Fall View

Construction Drainage Report

Prepared for

Fall View, LLC

c/o Land Pro Group, Inc.

10515 20th St SE, STE 202

Lake Stevens, WA 98258

Prepared by

LDC | Surveying Engineering Planning

20210 142nd Ave NE

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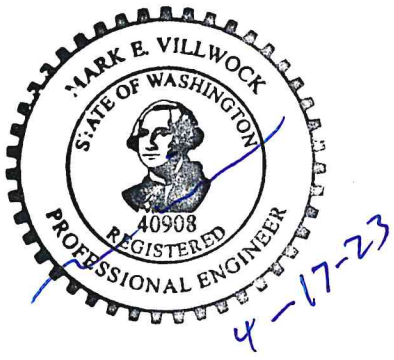


March 2023

Job No: C22-248

APPENDICES

SECTION 1: PROJECT OVERVIEW

The project is comprised of parcels 27090500200300, 27090500200400, and 27090500201100. The site area equals approximately 38.26 acres. The project proposes the development of 39 single-family residences. The site currently has gravel driveway extending to a residence near the northwest corner of the property, rest of the site is undeveloped and vegetated. Development will also include frontage improvements along Ley Road which will also provide access and utilities to the proposed residence. The site is located within Northwest quarter of Section 05, Township 27 NW, Range 9 E, W.M. See Vicinity Map in the Appendix A for visual representation of the subject property. The project is designed under the City of Gold Bar Design & Construction Standards, and the Department of Ecology's (DOE) 2019 Stormwater Management Manual for Western Washington (SWMMWW).

1.1 EXISTING SITE

The existing site currently has gravel driveway extending to a residence near the northwest corner of the property of approximately 13,337 sf, rest of the site is undeveloped and vegetated with grasses, blackberry vines, ferns, ivy, understory and variable diameter trees. The existing site contains 3 wetlands. The wetland A category II with 100 ft buffer is located along the west property line, wetland B category III with 75 ft buffer on northeast of 9,700 sf, and wetland C category III with 75 ft buffer on northeast of 12,170 sf. Most of the portion of the site is nearly level to slightly sloping downward in multiple directions. There are locally steep slopes north and west, respectively. The slopes ranging 30 to 50 percent. These slopes appear to be consistent with former meanders of area rives/streams. The high region creates two flow paths for existing site runoff to exit the site north, and west of two separate Threshold Discharge Areas (TDA's). TDA 1 coincides with flow paths which exit the site across the north and northeast site boundary and eventually discharges into Wallace River. TDA 2 coincides with flow path which exist the west corner of the site and eventually discharges into May Creek. Flow paths 1 and 2 do not converge within the ¼ mile buffer, however waters from May Creek do eventually reach Wallace River.

1.2 DOWNSTREAM ANALYSIS

The site contains two natural flow paths as flows from the project site. Flow path 1 contains 23.96 acres of associated project area and flows to the north. Flow path 2 contains 14.3 acres of

associated site area and flows to the west. Refer to Appendix C for figures delineating site Flow paths.

Runoff from Flow path 1 flows to the onsite Category III wetlands B and C and to the Wallace River. Flow path 2 flows travel overland west into Wetland A and to a May creek. Refer to Section 3.0 "Downstream Analysis Report" for a more in-depth description.

1.3 PROPOSED DEVELOPMENT

Development activities are proposed for all three parcels. Proposed development includes construction of 39 single-family units with access from Ley Road, and utility improvements. Frontage improvements will consist of the access point to the proposed lots, sidewalk, ADA ramps and landscaping. Existing (predeveloped) site areas and developed site areas are listed below.

Table 1.3.a: Development Areas Summary

Predeveloped Areas	
Roof:	-
Sidewalk:	-
Pavement:	0.31 Acres
Forest:	37.95 Acres
Existing Area Total:	**38.26 Acres**

Developed Areas	
Roof:	2.34 Acres
Sidewalk:	0.40 Acres
Pavement (PGIS):	2.40 Acres
Pasture:	33.12 Acres
Post Construction Total:	**38.26 Acres**

1.4 PROPOSED DRAINAGE SYSTEM

The project is required to meet MR #6 Runoff Treatment and MR #7 Flow Control as overall development creates greater than 5,000 square feet of pollution generating impervious surfaces (PGIS) and greater than 5,000 square feet of effective impervious surfaces. Refer to Section 4.0 for more detail. Runoff from Alder Lane and Road A will be collected via curb inlets and pipes to the Bioretention planter along perimeter of the Alder Lane and Road A and will be fully infiltrated. The roof runoff will discharge to drywell on each lot. The driveway runoff will be discharged via sheet flow on to 10' vegetation. Development will also include frontage improvements along Ley Road which will also provide access and utilities to the proposed residence. Runoff from the Ley Road along the frontage will be collected to drywells and will be fully infiltrated.

1.5 EROSION/SEDIMENTATION CONTROL

Erosion control measures that will be utilized during construction will include a combination of silt fence, plastic covering, straw bales, sediment trap and storm drain inlet protection. See Section 2.0 for discussion of how SWPPP Elements are addressed.

1.6 MINIMUM REQUIREMENTS

Per 2019 DOE Manual, Minimum Requirements 1-9 apply to the proposed development as the site will result more than 5,000 square feet hard surfaces.

Minimum Requirement #1: Preparation of Stormwater Site Plans: This Report along with the Construction Plans satisfies this minimum requirement.

Minimum Requirement #2: Construction Stormwater Pollution Prevention: See Section 2 of this Report for the SWPPP BMP Elements, and the SWPPP (submitted as a separate document) for a complete discussion of erosion control BMP's and their use specific to the site.

Minimum Requirement #3: Source Control of Pollution: Permanent source control BMPs are not applicable for the subject site since the associated activities for the new residential development do not fall within the types of facilities listed within Volume IV of the Drainage Manual (Residential developments are not required to implement source control BMP's). BMPs for erosion and sedimentation control are specified in the Construction Plans and the SWPPP.

Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls:
Existing drainage flows primarily north and west off the site. Developed site areas have been designed such that drainage courses will remain same as existing. See Downstream Analysis in Section 3 of this report for further information regarding the location of existing natural outfalls.

