Rec. 11/13/2020

Critical Areas and Aquatic Habitat Assessment Report for 113 Heden Road Chehalis, Washington

Prepared for:
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Project # 154.01

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Table of Contents

SIGNATURE PAGE 2

Qualifications Statement 2

INTRODUCTION 3

Purpose and Need 3

Site Description 3

METHODS 5

Desktop Review 5

State Regulations 6

Federal Regulations 6

Local Regulations 6

Field Investigations 6

Vegetation 7

Soils 8

Hydrology 8

Mapping 9

RESULTS and DISCUSSION 9

Wetlands 9

Streams 9

Stream Buffers 9

Buffer Mitigation Measures 9

CONCLUSIONS 10

LIMITATIONS 11

REFERENCES 11

FIGURES 13

APPENDIX A –CLIMATOLOGICAL SUMMARY 14

APPENDIX B –QUALIFICATIONS 15

INTRODUCTION

Purpose and Need

Loowit Consulting Group, LLC (LCG) was retained by Harnek Dhudwal (Applicant) to complete a critical areas investigation and shoreline narrative at 113 Heden Road (TPN 018493002001) in Chehalis, Washington (Figures 1 & 2). Mapped critical areas and shoreline designation overlays within the subject site prompted Lewis County to request an evaluation of critical areas according to Lewis County Code (LCC) Chapter 17.38 – Critical Areas and Shoreline Master Program (SMP). The applicant has proposed the construction of a 48-foot x 82-foot storage building to warehouse retail goods for the adjacent convenience store and Chevron fuel station also owned by the applicant. The current Chevron building does not have adequate space to house inventory thereby requiring the construction of a detached storage building. Current layout of the Chevron building, fuel pumps islands, parking area, and adjacent buildings do not allow the placement of the proposed building adjacent to the Chevron building. The applicant owns the adjacent parcel thereby allowing him access to a location in which to construct the proposed building. Existing overhead electric transmission line also limits potential locations where the building could be constructed.

17.35

Site Description

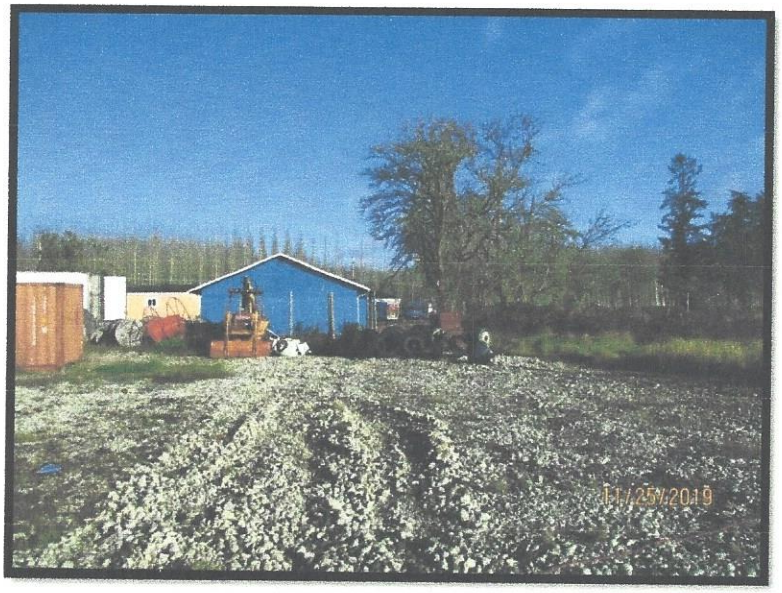
The subject site consists of a single parcel totaling approximately 9.3 acres of property currently used for commercial purposes. Site specifics include:

Site Address:	113 Heden Road Chehalis, WA 98532
Current Owner:	Harnek Dhudwal
Tax Parcel Number:	018493002001
Legal Description:	Section 1, Township 13 North, Range 3 West, W.M.
Property Size:	Approximately 9.3 acres
Jurisdiction:	Lewis County

The subject site is located south of Hwy 6 and west of Chehalis, Washington (Figure 1). The subject site consists of developed property used for vehicle repair, equipment storage, and vehicle parking (Photographs 1 & 2). Four buildings are located within the northern portion of the subject site (Figure 3) while asphalt and compacted gravel covers most of the parcel. A primary overhead electric transmission line bisects the site from northwest to southeast. Access to the site is via an asphalted apron and roadway from Hwy 6. A mapped Type F stream,

and historic oxbow of the Chehalis River, is located in the eastern and southern portion of the site of which the entire subject site is sloped to the south and east into the oxbow pond (Figure 3 & Photograph 3).

Photograph 1: Area of proposed building looking west.



Photograph 2: Area of proposed building looking north.

Photograph 3: Historic oxbow pond from Chehalis River looking east from proposed building location.

Land uses adjacent to the subject site include:

- To the South – Open water and agricultural land.
- To the North – Commercial land. Service station and convenience store.
- To the West – Agricultural land.
- To the East – Open water and agricultural land.

METHODS

Desktop Review

Prior to visiting the subject site, LCG conducted a desktop review of readily available mapping resources and other pertinent information including:

- Lewis County Web Map (http://ims.lewiscountywa.gov/webmaps/composite2/viewer.htm). This source provided parcel information, aerial photographs, physical attributes, and other information from the Lewis County Assessor.
- US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (https://www.fws.gov/wetlands/data/mapper.html). This mapping source depicts wetlands and streams throughout the United States.
- US Department of Agriculture Natural Resources Conservation Service Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). This source depicts mapped soils including hydric soils throughout the United States.

- Washington Department of Natural Resources Forest Practices Application Mapping Tool (https://fpamt.dnr.wa.gov/default.aspx). This mapping source depicts streams and wetlands in Washington State.
- Washington Department of Fish and Wildlife Salmonscape (http://apps.wdfw.wa.gov/salmonscape/map.html). This mapping source depicts streams and fish distribution in Washington State.
- Washington Department of Fish and Wildlife Priority Habitat and Species (http://apps.wdfw.wa.gov/phsontheweb/). This mapping source depicts priority habitats and species throughout Washington State.

