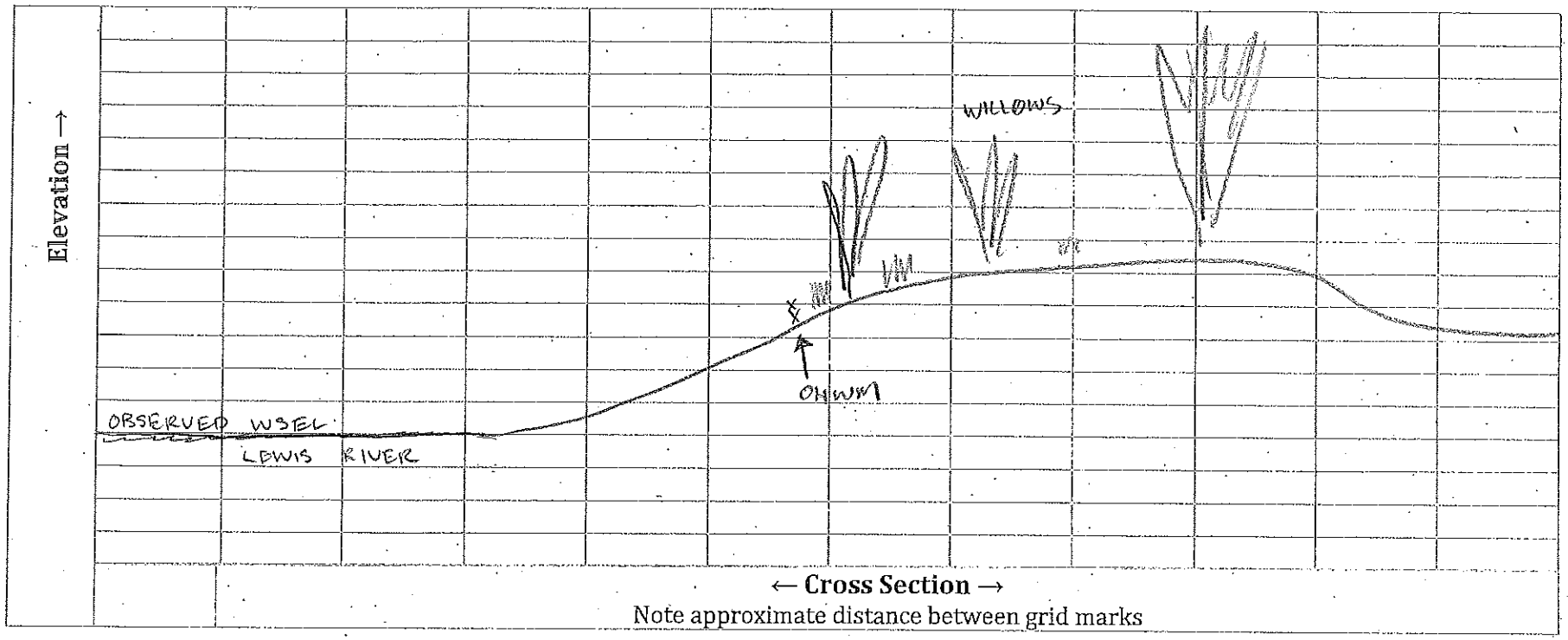
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank o Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) x Benches	x Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries reed canarygrass o Dunegrasses	o Sediment lines on vegetation or other fixed objects x Change from channel deposits to older alluvium. o Darker stain lines on fixed objects x Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation x Weathered and buried driftwood
Above OHWM	o Hillslope toe x Terraces or alluvium with an organic horizon or other developed soil horizons x Relic floodplain surface x Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir willow o Western hemlock o Ponderosa pine oregon ash o Oregon white oak o Coast pine black cottonwood o Quaking aspen o Vine maple (lakes) o Blackberries	x Lighter or no staining on fixed objects o Overbank deposits

Notes

This survey site was at the confluence of the Lewis and Columbia Rivers. The OHWM here was not clear on any fixed objects so we used the lowest elevations of the native willows and slough sedge. Reed canarygrass was present but tolerates wet and dry conditions so it was not a useful indicator species.



Below		Plant Distribution Across OHWM Gradient			
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
Canadian waterweed	OBL	slough sedge	OBL	willow	FACW
		willows	FACW	black cottonwood	NI
				rough cocklebur	FAC


20 Nov 2019
Photo Direction: N
WSEL: 8.42ft NAVD88
Exhibit 5
LRF-(1-3)
OHWM: Start of sedge and willow species

Appendix A: Field data form

General Information

Site/Project Name/Owner:	Wapato Valley / Plas Newydd Farm
Location:	Lewis River
Description:	45.85255, -122.7776056 points: LR-Cg-(1-2)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

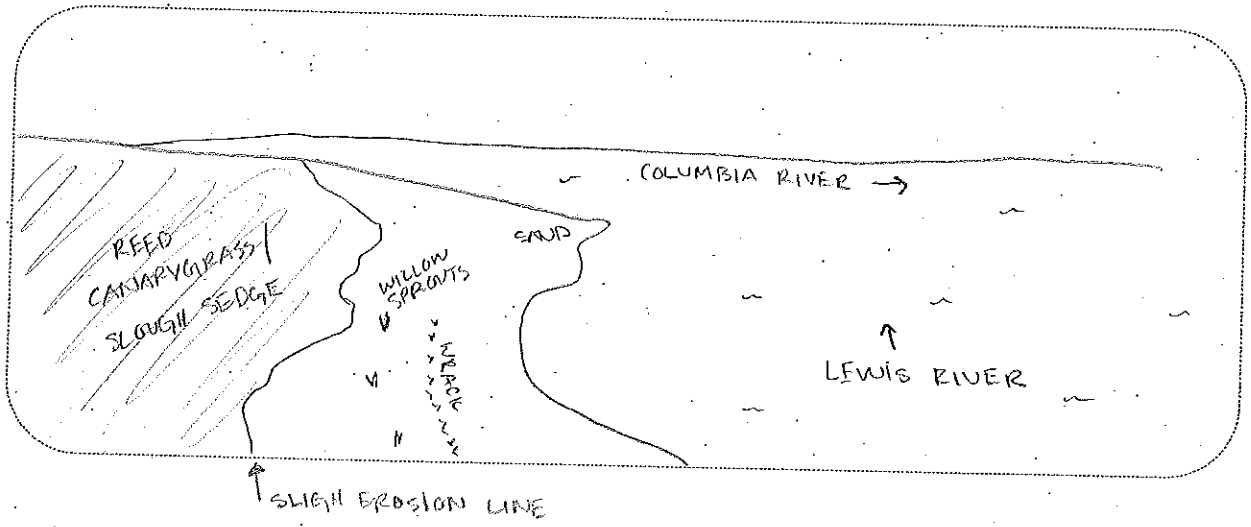
Date of site visit:	11-20-2019			
Time of site visit:	10:55			
Weather conditions:	full sun			
Watershed development:	Highly developed O		Mod. Developed Ø	Undeveloped O
Reach development:	Highly developed Ø		Mod. Developed O	Undeveloped O
Recent site disturbance?	No Ø	Yes O	Describe:	
Upstream flow control devices?	No O	Yes Ø	Describe: Merwin and Bonneville Dam	
Bank armoring at the site?	No Ø	Yes O	Describe:	
Bank armoring up or downstream?	No O	Yes Ø	Describe: upstream on both sides	
Observable tidal backwater?	No O	Yes Ø		
In-water structures? (i.e. bridge pilings, railroad embankments)	No O	Yes Ø	Describe: pilings upstream	
Animals grazing in riparian zone?	No Ø	Yes O	Describe:	
Observable beaver activity?	No O	Yes Ø	Describe: fresh chewed sticks	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	⊗ Sediment bars o Scour line o Clean cobbles/boulders. ⊗ Bank erosion/scour ⊗ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ⊗ Aquatic plants	o Exposed roots/root scour o Drainage patterns, as shown by flattened vegetation ⊗ Aquatic animals o Algal mats o Iron staining