Minimum Requirement #5: Onsite Stormwater Management:
Cobalt Geosciences performed a geotechnical investigation of site soils and underlying geology, dated October 4, 2022, that revealed that the Alluvium site soil consists of fine to medium grained sand with gravel makes infiltration feasible. Site stormwater runoff from the Access

roads will drain via conveyance system to the Bioretention swale along the road perimeter and will be fully infiltrated. Roof and driveway runoff will be collected and infiltrated via drywell. The site will provide stormwater management via post construction amended soils per BMP T5.13. No additional BMPs are feasible. See Section 4.5 for the LID BMP feasibility analysis.

Minimum Requirement #6: Water Quality: A bioretention swale filtration will be use for the water quality. See Onsite Stormwater Analysis Section 4.0 of this report.

Minimum Requirement #7: Flow Control: Flow control will be provided by means of a bioretention swale for the Access roads, drywell for the roof and sheet flow for the driveway runoffs. See Onsite Stormwater Analysis Section 4.0 for additional information regarding sizing.

Minimum Requirement #8: Wetlands Protection: Per Critical Area Study conducted by Acre Environmental Consulting, LLC., there are 3 Category III wetland and a Wallace River Type 1 Stream on site. These wetlands have been determined to have a habitat score of 7.

Wetland A is located along the western border of the property and extends off-site to the west and south and is a HGM Class depressional wetland. In City of Gold Bar, Category III wetlands receive a 75-foot buffer measured from the delineated edge.

Wetland B is in the northeastern corner of the subject site, east of Wetland C and south of the Wallace River and is a HGM Class Riverine wetland. In the City of Gold Bar, Category III wetland receives a 75-foot buffer measured from the delineated edge.

Wetland C is in the northeastern corner of the subject site, west of Wetland B and south of the Wallace River and is a HGM Class Riverine l wetland. In the City of Gold Bar, Category III wetland receives a 75-foot buffer measured from the delineated edge.

Wallace River – Type 1 Stream flows west along the northern boarder of the property and is mapped by a City of Gold Bar as an Urban Conservancy Shoreline of the State. In the City of Gold Bar, Type 1 waters typically receive a 150-foot buffer measured horizontally in a landward direction from the delineated ordinary high-water mark.

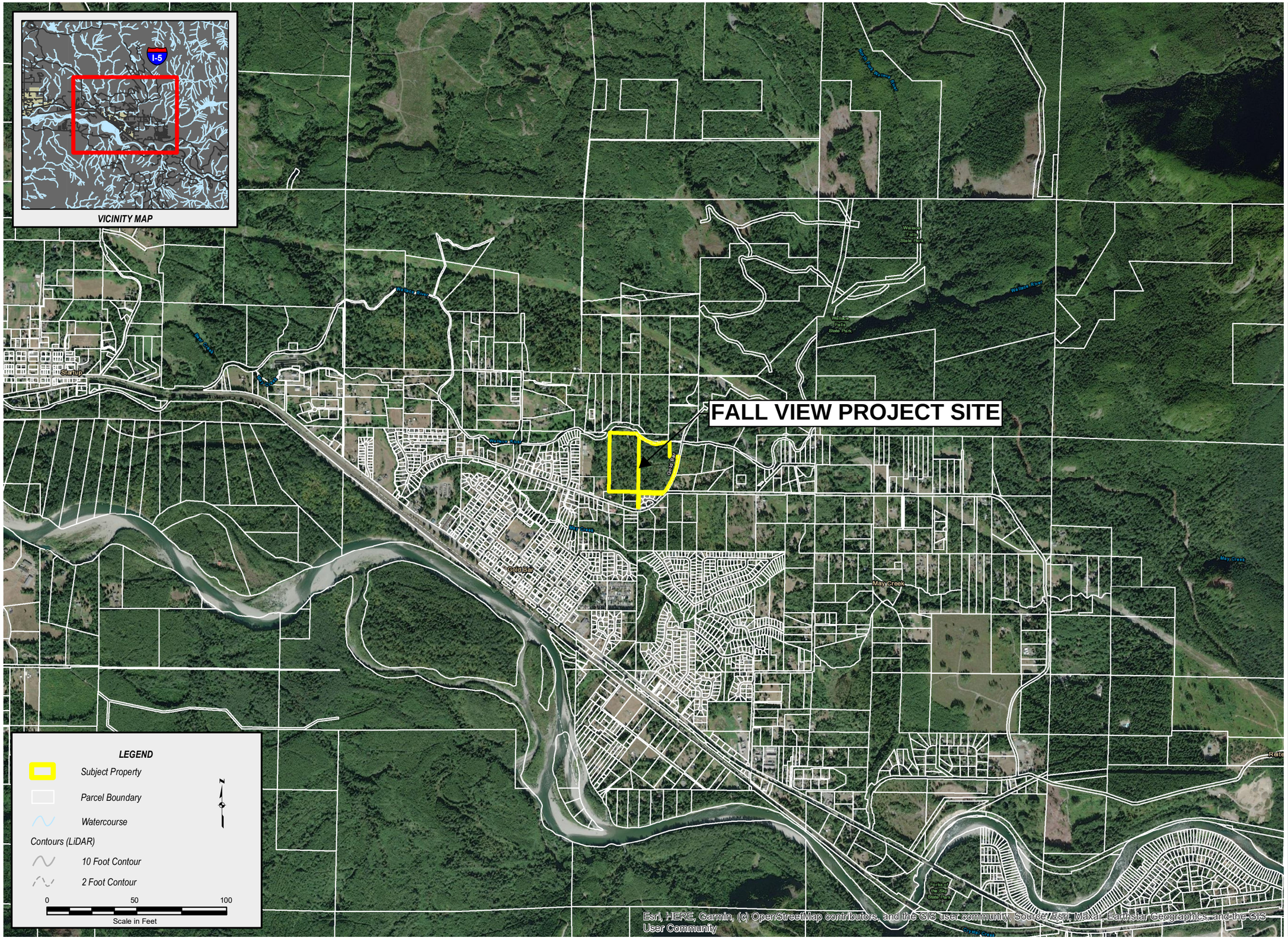
To accommodate the development of Lots 30 through 33, buffer averaging is proposed. The project is proposing to reduce a total of 9,700 sf of buffer to the south of Wetland B and C and delineate a total of 12,170 sf of equivalent or better-quality area as buffer.