State Regulations

Wetlands are regulated by Washington Department of Ecology (Ecology) under the Water Pollution Control Act and the Shoreline Management Act. The State Environmental Policy Act (SEPA) process is also used to identify potential wetland-related concerns early in the permitting process. All proposed direct and identified indirect impacts to wetlands are reviewed and approved/denied by Ecology using the regulations previously listed.

Streams are regulated by Washington Department of Fish and Wildlife under the State Hydraulic Code, Chapter 77.55 Revised Code of Washington. Projects involving activities within, over, or beneath jurisdictional streams are subject to the Hydraulic Project Approval (HPA) permitting process administered by WDFW.

Federal Regulations

Wetlands are regulated as "waters of the United States" under Section 404 of the Clean Water Act. Section 404 regulations are administered by the US Army Corps of Engineers (USACE).

Local Regulations

Wetlands and other critical areas are regulated by the Lewis County Code (LCC) Chapter 17.38 – Critical Areas.

Field Investigations

On November 25, 2019, LCG visited the subject site to collect site information, field verify critical areas, flag critical area boundaries, and collect GPS points for site mapping purposes. Weather conditions at the time of the site investigation consisted of clear skies with a high of 50°F and no rain the previous 24 hours. Recorded climatological history from the Chehalis Airport two weeks prior to visiting the site was characterized with high temperatures ranging from 38.5 to 57.4°F and low temperatures ranging from 29.4 to 44.4°F. Total recorded precipitation two weeks prior to the site visit (November 11 – November 24) was recorded at 1.13 inches (Table 1, Appendix A).

Table 1: Weather Data at Chehalis Airport, Washington.

Date	Minimum Temp (Deg F)	Maximum Temp (Deg F)	Total Precipitation (in)
11/11/2019	41.8	56.9	0.01
11/12/2019	43.4	51.9	0
11/13/2019	44	54.7	0.14
11/14/2019	44.3	57.4	0
11/15/2019	44.1	56.5	0
11/16/2019	43.4	53.9	0.26
11/17/2019	44.4	57.2	0.03
11/18/2019	44.3	53.4	0.09
11/19/2019	36.7	52	0.21
11/20/2019	30.7	51.2	0.36
11/21/2019	30.3	37.6	0.02
11/22/2019	29.4	38.5	0.01
11/23/2019	30.3	48	0
11/24/2019	41.2	54.3	0
		Total	1.13
11/25/2019	34	50	0.32

Data from AgACIS (Agricultural Applied Climate Information System) by NRCS

Site investigation work tasks included:

- Documentation of current site conditions
- Documentation of adjacent land uses
- Delineating and flagging of wetlands and streams
- Documentation of wetland/upland conditions with Test Plots

Wetlands were delineated according to methods outlined in the U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*. Streams were evaluated and the ordinary high water mark mapped using vegetative breaks, topography, and aerial photographs.

Vegetation

Vegetation at the site is a mix of primarily non-native grasses, invasive blackberries, and weedy forb species. Table 2 summarizes vegetation observed at the subject site.

Table 2: Vegetation Observed

Scientific Name	Common Name	Wetland Indicator Code
Alnus rubra	Red Alder	FAC
Cornus sericea	Red Osier Dogwood	FACW
Cytisus scoparius	Scotch Broom	UPL
Daucus carota	Queen Anne's Lace	FACU
Fraxinus latifolia	Oregon Ash	FACW
Nuphar polysepala	Yellow Pond Lily	OBL
Phalaris arundinacea	Reed Canary Grass	FACW
Plantago lanceolata	English Plantain	FACU
Rubus armeniacus	Himalayan Blackberry	FAC
Rumex crispus	Curled Dock	FAC

Wetland Indicator Code
OBL = Obligate (>99% found in wetlands)
FACW = Facultative Wetland (>67% to 99% found in wetlands)
FAC = Facultative (33% to 67% found in wetlands)
FACU = Facultative Upland (1% to <33% found in wetlands)
UPL = Obligate Upland (<1% found in wetlands)

Soils

According to the US Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey for Lewis County, soils at the site are mapped as summarized in Table 3 and Figure 4).

Table 3: Soil Summary.

Soil #	Soil Name	Slope %	Hydric %
48	Chehalis silty clay	0 – 3	10
W	Water	0	100

Historic land disturbance activities including fill placement and general grading may have altered natural soil conditions at the site resulting in soils that may be somewhat different than those mapped by NRCS.

Hydrology

The subject site generally slopes to the south and east into an historic oxbow pond of the Chehalis River (Figures 5 & 6). This drainage appears to eventually discharge into the Chehalis River when water level elevation rises to a point above the discharge point elevation. During high water events, the Chehalis River backflows into the oxbow pond. The oxbow pond is mapped as a Type F (fish) stream (Figure 6). The entire site is within a mapped rural or urban conservancy shoreline designation.

Mapping

Site flagging, roads, property boundaries, topography, and other site features were mapped using handheld portable GPS equipment with an implied horizontal accuracy of ±11-feet. Collected GPS were placed onto a scaled aerial photograph to create a site base map.

RESULTS and DISCUSSION

Wetlands

No wetlands were located at the site. The mapped oxbow pond is most accurately characterized as an aquatic habitat or Type F stream due to the depth of water and lack of wetland vegetation within the open water (Figure 3).

Streams

A Type F (fish) stream was located along the eastern and southern site boundaries and referred to as an oxbow pond in this report (Figures 3, 3a, & 5) This aquatic habitat is an historic oxbow of the Chehalis River with very constricted outlets resulting in a perennial water regime closely tied to the localized groundwater system.

Stream Buffers

Lewis County Code *LCC 17.38.420: Table 17.38-6* requires a standard stream buffer of 150-feet on Type F streams. The current buffer is comprised of a narrow 25-foot wide strip of vegetation consisting of invasive Himalayan blackberry with scattered Oregon ash trees and red osier dogwood shrubs. The remaining buffer is entirely surfaced with compacted gravel, concrete aggregate and existing buildings (Photograph 2). Trucks, metal storage containers, and miscellaneous equipment from the adjacent repair business are also stored within this area. The natural buffer is very much interrupted by existing buildings and aggregate surfaces. Lewis County code allows buffer reduction where existing roads, structures, or other improvements have effectively interrupted the physical nature of the buffer (*LCC 17.38.280.2*). The proposed building location is also elevated approximately 20 feet above the Type F stream (oxbow pond) thereby providing substantial vertical separation between the building and the aquatic resource.