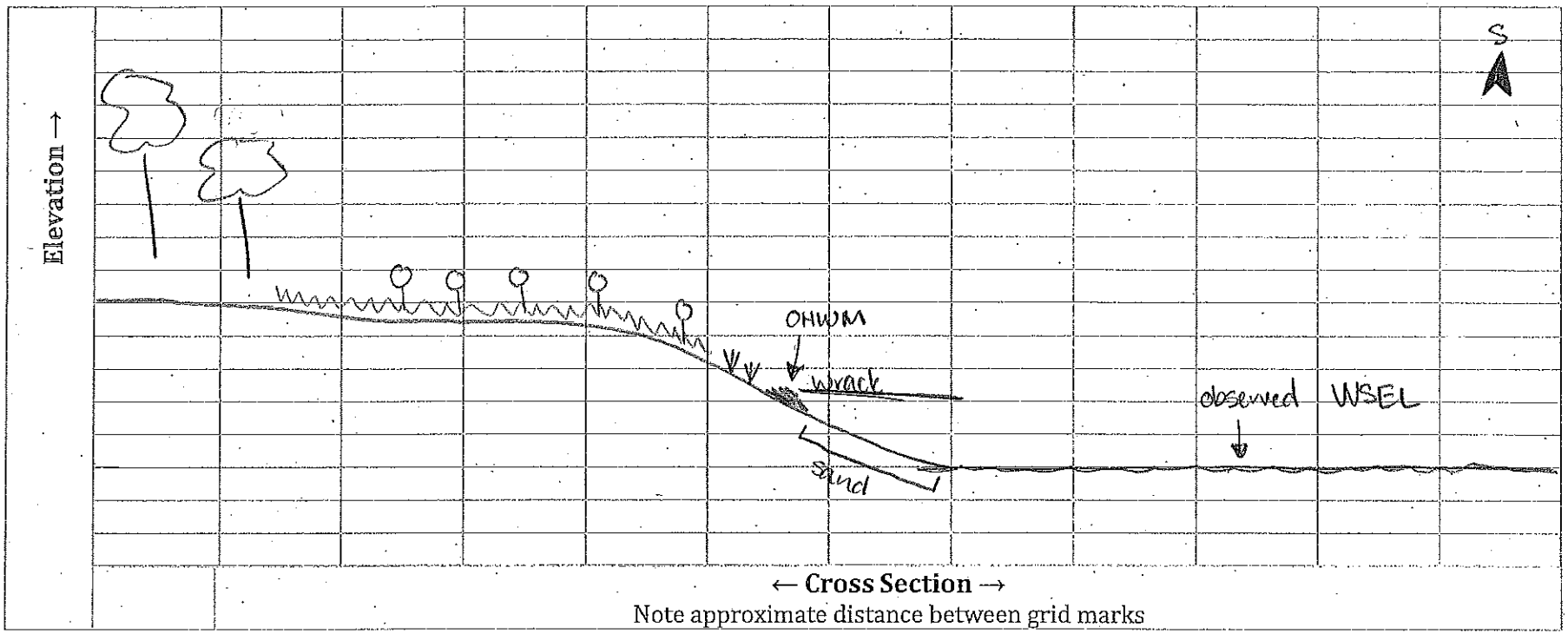
[24] Refer to Chapter 4 for a more complete description of indicators.

[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank ø Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ø Benches	ø Willows - sprouts o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder ø reed o Salmonberry cattail/grass o Nootka rose o Maidenhair and lady fern o Blackberries ø slough o Dunegrasses sedge	ø Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. ø Darker stain lines on fixed objects ø Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation ø Weathered and buried driftwood
Above OHWM	o Hillslope toe ø Terraces or alluvium with an organic horizon or other developed soil horizons ø Relic floodplain surface ø Well developed soil A andB horizons/duff layer	o Indian plum ø willows (larger mature) o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) o Blackberries	o Lighter or no staining on fixed objects ø Overbank deposits

Notes

This survey site was at the confluence of the Lewis and Columbia Rivers. Water levels here are highly variable as evidenced by lines of washed up debris/wrack at multiple elevations on the beach. Elevations were taken at larger wrack lines and where willows were sprouting a little higher on the beach.



Below		Plant Distribution Across OHWM Gradient			
~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
non-vegetated sand		sand bar willow	FACW	sitka willow	FACW
Eurasian watermilfoil	OBL	reed canarygrass	FACW	sand bar willow	FACW
		slough sedge	OBL	reed canarygrass	FACW
		rough cocklebur	FAC	Oregon ash	FACW
		western goldentop	FACW	black cottonwood	not listed
				western goldentop	FACW
				Robert geranium	FACU


20 Nov 2019
Photo Direction: S
WSEL: 8.42ft NAVD88
Exhibit 5
LRG-(1-2)
OHWM: Change from sand to vegetation such as sedge and willow species
213

Appendix A: Field data form

General Information

Site/Project	Wapato Valley
Name/Owner:	Pigs Newgold Farm
Location:	Lewis River
Description:	45.85581, -122.773755
	Points LR-H-(1-5)

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. A team consisting of a hydrologist/ geomorphologist and a biologist may be needed to accurately determine the ordinary high water mark.