The wetlands will meet I-C.2 General Protection by maintaining buffers, retaining maximum native vegetation, minimizing soil impact, and utilizing silt fence protection until site development is complete and the Army Corp of Engineers permits wetland filling. I-C.3 does not apply since proposed tributary flow is considered non-PGIS. The existing wetlands meet the wetland criteria listed in methods 2 in I-C.4, for wetland hydroperiod protection. See Section 4.6 for full analysis and Acre Environmental Consulting documentation for additional information.

Minimum Requirement #9: Operation and Maintenance: See Operations and Maintenance in Section 6 of this report.

Appendix A: Project Overview

1. Figure 1.0 – Vicinity Map
2. Figure 2.0 – Existing Conditions Map
3. Figure 3.0 – Proposed Development Map



SOURCE INFORMATION

SOURCE AGENCY	DESCRIPTION
SNOHOMISH COUNTY GIS	PARCEL BOUNDARY
SNOHOMISH COUNTY GIS	CONTOURS GENERATED FROM BARE EARTH LIDAR (KING COUNTY). THIS DATA HAS A STATED VERTICAL ACCURACY OF APPROXIMATELY 1 FOOT.

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FALL VIEW
VICINITY MAP

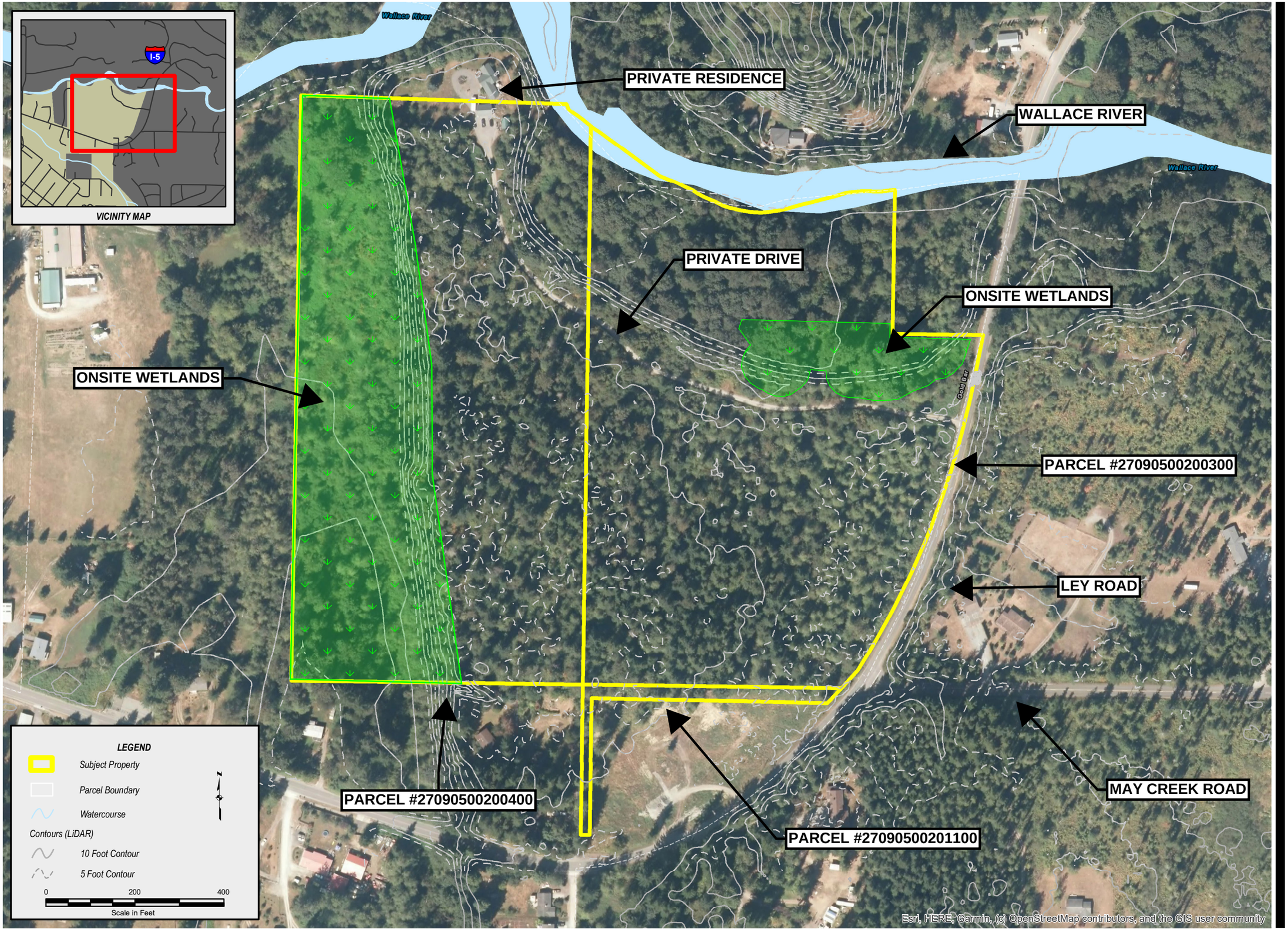
NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME:C22-248
DESIGNER: PPATEL
DRAWING BY: CTIWEYANG
DATE: 10/25/2022
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:

1.0

20221021_GIS_TIME.mxd | MOD: 10/25/2022 | ctiweyang



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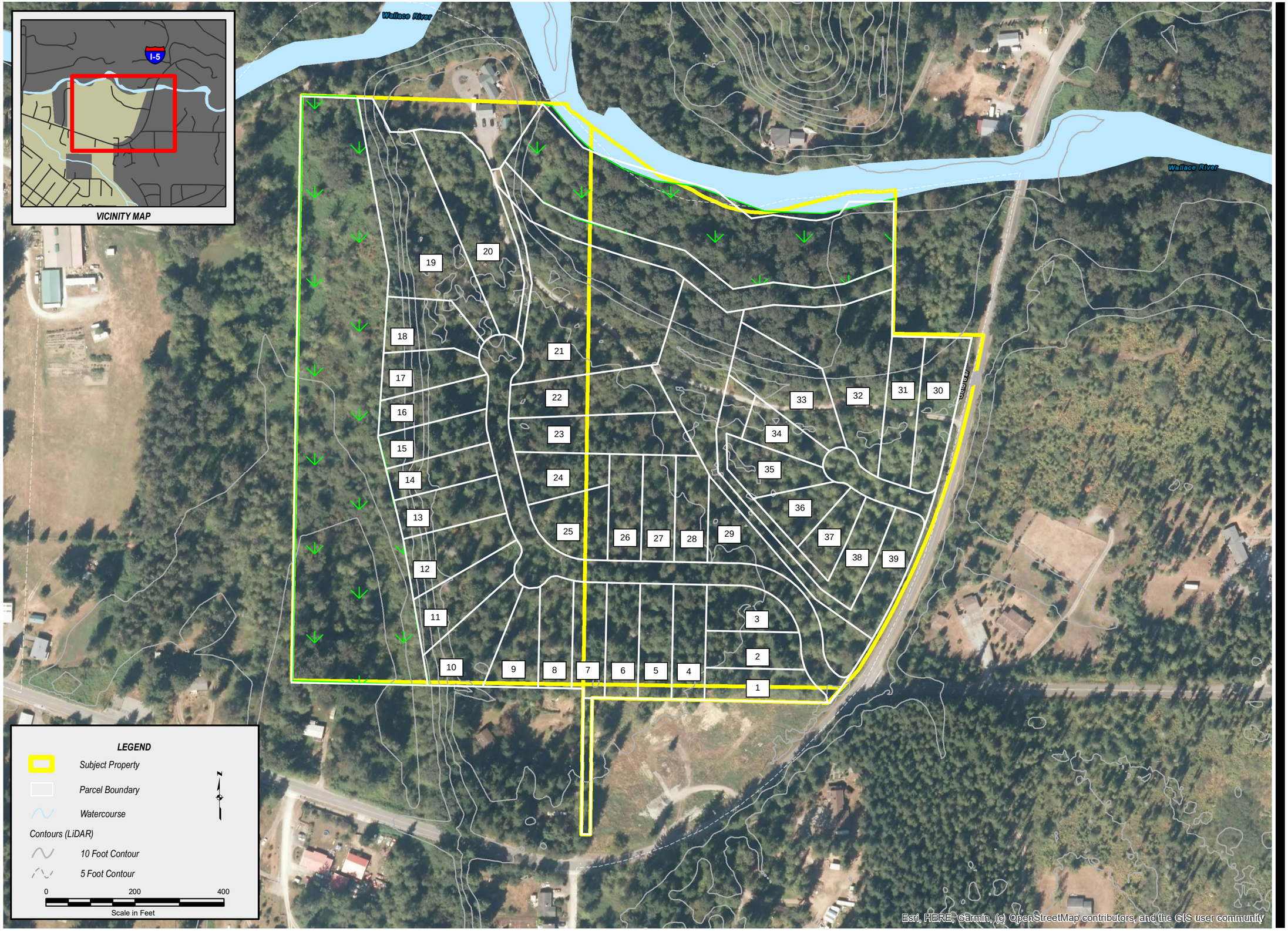
EXISITNG CONDITIONS MAP

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME: C22-248-2
DESIGNER: CTIWEYANG
DRAWING BY: CTIWEYANG
DATE: 12/13/2022
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:

2.0



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PROPOSED DEVELOPMENT

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME: C22-248
DESIGNER: PPATEL
DRAWING BY: PPATEL
DATE: 03/22/2023
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:

3.0

20221021_GIS_TIME.mxd | MOD: 10/27/2022 | cliweyang

SECTION 2: RISK ASSESSMENT ANALYSIS AND TEMPORARY EROSION AND SEDIMENT CONTROL DESIGN

2.1 TEMPORARY EROSION AND SEDIMENT CONTROL

A Stormwater Pollution Prevention Plan (SWPPP) has been provided as a separate document. The SWPPP report is modeled under the guidelines of Volume II, Section 3 of the 2019 Stormwater Management Manual for Western Washington. Construction SWPPP Elements #1 through #13 are addressed below.

Element #1 – Mark Clearing Limits: All clearing limits will be delineated with high visibility plastic fence or silt fence. See sheets ER-01, ER-02, and ER-03 of the construction plans for locations and details.

Element #2 – Establish Construction Access: The construction entrance located on the southeast side of the project along May Creek Road will provide site access. See sheets ER-01 and ER-02 of the construction plans for locations and details.

Element #3 – Control Flow Rates: Construction period flows will be controlled with a Temporary sediment pond. Excess flows will be dispersed on site. See ER-01, ER-02, and ER-03 of the construction plans for locations and details.

Element #4 – Install Sediment Controls: Silt fence and catch basin protection will be utilized to contain sediments within the project's clearing limits. See ER-01, ER-02, and ER-03 of the construction plans for locations and details.

Element #5 – Stabilize Soils: Exposed soils will be stabilized with plastic covering, mulching and/or temporary and permanent seeding and as specified in the Grading and Erosion Control Notes. See ER-01, and ER-02 of the construction plans for locations and details.

Element #6 – Protect Slopes: Slopes are flat to moderate on the developable area on site. Slopes shall be protected with plastic covering, mulching and/or temporary and permanent seeding as specified under Element #5.

Element #7 – Protect Drain Inlets: All storm drain inlets shall be protected throughout all stages of construction. See sheets ER-01 and ER-02 of the construction plans for locations and details.

Element #8 – Stabilize Channels and Outlets: Interceptor swales and check dams are proposed to convey flows and protect against erosion. See sheets ER-01 and ER-02 of the construction plans for locations and details.

Element #9 – Control Pollutants: Pollutants shall be controlled as specified in the Pollutant Control Notes. See sheet ER-02 of the construction plans for details.