Lewis County allows the reduction of stream buffers if proper mitigation measures are implemented as described in the following section. The applicant is proposing to locate the building approximately 75-feet from the OHWM of the oxbow pond.

Buffer Mitigation Measures

To assure the adjacent Type F stream, oxbow pond, is protected at a level at or above current conditions, a comprehensive list of mitigation measures will be implemented and strictly enforced (Table 4 adapted from LCC 17.38.280.b). These measures will be implemented along a 300-foot section of the buffer adjacent to the proposed building.

Table 4: Summary of Proposed Buffer Mitigation Measures

#	Mitigation Measure	Applicant Proposed Mitigation Measures
1	Lights	1. All outdoor lighting will be shielded and positioned away from streams and stream buffers. 2. Motion lighting will be used to limit length of light exposure.
2	Noise	1. Quiet hours will be enforced.
3	Toxic Runoff	1. Roof drains will be directed to dry wells or into an existing storm water system. 2. Water will not be directly discharged into streams or stream buffers. 3. Restricted use of pesticides in stream buffer areas.
4	Stormwater Runoff	1. Roof drains will be directed to dry wells or into an existing storm water system.
5	Change in Water Regime	1. Runoff will be detained, treated and allowed to infiltrate into native soils. Excess runoff will be managed by the existing stormwater system.
6	Pets and Human Disturbance	1. Construction fencing will be erected around proposed clearing limits prior to any site work. 2. Informative signage will be placed along the construction fencing to prevent incursions into buffers. 3. Permanent fencing will be designed to keep pets out of critical areas while limiting restriction of wildlife migration.
7	Dust	1. Watering exposed soils, straw mulching, and tarping of soils during construction will limit windblown dust and surface erosion.

CONCLUSIONS

A single Type F stream (oxbow pond) in the eastern and southern portion of the subject site was located and mapped using GPS equipment (Figures 3 and 3A). Lewis County requires a 150-foot buffer on Type F streams which can be reduced to 75-feet with the implementation of mitigation measures as summarized in Table 4.

It is the opinion of Loowit Consulting Group, LLC (LCG) that construction of the proposed building located 75-feet from the OHWM will not result in a net decrease in functions of the

existing buffer area and adjacent Type F stream if the mitigation measure in able are applied and enforced.

LIMITATIONS

The findings and conclusions contained in this document were based on information and data available at the time this document was prepared and evaluated using standard Best Professional Judgement. LCG assumes no responsibility for the accuracy of information and data generated by others. Local, State, and Federal regulatory agencies may or may not agree with the findings and conclusions contained in this document.

REFERENCES

Anderson, P., Meyer, S., Olson, P., Stockdale, E. 2016. Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State. Shorelands and Environmental Assistance Program Washington State Department of Ecology Olympia, Washington. Publication no. 16-06-029. October 2016 Final Review.

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US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (https://www.fws.gov/wetlands/data/mapper.html).

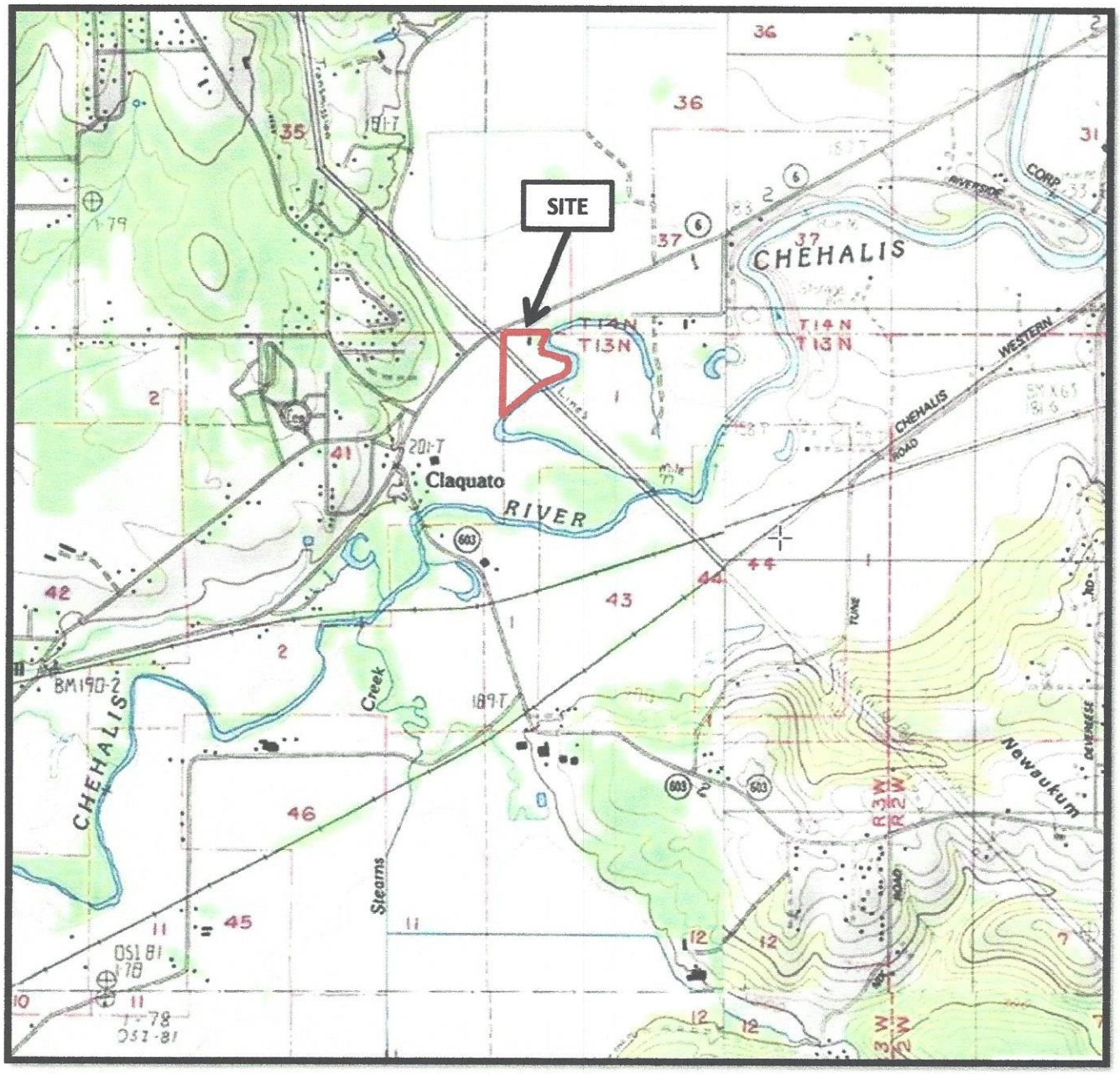
Washington Department of Natural Resources Forest Practices Application Mapping Tool (https://fpamt.dnr.wa.gov/default.aspx).