General Observations: Day of Site Visit

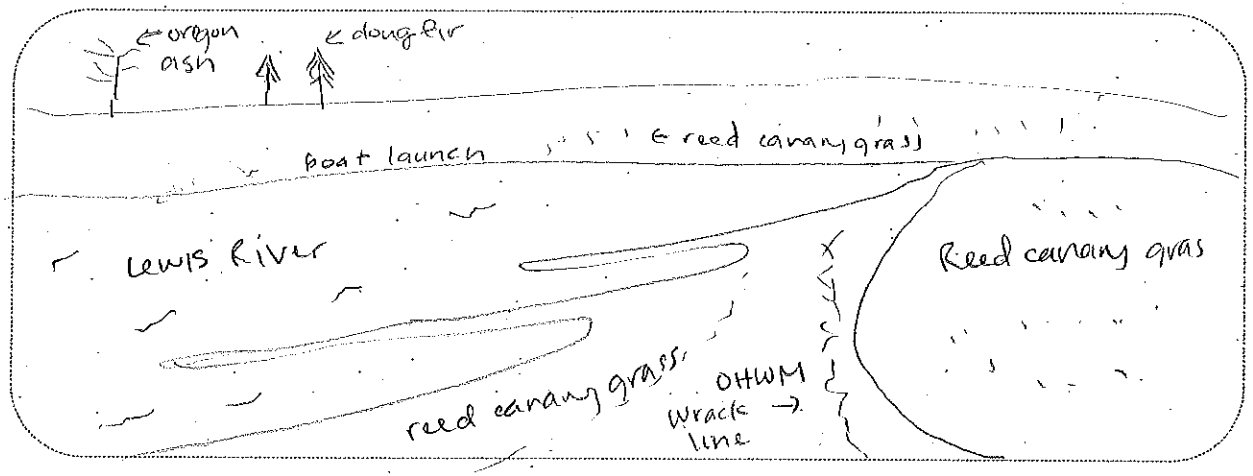
Date of site visit:	3 Dec 2019			
Time of site visit:	10:21			
Weather conditions:	Overcast			
Watershed development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Reach development:	Highly developed ⊗		Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ⊗	Yes ○	Describe:	
Upstream flow control devices?	No ○	Yes ⊗	Describe: Bonival	
Bank armoring at the site?	No ○	Yes ⊗	Describe: across the river	
Bank armoring up or downstream?	No ○	Yes ⊗	Describe:	
Observable tidal backwater?	No ○	Yes ○		
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ⊗	Describe: boat dock on other side of river	
Animals grazing in riparian zone?	No ⊗	Yes ○	Describe:	
Observable beaver activity?	No ⊗	Yes ○	Describe:	

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper aud lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
Below OHWM	☒ Sediment bars o Scour line o Clean cobbles/boulders. ☒ Bank erosion/scour ☒ Lack of soil horizons	Vegetation tolerant of inundation or high flow disturbances such as: o Willows o Black cottonwood o Japanese knotweed o Skunk cabbage ☒ Aquatic plants	o Exposed roots/root scour ☒ Drainage patterns, as shown by flattened vegetation ☒ Aquatic animals o Algal mats o Iron staining

reed canarygrass

[24] Refer to Chapter 4 for a more complete description of indicators.

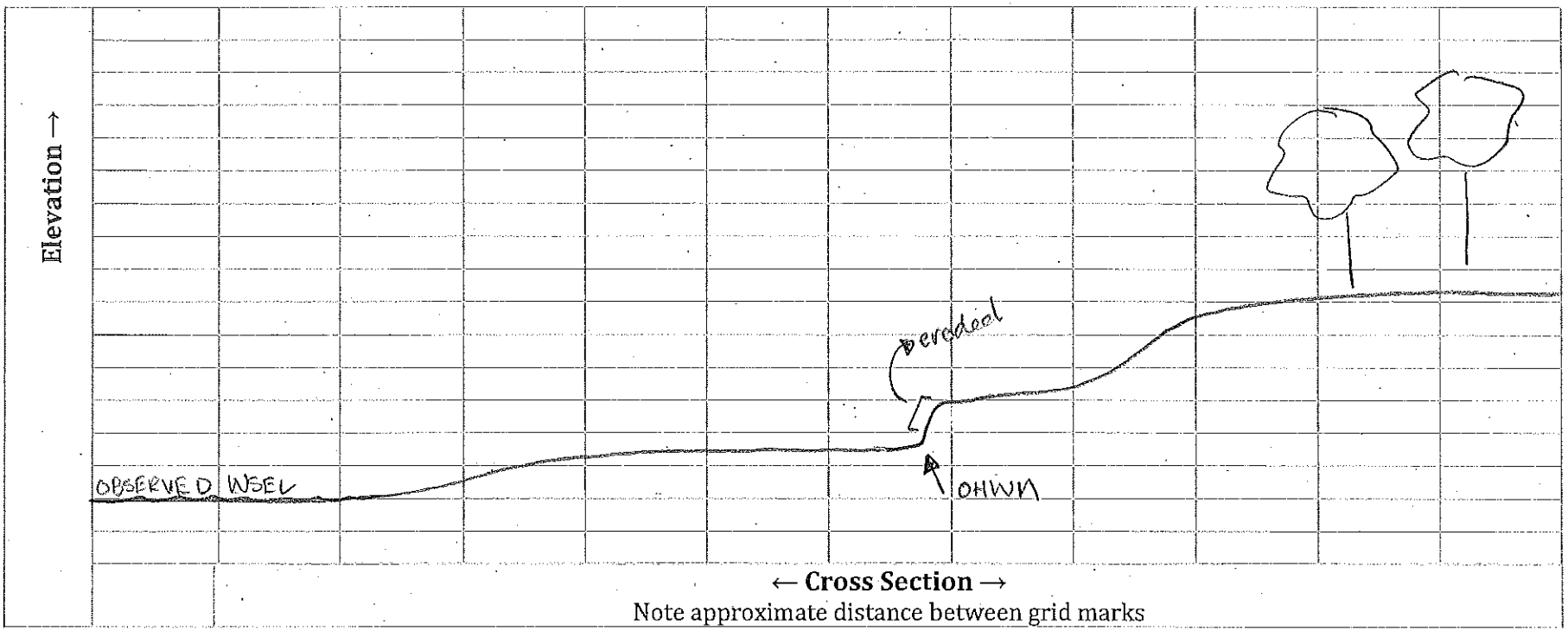
[25] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.

	Soil and geomorphic indicators [24]	Vegetative indicators [25]	Other indicators
At or straddling OHWM	o Top of bank Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) Benches	o Willows o Western red cedar o Vine maple (streams) o Black cottonwood o Red alder o Salmonberry o Nootka rose o Maidenhair and lady fern o Blackberries o Dunegrasses	o Sediment lines on vegetation or other fixed objects o Change from channel deposits to older alluvium. o Darker stain lines on fixed objects o Exposed roots/root scour. o Drainage patterns, as evidenced by flattened vegetation Weathered and buried driftwood
Above OHWM	o Hillslope toe Terraces or alluvium with an organic horizon or other developed soil horizons Relic floodplain surface Well developed soil A andB horizons/duff layer	o Indian plum o Red alder o Western red cedar o Douglas fir o Western hemlock o Ponderosa pine o Oregon white oak o Coast pine o Quaking aspen o Vine maple (lakes) o Blackberries	o Lighter or no staining on fixed objects o Overbank deposits

Oregon ash and Black cotton wood

Notes

There is a wrack line that is an OHWM indicator.