Element #10 – Control De-Watering: Disposal options for de-watering water are as specified in the De-Watering Control Notes. See sheet ER-02 of the construction plans for details.

Element #11 – Maintain BMPs: Maintenance of the BMPs is specified within the Construction Sequence and Grading and Erosion Control Notes. See sheets ER-01 and ER-02 of the construction plans for details.

Element #12: Manage the Project: The Grading and Erosion Control Notes specify seasonal work limitations. Maintenance of the BMPs is specified within the Construction Sequence and Grading and Erosion Control Notes. See sheets ER-01 and ER-02 of the construction plans for details.

Element #13: Protect LID BMPs: BMP T5.13 is the only LID BMP to be implemented as part of project development. Site shall be fully stabilized and improved prior to placement of soil amendments in order to protect from compaction. If necessary, construction fencing shall be placed around amended areas if adjacent construction improvements have not been completed.

SECTION 3: DOWNSTREAM ANALYSIS REPORT

3.1 TASK 1: STUDY AREA DEFINITION AND MAPS

Snohomish County Bare Earth LiDAR, survey, and 2012 aerial photography were the best topographical references available for the area containing the site. The limits of the downstream analysis extend roughly 0.25 miles beyond the subject property's natural discharge location (See Figure 3.0, Downstream Analysis Map).

3.2 TASK 2: RESOURCE REVIEW

All the resources below have been reviewed for existing and potential issues near the project site:

- **Adopted Basin Plans**
  No Adopted Basin Plans were located that include the project site.

- **Drainage Basin**
  This site is located within the Skykomish River basin.

- **Floodplain / Floodway (FEMA) maps**
  According to FEMA FIRM panel # 53061C1431F the project site lies within an area classified as Zone AE. The proposed development is not a risk of flooding. See Appendix 3 for FEMA FIRMette relevant to this project.

- **Critical Areas Map**
  There are two Category III and one Category II wetlands located onsite and a small portion of steep slopes located in the north and west property line. Critical area map has been submitted along with this submittal.

- **Drainage Complaints**
  No drainage complains have been reported for the site.

- **Road Drainage Problems**
  No drainage problems were recorded.

- **Snohomish County Soil Survey**

  According to the NRCS Soil survey of Snohomish County, the entire site is Skykomish gravelly loam with 0 to 30 percent slopes and is well drained. See Appendix B for USDA Soil Map, Snohomish County Area, Washington and the soil classification description.

- **Wetland Inventory Maps**

  There are three Category III wetlands located onsite.

- **Migrating River Studies**

  Migrating River Studies are not applicable to the proposed site development.

- **Section 303d List of Polluted Waters**

  Washington State Department of Ecology's Water Quality Assessment for Washington shows no impacted or polluted waters within 0.25 miles of the site.

- **Water Quality Problems**

  No known water quality problems are present within the site or anywhere within the 0.25-mile downstream flow path.

- **Stormwater Compliance Plans**

  Not applicable to the proposed project.

3.3 TASK 3: FIELD INSPECTION/DOWNSTREAM ANALYSIS

The subject property currently has gravel driveway extending to a residence near the northwest corner of the property, the rest of the site is undeveloped and vegetated. The site contains dense tree and vegetation growth throughout. The northern portion contains two wetland areas that are closed depressions with no visible outlets. The western portion contains one wetland area discharges to Wallace River on northwest property corner. There are no upstream run-off areas from offsite properties (Image 1).

The high region creates two flow paths for existing site runoff to exit the site north, and west of two separate Threshold Discharge Areas (TDA's). TDA 1 coincides with flow paths which exit the

site across the north and northeast site boundary and eventually discharges into Wallace River. TDA 2 coincides with flow path which exist the west corner of the site and eventually discharges into May Creek. Flow paths 1 and 2 do not converge within the ¼ mile buffer, however waters from May Creek do eventually reach Wallace River.

3.4 TASK 4: DRAINAGE SYSTEM DESCRIPTION AND PROBLEM DESCRIPTIONS

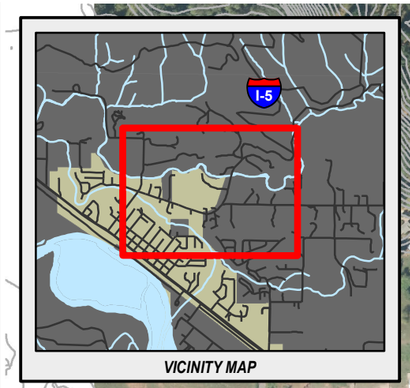
There are no downstream drainage issues associated with the conveyance system on Parcels 27090500200300, 27090500200400, and 27090500201100.

3.5 TASK 5: MITIGATION OF EXISTING OR POTENTIAL DRAINAGE PROBLEMS

There are no existing or potential drainage problems for the Parcels 27090500200300, 27090500200400, and 27090500201100.

Appendix B: Resource Review

1. Figure 4.0 - Downstream Analysis Map
2. Downstream Analysis Photos
3. FEMA Floodplain Map – Panel #53061C1040G
4. USGS Soils Map
5. USGS Soils Description



VICINITY MAP

FLOW PATH #1

QUARTER MILE BUFFER

WALLACE RIVER

PROJECT SITE

FLOW PATH #2

THRESHOLD DISCHARGE AREA LINE

May Creek

Gold Bar

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Snohomish County

LEGEND

- Subject Property
- Parcel Boundary
- Watercourse

Contours (LiDAR)

- 10 Foot Contour
- 5 Foot Contour

0 500 1000

Scale in Feet

20221021_GIS_TIME.mxd | MOD: 12/13/2022 | ctiweyang

SOURCE INFORMATION

SOURCE AGENCY	DESCRIPTION
SNOHOMISH COUNTY GIS	PARCEL BOUNDARY
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DOWNSTREAM MAP