Washington Department of Fish and Wildlife Salmonscape (http://apps.wdfw.wa.gov/salmonscape/map.html).

Washington Department of Fish and Wildlife Priority Habitat and Species (http://apps.wdfw.wa.gov/phsontheweb/).

FIGURES

Figure 1 – Site Location Map
Figure 2 – Parcel Map
Figure 3A - Existing Conditions Map
Figure 3 – Proposed Project Map
Figure 4 – Soils Map
Figure 5 - National Wetlands inventory Map
Figure 6 – Stream Map



Not to scale

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Figure 1
Site Location Map

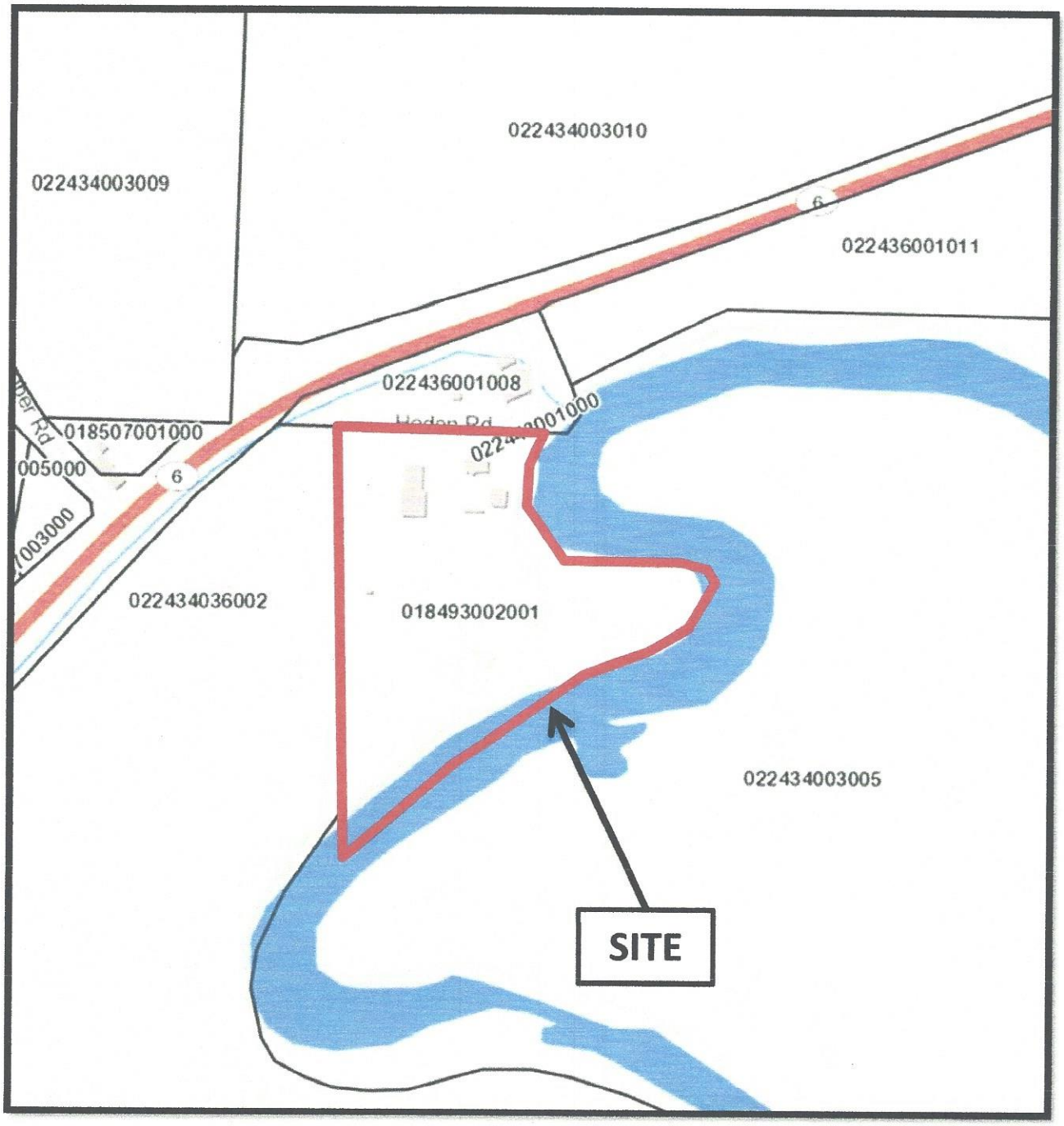

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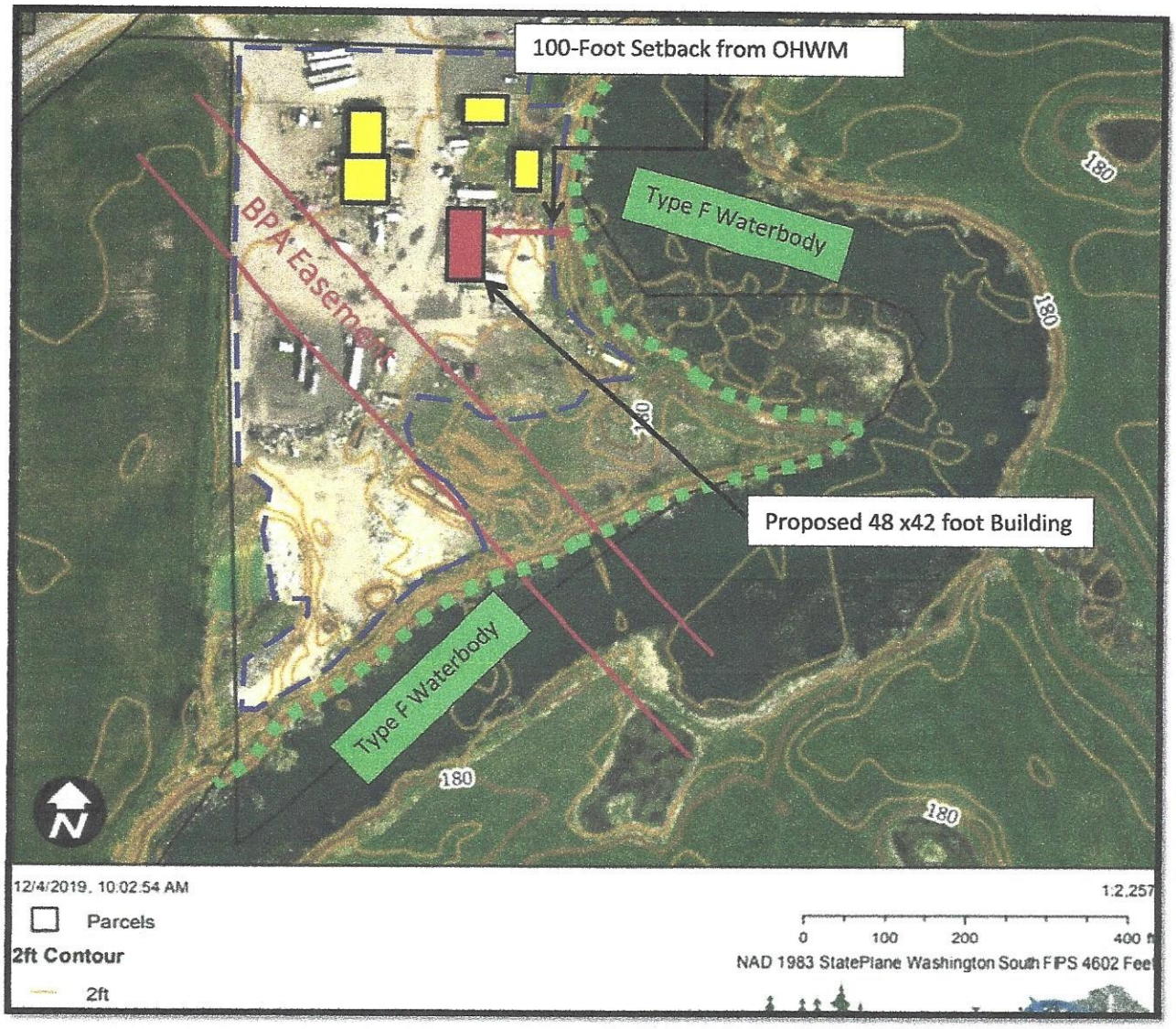
Figure 2
Parcel Map



Existing Buildings

Ordinary High Water Mark (OHWM)

Extent of Impervious and Packed Gravel Surfaces

All features depicted were placed on the base map using GPS waypoints and aerial imaging. Horizontal accuracy is implied and should be used for planning purposes only.

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Figure 3
Proposed Project Map
113 Heden Road
Chehalis, Washington

Existing Buildings

Property Line

Extent of Impervious and Packed Gravel Surfaces

All features depicted were placed on the base map using GPS waypoints and aerial imaging. Horizontal accuracy is implied and should be used for planning purposes only.

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Figure 3A
Existing Conditions Map
113 Heden Road
Chehalis, Washington

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
48	Chehalis silty clay	9.2	80.8%
W	Water	2.2	19.2%
Totals for Area of Interest		**11.4**	**100.0%**