Plant Distribution Across OHWM Gradient

Below ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
Canadian waterweed	OBL	reed canarygrass	FACW	reed canarygrass	FACW
reed canarygrass	FACW	slough sedge	OBL	Oregon ash	FACW
needle spikerush	OBL			sand bar willow	FACW
				Pacific willow	FACW
				bentgrass sp.	FAC


3 Dec 2019
Photo Direction: NE
WSEL: 8.31ft NAVD88
Exhibit 5
LRH-(1-5)
OHWM: Wrack line

ATTACHMENT B

SPECIES AND COMMON NAMES OF PLANTS

Common Camas	Species Name
Bird's Foot Trefoil	*Lotus corniculatus*
Black Cottonwood	*Populus balsamifera trichocarpa*
Black Hawthorn	*Crataegus douglasii*
Bur-reed	*Sparganium sp*
Common Camas	*Camassia quamish*
Douglas Fir	*Pseudotsuga douglasii*
Douglas Spirea	*Spirea douglasii*
False Indigo Bush	*Amorpha fruticosa*
Herb Robert	*Geranium robertianum*
Himalayan Blackberry	*Rubus armeniascus*
Licorice Fern	*Polypodium glycerrhiza*
Needle Spikerush	*Eleocharis acicularis*
Oregon Ash	*Fraxinus latifolia*
Oregon White Oak	*Quercus garryana*
Red-Osier Dogwood	*Cornus alba*
Reed Canarygrass	*Phalaris arundinancea*
Rough Cocklebur	*Xanthium strumarium*
Scot's Broom	*Cystisus scoparius*
Slough Sedge	*Carex obnupta*
Smartweed	*Polygonum sp*
Snowberry	*Symphoricarpos albus*
Softstem Bulrush	*Schoenoplectus tabernaemontanii*
Wapato	*Sagittaria latifolia*
Western Goldenrod	*Euthamia occidentalis*
Willows	*Salix sp*
Woolgrass	*Scirpus cyperinus*
Wormleaf Stonecrop	*Sedum stenopelatum*

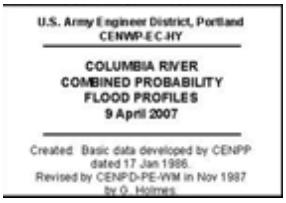
From: Kelley Jorgensen
To: Brent Davis; Jenna Kay
Subject: [Contains External Hyperlinks] FW: Zip shapes for delivery
Date: Wednesday, December 4, 2019 4:58:14 PM
Attachments: image003.png
100yr Flood zone PN Farm Property.zip
Wetland Rating Units Wapato.zip
OHWM PN FARM & Wapato Bank.zip

Hi Brent and Jenna,
Please find attached the wetland rating unit, OHWM and 100-year flood GIS shapefiles for the Plas Newydd property.
These are the locations we are proposing updates for the Shoreline Master Plan process.
OHWM delineation technical memo to follow under separate cover.
Please don't hesitate to contact me or Chris Watson if you have any questions.
Thank you for your time and consideration,

Kelley

KELLEY JORGENSEN » *President of Conservation*
she | her | hers
T 360.857.4087 C 971.285.6874 E kjorgensen@pnfarm.com
PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

Please find attached GIS shapefiles:

- 100yr flood zone on the PN Farm property based on the USACE 1% exceedance value at Columbia RM 87 of 26.54' NAVD 88.
  - 

- Wetland rating units on the Wapato Mitigation and Conservation Bank provided by CEG.
- OHWM from determination.

CHRIS WATSON » *GIS Manager/Project Manager/Geologist*
he | him | his

T 360.857.4040 C 503.332.7231 E cwatson@pnfarm.com

PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

From: David Morgan
To: Davis, Brent
Cc: Kay, Jenna; Pool, Bob; Kelley Jorgensen
Subject: [Contains External Hyperlinks] RE: Shoreline Review
Date: Thursday, November 7, 2019 1:45:24 PM

Brent,
Thank you.
We are working on a shapefile for your team to review and should have that in the middle of next week if that is soon enough for your timeline. For the IRT review you mention below lets chat next week about what you need there. I will ask Chris to work directly with Bob on the GIS file types and details.
Thank you very much.
David

DAVID MORGAN » *Managing Partner*
he | him | his
T 360.857.4039 C 503.750.7570 E dmorgan@pnfarm.com
PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

From: Davis, Brent <Brent.Davis@clark.wa.gov>
Sent: Tuesday, November 5, 2019 10:09 AM
To: David Morgan <dmorgan@pnfarm.com>
Cc: Kay, Jenna <Jenna.Kay@clark.wa.gov>; Pool, Bob <ROBERT.POOL@clark.wa.gov>
Subject: RE: Shoreline Review

David,

The Shoreline Map is adopted with the Shoreline Master Program and can only be changed through a Shoreline Amendment process, so now is the time. I suggest you contact Bob Pool to get the data formatting details for our GIS and then submit your OHWM (pursuant to RCW 90.58), Wetland, and Floodplain mapping to Jenna for inclusion in the upcoming map amendment. It would also be helpful to have concurrence documentation from the IRT for the record.

Brent Davis
Wetland and Habitat Review Manager

COMMUNITY DEVELOPMENT

564.397.4152

From: Kay, Jenna
Sent: Tuesday, November 5, 2019 9:54 AM
To: 'David Morgan'
Cc: Davis, Brent
Subject: RE: Shoreline Review

Hi David,

Thank you for reaching out. I am going to connect you with Brent Davis, copied here, the county's Shoreline Administrator. His team will be able to follow-up with you further.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: David Morgan [mailto:dmorgan@pnfarm.com]
Sent: Monday, November 4, 2019 4:57 PM
To: Kay, Jenna
Subject: [Contains External Hyperlinks] Shoreline Review

Jenna,
I would like to setup a time to talk with the department about some inconsistencies I see in the proposed mapping for my property in North West Clark County along the Lewis River. We are working with Clark County on a mitigation and conservation bank and it looks like the Ordinary High Water line on my property does not reflect the work we have done to date. If you can let me know the best way to come in and have a conversation about this I would appreciate it.

Thank you
David Morgan

DAVID MORGAN » *Managing Partner*

T 360.857.4039 C 503.750.7570 E dmorgan@pnfarm.com
PO Box 428 | Ridgefield, WA 98642 | www.wapato-valley.com

From: Kay, Jenna
To: "Karen Smith"
Cc: Davis, Brent
Subject: RE: SMP clarification
Date: Tuesday, November 12, 2019 9:21:45 AM
Attachments: Map A - New and Removed Areas.pdf

Hi Karen,

Thank you for reaching out. Below is a bit more detail on the wetlands near Shanghai Creek. Also, attached is a map that shows the wetland area. If you zoom in near Shanghai Creek, you can see an area that has a black color – this is the area proposed to be removed from shoreline jurisdiction.