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

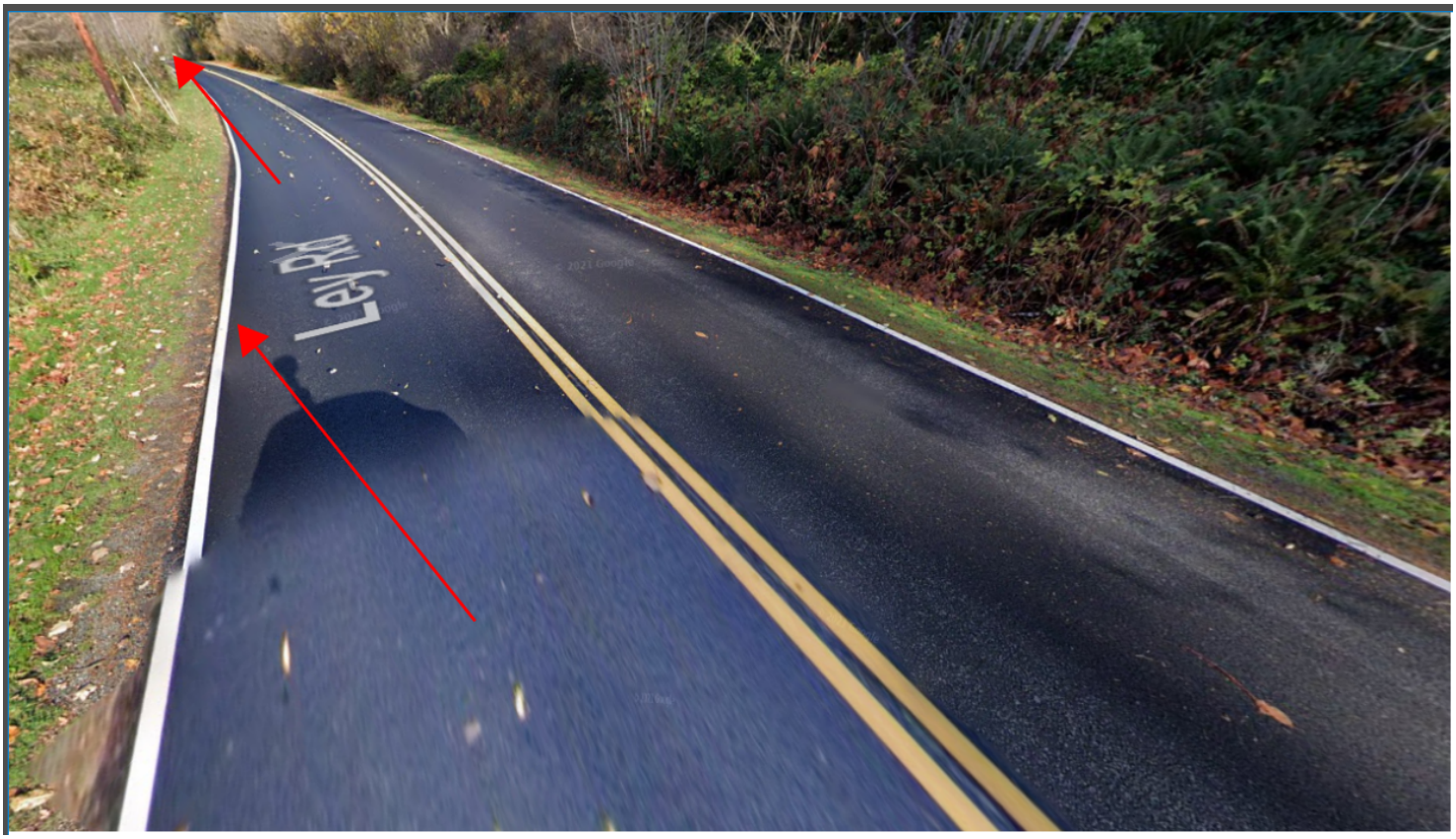
REVISION:
JOB NUMBER: C22-248
DRAWING NAME: C22-248-4
DESIGNER: CTIWEYANG
DRAWING BY: CTIWEYANG
DATE: 12/13/2022
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:

4.0

Downstream Analysis Photos


May Creek Rd


Levi Rd

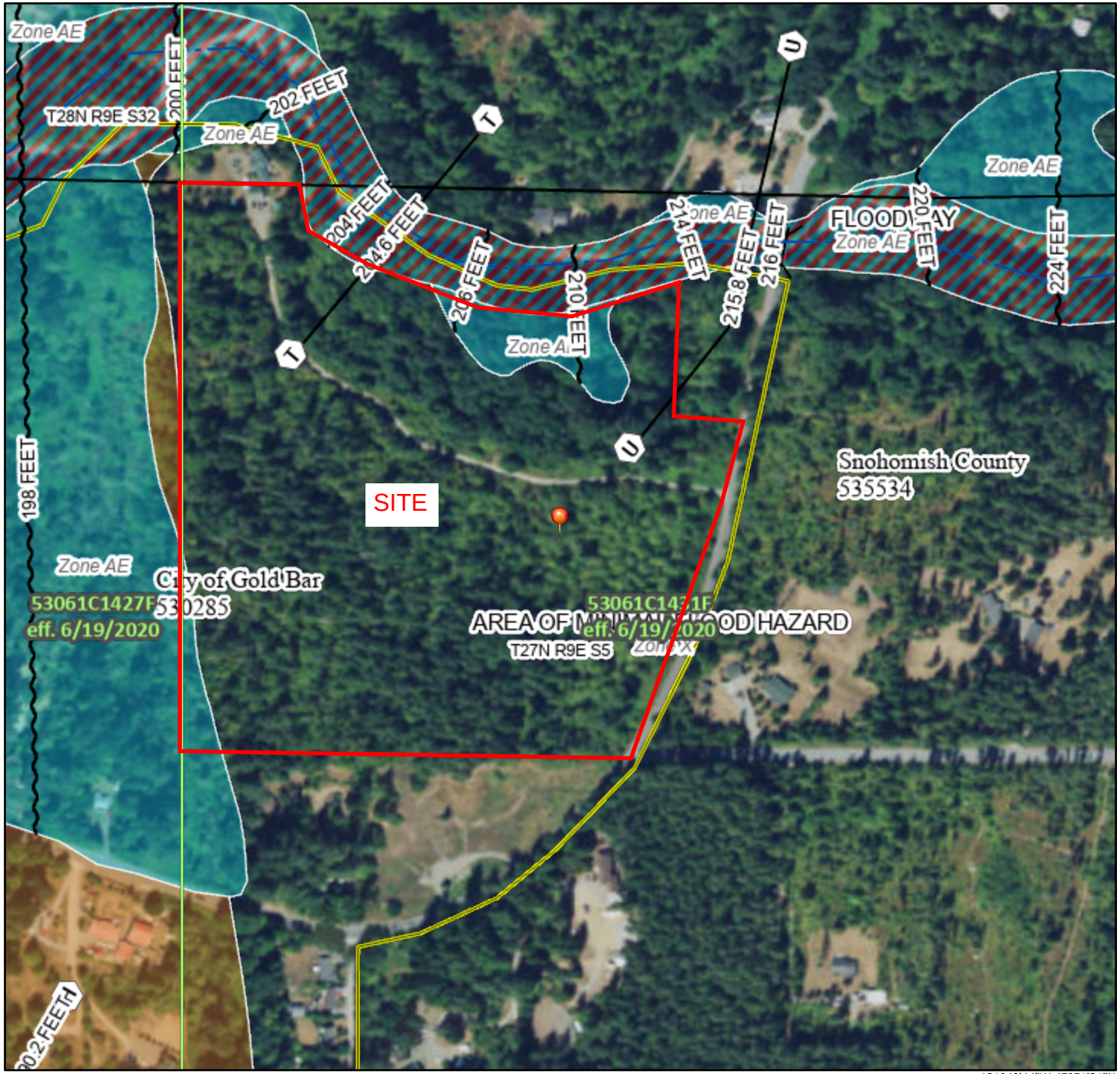

Ley Rd


Ley Rd

National Flood Hazard Layer FIRMette

FEMA

121°41'21"W 47°51'55"N



121°40'44"W 47°51'31"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

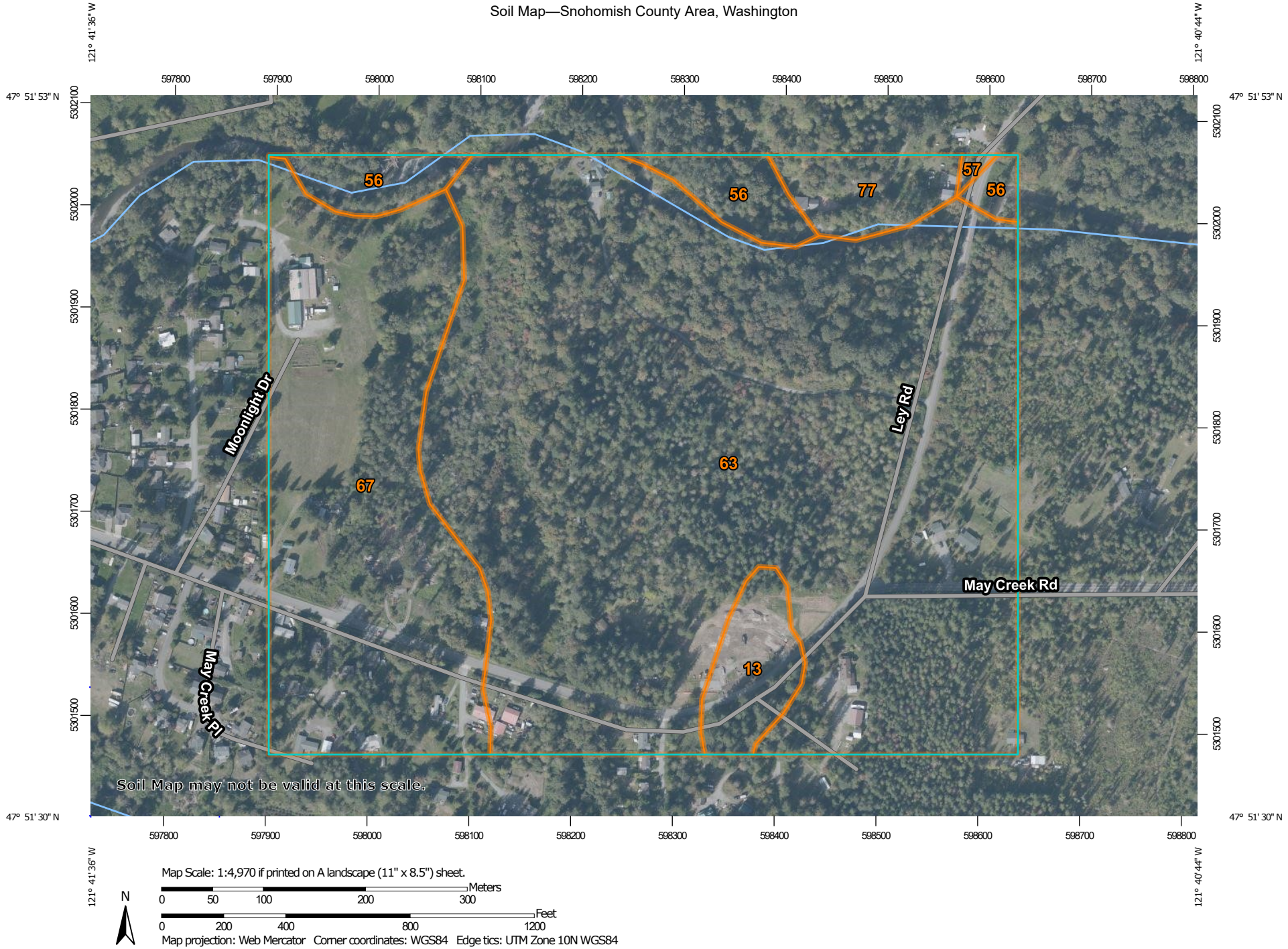
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/19/2022 at 12:15 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Soil Map—Snohomish County Area, Washington



Map Scale: 1:4,970 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Snohomish County Area, Washington
Survey Area Data: Version 24, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 25, 2018—Oct 22, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Custer fine sandy loam	3.1	2.9%
56	Puyallup fine sandy loam	4.7	4.4%
57	Ragnar fine sandy loam, 0 to 8 percent slopes	0.2	0.2%
63	Skykomish gravelly loam, 0 to 30 percent slopes	71.2	66.4%
67	Sultan variant silt loam	25.1	23.5%
77	Tokul-Winston gravelly loams, 25 to 65 percent slopes	2.9	2.7%
Totals for Area of Interest		**107.2**	**100.0%**

SECTION 4: STORMWATER MITIGATION

4.1 Pre-Developed Hydrology/Land Cover

The pre-developed and developed conditions were modeled in WWHM2012 for the purpose of infiltration sizing and flow-duration control. Based on the site location, WWHM2012 used the Everett Gage and a Precipitation Scale factor of 1.6.