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Figure 4
Soils Map

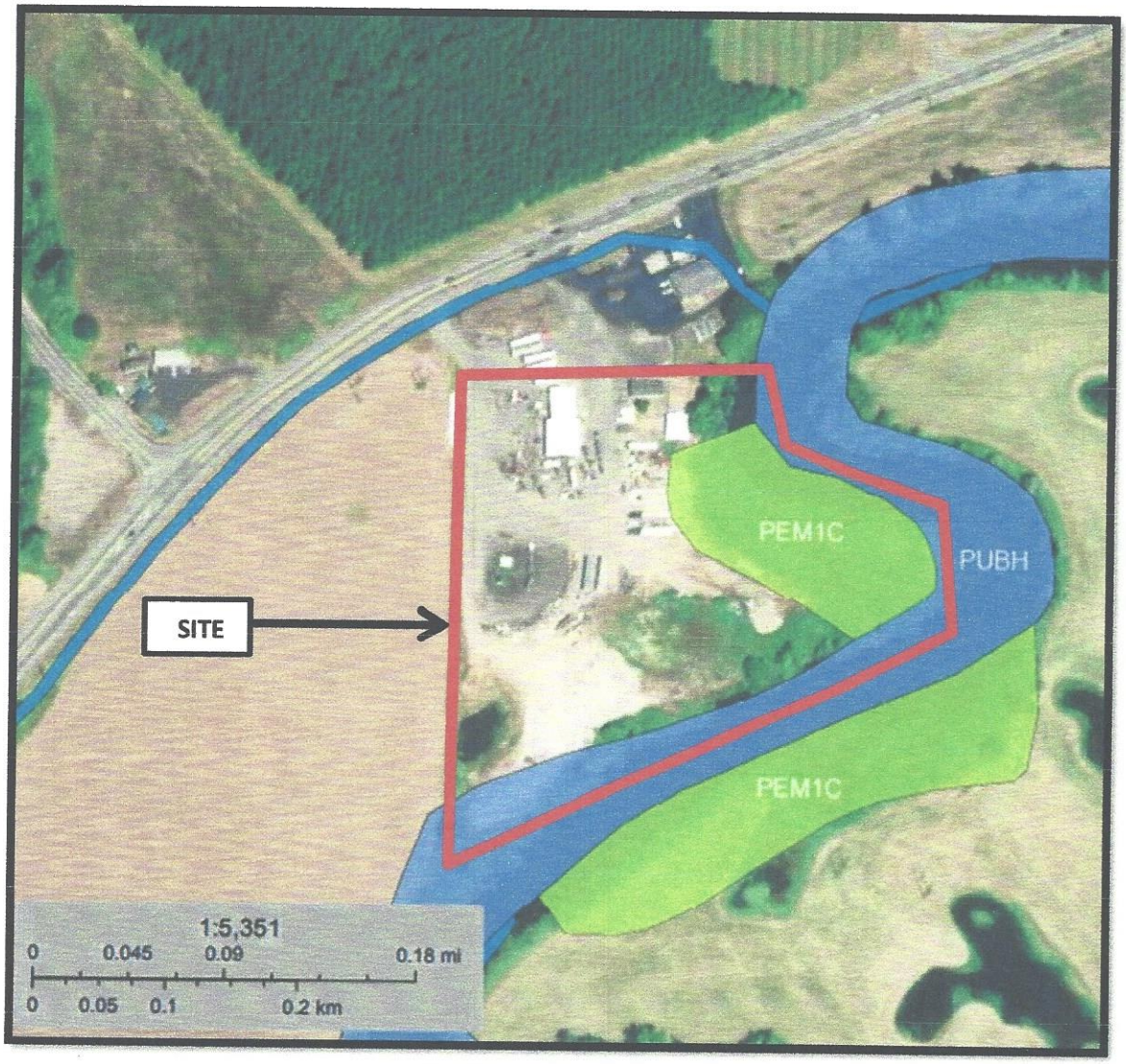

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Figure 5
National Wetlands Inventory Map