Associated wetlands are one of the criteria for determining shoreline jurisdiction. There is an area of wetlands near Shanghai Creek, that county and Ecology staff have confirmed are not actually considered associated wetlands. This was based on multiple site visits to the area for various development projects. Since on the ground shoreline boundary mapping overrides what is on the shoreline map, there have been a handful of projects in this area that did not receive any kind of shoreline permit or exemption because it was determined those projects were not actually within shoreline jurisdiction. Based on this information, and in order to keep the shoreline map as current as possible, this amendment would remove the portion of wetlands near Shanghai Creek that are not considered associated wetlands and are not considered within shoreline jurisdiction. If removed from the shoreline map, these wetlands would be protected by the county wetland protection code instead of the shoreline master program.

Please let me know if you have additional questions or would like more specifics.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

-----Original Message-----
From: Karen Smith [mailto:kareyla@aol.com]
Sent: Sunday, November 10, 2019 9:11 AM
To: Kay, Jenna

Subject: SMP clarification

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Jenna,
I received the flyer regarding the SMP. Unfortunately, I will be unable to attend either of the upcoming open houses.
Could you please clarify the statement in the Proposed Map Changes section which reads: Remove some of the wetlands near Shanghai Creek that are not in shoreline jurisdiction, but are currently included on the shoreline map.

Thank you,
Karen Smith

Sent from my iPhone

Map A

Yale Lake
Lake Merwin
Woodland
Horseshoe Lake
La Center
Lake Rosannah
Lancaster Lake
Canvasback Lake
Carty Lake
Wigeon Lake
Quigley Lake
Turtle Lake
Deep Lake
Long Lake
Rest Lake
Campbell Lake
Post Office Lake
Green Lake
Curtis Lake
Ridgefield
Yacolt
Battle Ground Lake
Achen Lake
Battle Ground
Vancouver Lake
V a n c o u v e r
Biddle Lake
Lacamas Lake
Round Lake
Camas
Washougal
Steigerwald Lake
Columbia River

Proposed Changes to Shoreline Map

November 2019 Draft

CLARK COUNTY, WASHINGTON

N

NOTE: *Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.*

0 1 2 3 Miles

Data Sources: Clark County, 2019
Q:\Projects\conSrvs\Planning\Shoreline_Management_Plan\SMP_Review2019\SMP_Review.aprx, Printed on: Nov 08, 2019

KEY

- Areas Added
- Areas with no Change
- Areas Removed
- USFWS National Wildlife Refuges**
- County Boundary
- Incorporated Area
- Urban Growth Area

**Private development in National Wildlife Refuges are regulated under the Rural Conservancy Residential provisions of the SMP.

From:	Jenna Kay
To:	"kkri@aol.com"
Subject:	RE: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: Shoreline
Date:	Friday, December 20, 2019 8:21:06 AM

Hi Manoj,

Thanks for your follow-up. I will add your additional email to the project website.

Also, I am confirming that we will use the current DNR lake and stream data for the labels on water features on our updated SMP map. So, Mill Pond will be labeled.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: kkri@aol.com [mailto:kkri@aol.com]
Sent: Thursday, December 19, 2019 9:59 PM
To: Jenna Kay
Subject: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: Shoreline

Hello Jenna,
Thank you for your note.

Since you are posting our communications to the project site, if I may ask, please add this reply as well so the loop is complete. .

I appreciate you discussing my concern (I sent to you earlier) with Ecology and City of Camas. Thank you.

From my lay person's understanding of Govt processes, it is my understanding that I as a member of the public through public comment am required to inform each agency that currently is using a Map with errors, so maps can be corrected before the final publication.

I forwarded to you what Ecology sent to me in Nov 2019 (I emailed you the copy/paste of RCW 43.30.294).

RCW 43.30.294 (3)
Whenever the board on geographic names has given a name to any lake, stream, place, or other geographic feature within the state, the name **must be used in all maps,** records, documents,

Therefore wherever I see a Map that shows Mill Pond connected to Round lake and not correctly reflecting its formal name, I am making it known so each agency fulfills the obligation to correctly identify waterbody in their map with the formal name so it does not create any confusion.

As a side note, I have reached out to the City, County and the State.I understand City of Camas has the primary responsibility within City limits. However if State, County or any other agency uses an incorrect map I am making it known so all agencies can correct their Maps before published in their SMPs..

Thank you for your help,

manoj

-----Original Message-----
From: Jenna Kay <Jenna.Kay@clark.wa.gov>
To: 'kkri@aol.com' <kkri@aol.com>
Sent: Thu, Dec 19, 2019 1:26 pm
Subject: RE: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: Shoreline

Hi Manoj,

Thanks again for reaching out the other day. I wanted to let you know that I will be getting your emails and attachments posted to our project website today.

I also wanted to reconnect with you regarding the Mill Pond information you provided, now that I have had a chance to review it in more detail and coordinate with the City of Camas and Department of Ecology.

Since Mill Pond is entirely within the City of Camas, you will want to continue working with the city on your Mill Pond requests and feedback, as it falls under their jurisdiction. The county's Shoreline Master Program only applies to waterbodies in the unincorporated areas of the county and, therefore, does not cover Mill Pond.

I recognize that the county's official shoreline map shows the shoreline areas in the cities, which is confusing. We are going to work on improving our maps so it's more clear that the county's Shoreline Master Program only applies to the unincorporated area.

Please let me know if you have any additional questions or would like to discuss this topic further.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: kkri@aol.com [mailto:kkri@aol.com]
Sent: Tuesday, December 10, 2019 1:38 PM
To: Jenna Kay
Subject: [Contains External Hyperlinks] Re: [Contains External Hyperlinks] Re: Shoreline

Hello Jenna,
I was reviewing the notes posted to the County website under public comments. I did not see my request/comment I submitted on Nov 11th as included. I am a bit puzzled as to how to have my concerns addressed so would like to ask if you need my comments in person ? O do I need to mail them to be part of the process you are undertaking so my request is included as Public comment during this update.

Please advise,
Thank you
manoj

-----Original Message-----
From: kkri <kkri@aol.com>
To: Jenna.Kay <Jenna.Kay@clark.wa.gov>
Sent: Sat, Nov 16, 2019 1:47 am
Subject: Re: [Contains External Hyperlinks] Re: Shoreline

Hello Jenna,
Additional info arrived from Olympia today which I wanted to share with you so you have the supporting information. The email I received pointed me to RCW 43.30.294 as copied below for a quick reference . She also encouraged me to share the info with local Jurisdiction which I already have by sharing with you. Thank you again. and I will wait for your confirmation and results of your research. Thank you , copy paste is below.

**********Start of Copy _____

RCW 43.30.294

Board on geographic names—Adoption of names—Publication in the Washington State Register—Official names.