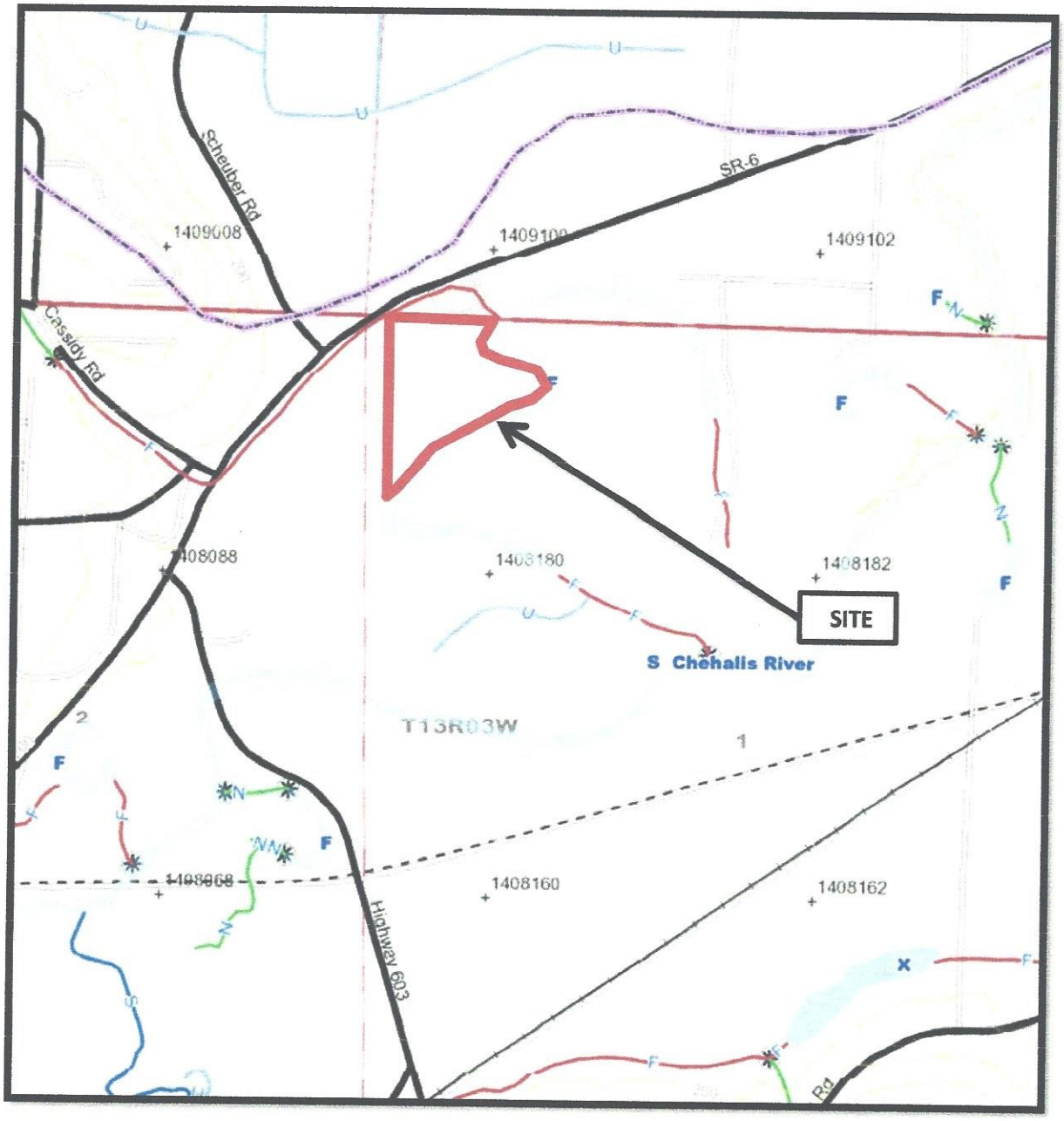

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Figure 6
Stream Map

APPENDIX A –CLIMATOLOGICAL SUMMARY

Date	Date	MinÂ°F	AvgÂ°F	MaxÂ°F	AvgDPÂ°F	AvgRH%	AvgLWu.	AvgDirÂ°
11/1/2019	1	26.2	41.3	59.1	33.7	77.4	0.01	N
11/2/2019	2	30.4	44.3	62.7	37.5	79.9	0.03	NW
11/3/2019	3	35.3	43.1	57.6	39.5	88.4	0.06	N
11/4/2019	4	36.8	45.3	60.2	42	89.5	0.07	N
11/5/2019	5	34.1	43.8	56.6	41.1	90.8	0.07	N
11/6/2019	6	33.7	41.3	52.4	39.1	92.2	0.07	N
11/7/2019	7	33.3	39.6	52.7	38.2	95	0.08	N
11/8/2019	8	32	42.7	60	39	88.6	0.07	SW
11/9/2019	9	42.1	48.3	51.7	46.3	92.5	0.1	S
11/10/2019	10	48.7	51.1	54.6	49.5	94.5	0.13	N
11/11/2019	11	41.8	48.8	56.9	46	90.6	0.09	N
11/12/2019	12	43.4	48.3	51.9	46	91.9	0.08	S
11/13/2019	13	44	49.7	54.7	47.4	92.2	0.09	N
11/14/2019	14	44.3	48.8	57.4	44.4	85.6	0.05	S
11/15/2019	15	44.1	49.5	56.5	46.8	90.5	0.07	S
11/16/2019	16	43.4	49.2	53.9	47.5	93.8	0.1	S
11/17/2019	17	44.4	52.5	57.2	49.7	90.2	0.05	S
11/18/2019	18	44.3	47.9	53.4	46.9	96.6	0.2	NE
11/19/2019	19	36.7	46.4	52	44.3	92.6	0.15	W
11/20/2019	20	30.7	39.1	51.2	35.8	89.1	0.07	N
11/21/2019	21	30.3	33.5	37.6	33.2	99.1	0.1	SW
11/22/2019	22	29.4	33	38.5	32.7	99.3	0.11	W
11/23/2019	23	30.3	40.1	48	36.6	88.2	0.06	S
11/24/2019	24	41.2	45.8	54.3	41.6	86	0.05	S
11/25/2019	25	34	40.6	50	36.6	86.6	0.07	SW
11/26/2019	26	34.1	38.5	41.8	32.3	79.6	0.05	N
11/27/2019	27	27.8	38.9	47	23.5	55.3	0	N
11/28/2019	28	24.4	32	44.8	23.8	75.8	0	N
11/29/2019	29	20.7	28.2	43	22.5	83.9	0	W
11/30/2019	30	18.9	27.8	40	23.7	87.9	0	N

AvgSpeedn	MaxGustm	Avg 2 in.Â°	MinÂ°F	AvgÂ°F	AvgSoilVW	TotPrecin	TotalSolarF	ETоin
2.6	11	40.7	44.2	45.4	38.3	0	10	0.04
2.5	11.4	42.6	45	46.2	38.2	0	9.27	0.04
1.9	10.3	43.9	46.1	47	38	0	8.16	0.03
1.8	11.4	45.7	46.9	47.7	37.9	0	7.89	0.03
2.4	12.1	45.5	47.5	48.1	37.8	0	6.11	0.03
2.3	9.2	43.5	46.7	47.4	37.5	0	5.36	0.02
1.8	8.9	43.4	46.2	46.8	37.3	0.01	5.4	0.02
2.7	12.1	44.1	45.8	46.6	37.1	0	7.37	0.03
4.7	12.8	47.2	47	47.5	37.1	0.13	2.84	0.02
2.8	11	50.3	48.5	49.2	37.3	0.01	2.69	0.02
2.7	8.2	50	49.8	50.3	37.4	0	6.41	0.02
3.3	11.4	49	49.7	50.1	37.7	0.14	2.62	0.02
3.1	15.3	50.3	50.2	50.5	37.9	0	3.85	0.02
3.3	9.2	49.5	50	50.4	37.8	0	4	0.03
5.2	15	49	49.8	50.3	40.7	0.26	3.2	0.03
4.5	11	49.6	49.7	50.1	41.6	0.03	3.29	0.02
5.6	17.8	51.2	50.6	51	42.2	0.09	1.72	0.01
3.3	15.7	49.1	50.4	50.7	42.1	0.21	0.89	0.01
3.3	11.7	48.3	50	50.2	43.1	0.36	2.62	0.01
3.2	15.3	43.7	47.8	48.6	41.9	0.02	7.51	0.02
2.3	7.4	41.7	45.8	46.5	41.3	0.01	2.97	0.01
2.8	7.4	41.5	44.9	45.4	41	0	4.23	0.01
4.9	16	41.9	43.9	44.6	40.8	0	3.26	0.02
4.6	18.2	44.7	45.1	45.8	41.3	0.32	5.87	0.03
4	18.2	41.7	45.3	46	42.6	0.02	6.06	0.02
5.8	15.7	39.6	43.9	44.4	41.5	0	2.23	0.03
6.8	22.5	38.2	42.7	43.2	41	0	6.28	0.05
2.9	13.2	34.9	40.9	41.6	40.6	0	6.64	0.02
1.8	7.1	33.2	39.5	40.1	40.3	0	6.41	0.01
2.3	9.2	32.2	38.2	38.8	39.9	0	6.13	0.01

ETrin	AvgAtm.PressinHg
0.06	30.42
0.06	30.29
0.04	30.22
0.04	30.22
0.04	30.2
0.03	30.25
0.03	30.21
0.05	30.19
0.02	30.23
0.02	30.29
0.03	30.24
0.02	30.14
0.02	30.11
0.05	30.02
0.04	30.14
0.02	30.3
0.02	30.18
0.01	29.89
0.02	29.88
0.03	30.12
0.01	30.04
0.01	30.28
0.03	30.32
0.05	30.27
0.03	30.16
0.04	29.74
0.09	29.55
0.04	29.86
0.02	29.9
0.02	30.02

APPENDIX B –QUALIFICATIONS

Timothy (Tim) J. Haderly

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Biography

Tim Haderly is a natural resource and project management consultant who owns Loowit Consulting Group, LLC (LCG) based in Washington State, United States. For over 30 years, Tim has provided professional expertise to his national and international clients in the public/governmental and private sectors.

After graduating from Western Washington University in 1988 with degrees in terrestrial ecology and freshwater studies, Tim began his professional career in private consulting. After working seven years for a large geological consulting company, Tim struck out on his own becoming an owner of a consulting company where he remained for over 20 years. In 2017, Tim sold his stock and started LCG where he continues to provide high quality environmental permitting expertise for a wide variety of projects including mining, commercial development, rail & road transportation, communications, pipelines, electrical transmission lines, and industrial.

Tim specializes in projects involving complex environmental permitting challenges where he works closely with regulatory agency staff to identify and expeditiously address permit requirements. In addition to permitting tasks, Tim also provides expertise in site reclamation, mitigation, landscape restoration, and conservation banking.