(1) The board on geographic names shall consider the recommendations made by the committee on geographic names for adoption of names. The board on geographic names must either adopt the name as recommended, or refer the matter back to the committee on

geographic names for further review.
(2) All geographic names adopted by the board on geographic names shall be published in the Washington State Register.
(3) Whenever the board on geographic names has given a name to any lake, stream, place, or other geographic feature within the state, the name must be used in all maps, records, documents, and other publications issued by the state or any of its departments and political subdivisions, and that name is the official name of the geographic feature.

********** End of Copy_____

]Thank you
manoj

-----Original Message-----
From: kkri <kkri@aol.com>
To: Jenna.Kay <Jenna.Kay@clark.wa.gov>
Sent: Tue, Nov 12, 2019 11:05 am
Subject: Re: [Contains External Hyperlinks] Re: Shoreline

Hi Jenna,
You are awesome !! Thank you.

Just to help I am attaching some maps that I received from WA DNR just it case it helps you save some time digging for them. Thank you again,
manoj

-----Original Message-----
From: Kay, Jenna <Jenna.Kay@clark.wa.gov>
To: 'kkri@aol.com' <kkri@aol.com>
Sent: Tue, Nov 12, 2019 10:56 am
Subject: RE: [Contains External Hyperlinks] Re: Shoreline

Hi Manoj,

Thanks for bringing Mill Pond to our attention. I will do some research on this item and then circle back to you.

Also, attached please find excerpts of the shoreline map I was trying to link you to; as you noted, Mill Pond is not labeled on the map.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: kkri@aol.com [mailto:kkri@aol.com]
Sent: Tuesday, November 12, 2019 10:19 AM
To: Kay, Jenna
Subject: [Contains External Hyperlinks] Re: Shoreline

Good morning Jenna,
Thank you for your prompt reply.

The first link below did not work the second did bring up the list of the water bodies.

I am asking for assistance as the Shoreline Map does not show the name of the water body known as "Mill Pond" this distinction and separation would be very help full as Round lake is in the program, and typically both show up on the maps together (they are connected). Not having the name Mill Pond and showing the name Round Lake makes it appear that both water bodies are Roundlake. It would be greatly appreciated to insert the name as the smaller water body now has its official name since 2013.
If i need to do anything else please advise.

Thank you for you help
manoj

-----Original Message-----
From: Kay, Jenna <Jenna.Kay@clark.wa.gov>
To: 'kkri@aol.com' <kkri@aol.com>
Sent: Tue, Nov 12, 2019 9:46 am
Subject: RE: Shoreline

Hello Manoj,

Thank you for your inquiry.

The following link will take you to a copy of the current shoreline map which includes labels for most of the lakes and streams in the program: https://www.clark.wa.gov/sites/default/files/dept/files/community-planning/County_SD_Poster_Mapbook_36x44_Revised_SDs%5B1%5D.pdf.

Also, the Clark County Code includes a complete list of all the waterbodies in the program. Here is a link to the relevant section: https://www.codepublishing.com/WA/ClarkCounty/?ClarkCounty40/ClarkCounty40460/ClarkCounty40460210.html#40.460.210.

Please let me know if you run into any issues with the links or have additional questions.

Regards,
Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: kkri@aol.com [mailto:kkri@aol.com]
Sent: Monday, November 11, 2019 8:40 AM
To: Kay, Jenna
Subject: Shoreline

Good morning Jenna,
I missed the open house in Sept and wanted to ask which is the main map that is used by the County for the shorelines master program that shows the names of the different lakes and streams in Clark County ? I understand different layers are used in map building, however where do the names of lakes and streams come from ?

Thank you
manoj

This e-mail and related attachments and any response may be subject to public disclosure under state law.

This e-mail and related attachments and any response may be subject to public disclosure under state law.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

PETER GOLDMARK
Washington State Commissioner of Public Lands

May 22, 2012

Manoj Kripelani
27615 SE Robinson Road
Camas, WA 98607

Dear Mr. Kripelani,

Congratulations! At the May 18, 2012 meeting of the Washington State Committee on Geographic Names, the Committee voted to send your application to name **Mill Pond** to the Washington State Board on Geographic Names with the Committee's recommendation to approve.

The Committee's recommendation, along with all information provided in the proposal, will be presented to the Board for consideration at their July 3, 2012 meeting. If you have any questions, please call me at (360) 902-1280 or email me at caleb.maki@dnr.wa.gov.

Thank you for your interest in geographic names.

Sincerely,

Caleb Maki, Executive Secretary
Washington State Committee on Geographic Names
P.O. Box 47030
Olympia, WA 98504-7030
(360) 902-1280
caleb.maki@dnr.wa.gov

Feature Detail Report for: Mill Pond

ID:	**2750141**
Name:	**Mill Pond**
Class:	**Lake (Definitions)**
History:	**Named for a former mill near the site**
Description:	**3.5 acres; located just W of Round Lake, 1,500 ft. SE of Lacamas Lake, 1 mi. N of the City of Camas; Sec. 47, T1N, R3E, Willamette Meridian**
Citation:	**U.S. Board on Geographic Names. Geographic Names Post Phase I Board/Staff Revisions. 12-SEP-2013.**
Entry Date:	**13-Sep-2013**
*Elevation:	**180/55**