When not working on projects, Tim stays active spending time outdoors hiking, camping, mountaineering, spelunking, fishing, prospecting, and rock hounding. Tim and his wife Karin also enjoy travelling and spending time with their three dogs.

Timothy (Tim) J. Haderly

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Education

Western Washington University
1988 – Terrestrial Ecology (Bachelor of Science Degree)
1988 – Freshwater Studies (Minor Degree)

Lower Columbia College
1985 – Environmental Studies (Associates Degree)

Experience

Loowit Consulting Group | 312Gray Road, Castle Rock, Washington 98611
Principal Scientist/Owner ***2017 - Present***

- Project manager for projects throughout Washington, Oregon, and Alaska for a wide variety of public and private clients
- Natural resource studies including wetland delineation, wetland characterization, stream typing, fish absence/presence, habitat inventories, listed species inventories, and ordinary high-water mark identification
- Local, State, and Federal environmental permitting
- NEPA analysis for public funded projects

Goodnews Restoration & Mining PTY LTD | Level 4, 14 Ventnor Avenue, West Perth, Western Australia
USA Manager ***2017 - Present***

- Supervisor for activities on projects in the United States
- Technical review of reports and data for soils, wetlands, streams, wildlife, listed species, and sensitive habitats
- Field studies including soil sample collection, wetland delineation, wetland characterization, stream typing, fish absence/presence, habitat inventories, listed species inventories, and ordinary high water mark identification
- Involved with baseline studies, permitting, maintenance, monitoring, and operation of mining projects in Untied States
- Development of Mine Plans of Operation and Notice of Exploration Activity under BLM jurisdiction

LBMB, Inc. | 1157 3rd Ave, Suite 220, Longview, Washington 98632
Owner ***2007 – Present***

- Owner and operator of a wetland and conservation mitigation bank in Southwest Washington
- Technical review of reports and data for wetlands, streams, wildlife, listed species, and sensitive habitats
- Field studies including wetland delineation, wetland characterization, habitat inventories, and listed species inventories
- Involved with baseline studies, permitting, maintenance, monitoring, operation, and ownership of the mitigation banks

SCJ Alliance | 8730 Tallon Lane NE, Lacey, Washington 98516
Principal Environmental Scientist ***2017 - 2019***

- Business development and marketing including written proposals, interviews, and new market analysis

- Project manager for projects throughout Washington, Oregon, and Alaska for a wide variety of public and private clients
- Technical review of reports and data for wetlands, streams, wildlife, listed species, and sensitive habitats
- Field studies including wetland delineation, wetland characterization, stream typing, fish absence/presence, habitat inventories, listed species inventories, and ordinary high-water mark identification
- NEPA analysis for public funded projects

Ecological Land Services, Inc. | 1157 3rd Ave, Suite 220, Longview, Washington 98632
Senior Ecologist/Principal ***1996 – 2017***

- Senior manager and owner of ELS with over 30 employees in three offices
- Business development and marketing including written proposals, interviews, and new market analysis
- Budget tracking, financial analysis, and forecasting for projects and business
- Project manager for projects throughout Washington, Oregon, and Alaska for a wide variety of public and private clients
- Technical review of reports and data for wetlands, streams, wildlife, listed species, and sensitive habitats
- Field studies including wetland delineation, wetland characterization, stream typing, fish absence/presence, habitat inventories, listed species inventories, and ordinary high water mark identification
- Involved with baseline studies, permitting, maintenance, monitoring, operation, and ownership of mitigation banks.

EMCON (formerly Sweet-Edwards & Associates) | Kelso, Washington 98611
Project Manager ***1989 – 1996***

- Project management of various projects throughout Washington, Oregon, California, Arizona, Nevada, and Alaska for a wide variety of public and private clients
- Supervision of field crews and contracts on various private and public projects
- Data collection, input, analysis, statistical comparison, and formulation of conclusions based on data trends
- Collection of surface water, groundwater, soils, sediments, & air samples and submitting samples to laboratories under proper storage and chain-of-custody documentation
- Drafting of site investigation reports, quarterly monitoring reports, cleanup reports, and progress reports
- Specialized in solid waste landfills, CERCLA cleanup sites, UST sites, and other sites with contamination issues

Skills & Technical Experience

- Local critical areas (WA)
- Wetland identification, delineation, and characterization
- Stream and lake typing and characterization
- Wildlife and vegetation surveys/inventories
- Priority habitats and species inventories (WA)
- Level 1 and 2 Habitat Assessments
- Shoreline permitting (WA)
- Ordinary High Water Mark determinations (WA)

- Zoning and comprehensive plan compliance
- Mitigation plans
- State Environmental Policy Act (SEPA) documentation (WA)
- Joint Aquatic Resource Permit Applications (JARPA) (WA)
- Section 401 permitting
- Hydraulic Project Approvals (HPA) (WA)
- Mitigation and conservation bank baseline studies, permitting, and operation
- Oregon Removal-Fill Permitting (OR)
- Joint Permit Applications (JPA) (OR)
- WSDOT Local Programs, Local Agency Environmental Classification Summary Forms (WA)
- Mining Plans of Operation, Exploratory Notices, and Reclamation Plans
- Section 404 and Section 10 permitting – Individual, Nationwide, and Regional General Permits (Fed)
- Section 404(B)(1) Alternatives Analysis (AA) reports (Fed)
- Environmental Assessments (EA)/Finding of No Significant Impact (FONSI) documentation (Fed)
- Biological Assessments/Biological Evaluations/No Affect documentation for listed species (Fed)
- NEPA Analysis CE/EA/FONSI/EIS analysis (Fed)

Membership, Certifications & Training

- Society of Wetland Scientists (former)
- Alaska Miners Association (former)
- Certified Wetland Delineator 40 hour course
- Field Indicators for Hydric Soils
- Using the Revised Wetland Rating for Western Washington
- How to Determine the Ordinary High Water Mark
- Selecting Wetland Mitigation Sites Using a Watershed Approach
- Forest Stewardship Planning
- Master Gardner
- Friends of Harry Gardner Park, Chairperson
- Cowlitz County Habitat for Humanity, Board of Directors (former)