***Elevations in feet/meters from the National Elevation Dataset**

Board on Geographic Names Decisions

Name	Authority	Decision Type	BGN
Mill Pond	Board Decision	Official	2013

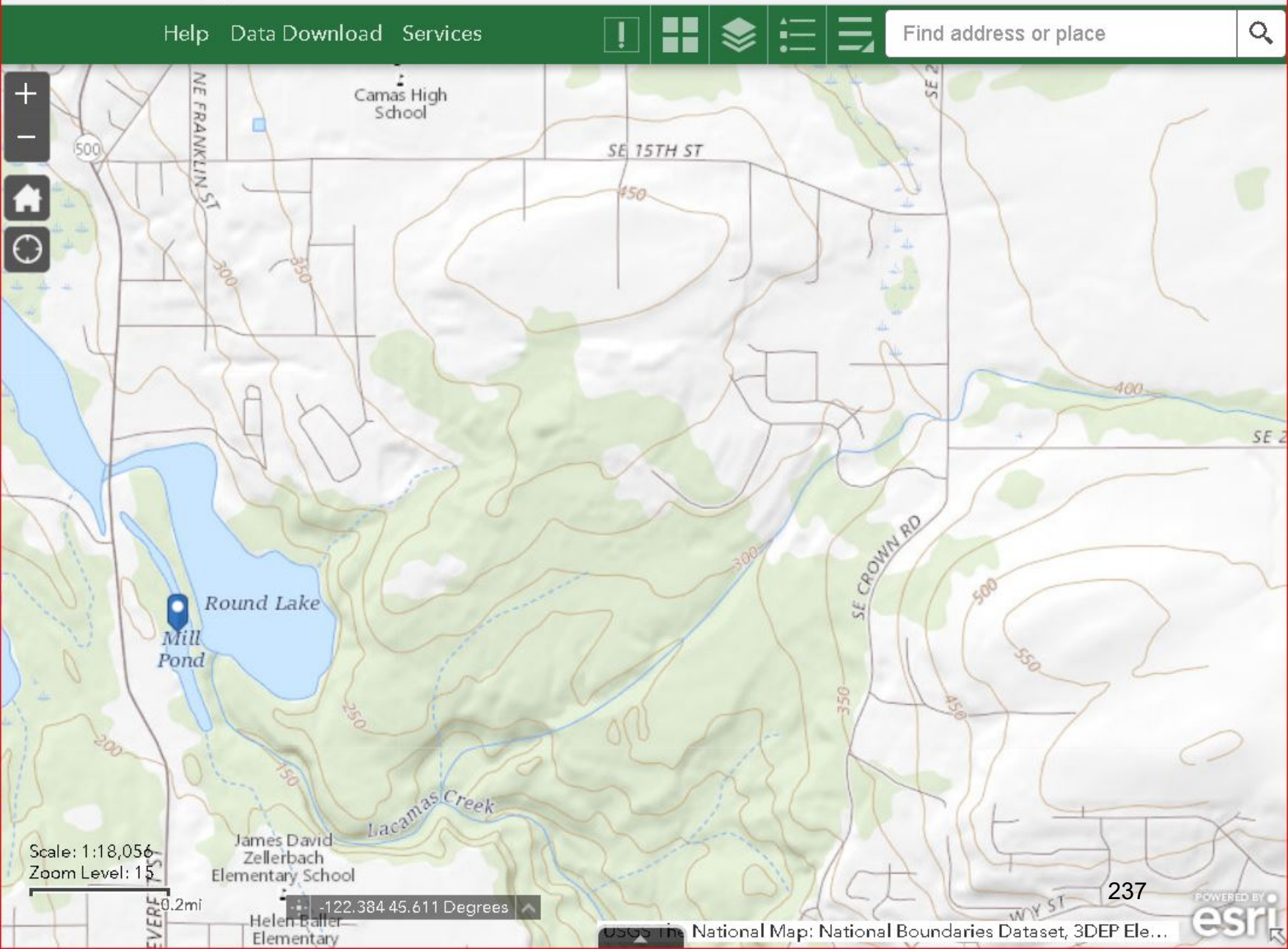
BGN Subject Folders: (Click arrow to open folder)

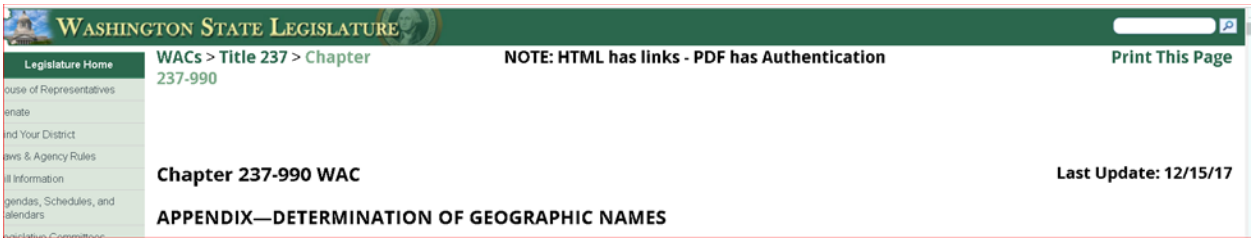
Correspondence:

Forms:

Counties

Sequence	County	Code	State	Code	Country
1	Clark	011	Washington	53	US


Help
Data Download
Services
Find address or place
Camas High School
NE FRANKLIN ST
SE 15TH ST
SE CROWN RD
Round Lake
Mill Pond
Lacamas Creek
James David Zellerbach Elementary School
Helen Baller Elementary
Scale: 1:18,056
Zoom Level: 15
0.2mi
-122.384 45.611 Degrees
USGS The National Map: National Boundaries Dataset, 3DEP Ele...
POWERED BY esri



118-02-10 W (heading). Approved 9-13-83.

Mill Pond: Lake; 0.01 km² (3.5 acres), located N of the City of Camas in Round Lake County Park; Named for the local paper mill; Clark County, WA; Sec. 47, T 1 N, R 3 E, W.M.; 45° 36' 3.813" N, 122° 24' 17.921["] W. Approved 2/5/2013.

From: Kirk VanGelder
To: Jenna Kay
Subject: [Contains External Hyperlinks] Re: Shoreline review questions
Date: Tuesday, January 28, 2020 10:37:17 AM

Thanks Jenna! I will look it over and hit you up with any follow up questions.

Kirk

On Tue, Jan 28, 2020 at 10:02 AM Jenna Kay <Jenna.Kay@clark.wa.gov> wrote:

> Hi Kirk,
>
> I wanted to circle back to you on the below email regarding the county's shoreline periodic review project and to provide the requested documentation on the proposed wetland removal area near Shanghai Creek.
>
> We have posted documentation on the proposed wetland removal area to the project website. Here is a direct link to the relevant memo:
> https://www.clark.wa.gov/sites/default/files/dept/files/community-planning/Shoreline%20Master%20Program/Exhibit%2014%20-%20Map%20Amendment%20Memo%20with%20Attachments%20-%20Shanghai%20Creek%20Wetlands.pdf
>
> Please note that the area proposed for removal is slightly smaller than the map previously shared at the November open house and with you via email. Through discussion with the Dept. of Ecology, we have adjusted the proposed area to remove from shoreline jurisdiction to only include wetlands where we have really good data that shows they are not part of shoreline jurisdiction.
>
> Please let us know if you have any follow-up questions.
>
> Thanks,
>
> Jenna

Jenna Kay
Planner II
COMMUNITY PLANNING

564.397.4968

From: Kay, Jenna
Sent: Monday, November 25, 2019 3:55 PM
To: 'Kirk VanGelder'
Cc: Davis, Brent
Subject: RE: Shoreline review questions

Hi Kirk,

Thanks for reaching out.

Attached are snapshot of the maps near Shanghai Creek. The first page shows the current map with the wetland area outlined. The second page shows the proposed map with the wetland area removed from the map. Hopefully it's detailed enough for what you are looking for. If not, let me know.

I have found it easiest to explore the map changes online through our interactive maps.

- You can find the interactive maps here: https://gis.clark.wa.gov/portal/apps/MapSeries/index.html?appid=32ed5c55d5a9452c8292992247634a04.

- Once on the site, click on the tab that says "Interactive Maps"

We are still working on the written documentation for the wetland removal area. I can send you a copy once it is drafted (this will likely be in December or January). In the meantime, if you have

any specific questions, Brent, copied here, should be able to help.

Regards,

Jenna

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From: Kirk VanGelder [mailto:vandad12@gmail.com]
Sent: Monday, November 25, 2019 2:49 PM
To: Kay, Jenna
Subject: Shoreline review questions

Hi Jenna,

I attended the open house at Frontier MS last week regarding the proposed Shoreline changes. As I've been reviewing the info, I have a couple of questions regarding the Shanghai Creek areas of removal.

1. Do you have a detailed map that shows both the current shoreline outline for that area, and the proposed shoreline outline? It could be two separate maps as well.

2. Can you share with me any written documentation used as justification for the removal?

Thanks very much,

Kirk VanGelder

OLSON: AYE

BLOM: AYE

MEDVIGY: AYE

QUIRING: AYE

QUIRING: Motion passes. Okay. Moving on to CPZ2019-00030, Shoreline Master Plan.

ORJIAKO: Councilors, with my staff, this is, we are not amending the Shoreline Master Program, we are just asking you to approve the public partition plan that we are putting in place to help us in engaging the community as we update the Shoreline Master Plan that is required by State due June of 2020. We've had a work session with the Council on this.

KAY: So this is CPZ2019-00030 regarding the Shoreline Master Program Periodic Review Public Participation Plan.

As we discussed in our work session, Clark County is undertaking a periodic review of its Shoreline Master Program as required by the Washington State Shoreline Management Act in RCW 90.58.080. The Shoreline Management Act requires each Shoreline Master Program be reviewed and revised if needed on an eight-year schedule established by the legislature. The review ensures the Shoreline Master Program stays current with changes in laws and rules,

remains consistent with other Clark County plans and regulations and is responsive to changed circumstances, new information and improved data.

A Public Participation Plan is required to describe how Clark County will encourage early and continuous public partition throughout the process of reviewing the Shoreline Master Program and the plan describes the steps that Clark County will take to provide opportunities for public engagement and public comment as well as Clark County contact information and web addresses.

And the plan includes open houses, meeting with advisory boards such as the Development & Engineering Advisory Board, the Clean Water Commission, the Parks Advisory Board and the Planning Commission as well as meeting with any neighborhood association or interest group who is interested in meeting to discuss the project.
The plan also includes selecting the joint comment period for the Department of Ecology as well as providing opportunities for testimony during Planning Commission and Council hearings.

So today we are requesting Council approval of the Shoreline Master Program Periodic Review Public Participation Plan & Associated Resolution so that we can move forward into the outreach and proposal development plan this fall followed by the adoption

process in 2020.

QUIRING: Okay. Richard Dyrland.

DYRLAND: Richard Dyrland, 27511 N.E. 29th Avenue, Ridgefield, Washington. I have three brief shoreline related comments to make.

One, we need to have more effective enforcement of existing shoreline regulations, and I raised that twice, in the future changes that may come up through this process here and I'm encouraged to see that kind of a step-by-step logical layout of the process. Second, we need to make sure that we don't have inadvertently use shoreline regulations to stall or prevent good stream protection and restoration progress or projects, again this is primarily related to reviewers and the amount of field experience they have. Third, we need to put more emphasis to on the ground training of staff specialists.

We have too much going by the book versus field experience and training and I think what we see coming with the development and expansion and the other possible situations that may arrive and if we get another bridge, these things become even more important to reflect the quality of life that you folks have described so well here in the last hour or two. Thank you.

QUIRING: Thank you. Carol Levanen.

LEVANEN: Carol Levanen for Clark County Citizens United. If I remember right, this Shoreline Management Plan there was conversation, I don't know if it was either at work session or possibly at some sort of hearing, regarding the DNR cutting permits. And if I remember right there was language that was proposed and maybe I'm thinking of the wrong document, but proposed that would say that the, in the DNR cutting permit that people can cut their timber but they can't put any logging roads and they can't put access roads and they can't put landings and they can't put all of these things that are all part of logging and I remember that the DOE and the Department or DNR and DOE also warned Clark County not too step on their toes more or less.

Always remember that there's State law that controls those things that the County didn't have jurisdiction to make those kinds of changes. I just came across some documentation that, and I think I forwarded it to the Council regarding this of what the State law actually says and all of those kinds of activities for logging activities are exempt under the shorelines unless they actually directly affected a Class V, I think a Class V is the big one or Class I, you never know.

But, anyways, so I'm hoping that what you're going to be reviewing in this language of this document that you're going to be putting forward to the public doesn't include that because we gave testimony against, some pretty extensive testimony against including that portion. We've also alerted the forest industry folks and they're not happy with this and they said they've got a fight, if the County tries to do something like this they've got a fight on their hands.

So that's part of logging, those logging roads, those landings, those culverts that they have to put in, all those kinds of things, the State requires that, they require them to pave, they actually prefer that they pave it, let alone, at least they require quite a bit of rock, but they prefer if they log -- if they pave those roads and of course those roads are used for everybody else after the logging is over with. So to put that under a county jurisdiction it's not a good idea and hopefully you've taken it out of this draft. Thank you.

QUIRING: Thank you. Actually, Jenna, I think we talked about this at some, would you like to comment on that.

KAY: Sure.

QUIRING: Are these roads -- I don't --

KAY: Yeah. This came up with, we did an amendment to the Shoreline Master Program Code I guess last year --

ORJIAKO: Correct.

KAY: -- and, but there were some comments submitted regarding that amendment regarding we were adding some clarifying language around forestry practices too, we were trying to clarify what is considered development and not under the Shoreline Management Act which I believe what was just being referenced, so that was part of the previous amendment. I don't know if you want to add anything, Oliver.

ORJIAKO: No. The only thing I will add is that with respect to Carol that is not what is before you, that was the discussion that as Jenna indicated happened when we made the limited amendment to the shoreline and during the comment they submitted a comment, we reviewed it concurrently with Ecology and they approved that amendment and the amendment that was made was consistent with the rules put out by Ecology, so I believe that Ecology have resolved that issue.

QUIRING: Okay. Any other questions? Okay. Then moving along to the actual item at hand here, the Shoreline Master Plan Periodic

Review Public Participation Plan.

BLOM: Move to approve CPZ2019-00030.

OLSON: Second.

QUIRING: It's been moved and seconded to approve CPZ2019-00030. Any discussion? Call the roll, please.

LENTZ: AYE
OLSON: AYE
BLOM: AYE
MEDVIGY: AYE
QUIRING: AYE

QUIRING: Motion passes.

ORJIAKO: Councilors, I believe we submitted a resolution and I think we would like the Council to approve this by resolution. Is there a resolution? No?

KAY: Was it attached to the staff report?

QUIRING: Not here.

LENTZ: It's a secondary document.

BLOM: Oh, I have it maybe.

LENTZ: It doesn't have a number yet.

OLSON: It's 2019-09-10.

ORJIAKO: Thank you. Thank you, Rebecca.

OLSON: Move to approve Resolution No. 2019-09-10.

BLOM: Second.

QUIRING: It's been moved and seconded to approve Resolution No. 2019-09-10. Is there any further discussion? Call the roll, please. This could be a voice; right? All in favor say aye.

EVERYBODY: AYE

QUIRING: Opposed? Hearing and seeing none the motion passes. Right.

ORJIAKO: Thank you, Councilors.