As there is a gravel driveway extending to a residence near the northwest corner of the property. The existing impervious area is very minor and way less than 35% therefore the project is considered new development. The pre-developed condition (forested) is applied to all the area of the Onsite Basin.

Total site area is approximately 38.26 AC and total developed project area is approximately 5.14 AC. For visual representation of the following basins, see Figure 5.0, "Predeveloped Hydrology Map" in Appendix C. Predeveloped areas and ground coverages associated with the Onsite Basin are modeled in WWHM2012 are as follows:

Onsite Basin	
GROUND COVER	AREA (acre)
Forested, Flat	5.14
TOTAL	**5.14**

Frontage Basin	
GROUND COVER	AREA (acre)
Forested, Flat	0.276
Pavement, Flat	0.02
TOTAL	**0.296**

4.2 Developed Site Hydrology

In compliance with the 2019 DOE Manual runoff from onsite developed/disturbed surfaces will be collected, treated, and mitigated to the extent feasible

Mitigated flows will be collected and will be infiltrated via bioretention swale within parameters established by 2019 DOE Manual, as modeled in WWHM2012. See Section 4.5 for additional information regarding infiltration sizing.

Onsite Basin	
Basin	AREA (acre)
Onsite Basin 1	1.4
Onsite Basin 2	0.23
Onsite Basin 3	3.51
TOTAL	**5.14**

Frontage Basin	
Basin	AREA (acre)
Frontage Basin 1	0.092
Frontage Basin 2	0.092
Frontage Basin 3	0.092
Frontage Bypass	0.02
TOTAL	**0.296**

Onsite Basin 1:

The Onsite Basin 1 is 1.4 acres in the developed condition and is comprised of Alder Lane Access driveway and sidewalk. This area will be collected and routed through a system proposed Bioretention 1 running along the perimeter of the access driveway. For visual representation of the following developed conditions see Figure 6.0, "Developed Hydrology Map". In the developed condition, the Onsite Basin 1 has been modeled using WWHM2012 with the following areas and ground cover designations:

Onsite Basin 1	
GROUND COVER	AREA (acre)
Sidewalk, Flat	0.35
Pavement, Flat	1.05
TOTAL	**1.4**

Onsite Basin 2:

The Onsite Basin 2 is 0.23 acres in developed condition and is comprised of Road A Access driveway and sidewalk. This area will be collected and routed through a system proposed Bioretention 2 running along the perimeter of the access driveway. For visual representation of the following developed conditions see Figure 6.0, "Developed Hydrology Map". In the developed condition, the Onsite Basin 2 has been modeled using WWHM2012 with the following areas and ground cover designations:

Onsite Basin 2	
GROUND COVER	AREA (acre)
Sidewalk, Flat	0.05
Pavement, Flat	0.18
TOTAL	**0.23**

Onsite Basin 3 (Each Lot):

The Onsite Basin 3 is 0.09 acres in the developed condition and is comprised of Roof area of 0.06 AC and Driveway area of 0.03 AC for each lot.

Total developed roof area is 2.34 AC for all 39 lots. Runoff from roof for each lot will be collected and routed to Drywell. In the developed condition, the onsite and has been modeled using WWHM2012 with the following area and ground cover designations:

Onsite Basin 3A - Roof (Each Lot)	
GROUND COVER	AREA (acre)
Roof, Flat	0.06
39 Lots	X 39
TOTAL	**2.34**

Total developed driveway area is 1.17 AC for all 39 lots. The runoff from driveways for each lot will be dispersed via sheet flow on to 10' vegetation and considered as bypass and has not been modeled via WWHM2012.

Onsite Basin 3B - Driveway (Each Lot) – Sheet Flow (Not Modeled)	
GROUND COVER	AREA (acre)
Driveway, Flat	0.03
39 Lots	X 39
TOTAL	**1.17**

For visual representation of the following developed conditions see Figure 6.0, "Developed Hydrology Map".

Frontage Basin 1,2 and 3:

The Frontage Basin 1,2 and 3 are of 0.092 acres in the developed condition and is comprised of frontage pavement. This area will be collected via proposed Drywells. For visual representation of the following developed conditions see Figure 6.0, "Developed Hydrology Map". In the developed condition, the Frontage Basins have been modeled using WWHM2012 with the following areas and ground cover designations:

Frontage Basin 1,2 and 3	
GROUND COVER	AREA (acre)
Pavement, Flat	0.092
TOTAL	**0.092**

4.3 INFILTRATION FACILITY

Flows within Onsite Basins 1 and 2 will be collected and routed to a Bioretention Swale along the perimeter of the Alder Lane and Road A. Onsite Basin 3 will be collected and routed to the Drywell located at each lot. The facility was designed in compliance with the 2019 DOE Manual to model hydrologic conditions in a continuous runoff model (WWHM2012) where the following evaluation parameters are employed:

"Flow duration is computed by counting the number of flow values that exceed a specified flow level. The specified flow levels used by WWHM in the flow duration analysis are listed below.

1. *50% of the 2-year predevelopment peak flow.*
2. *100% of the 2-year predevelopment peak flow.*
3. *100% of the 50-year predevelopment peak flow.*

There are three criteria by which flow duration values are compared:

1. *If the post development flow duration values exceed any of the predevelopment flow levels between 50% and 100% of the 2-year predevelopment peak flow values (100 Percent Threshold) then the flow duration requirement has not been met.*
2. *If the post development flow duration values exceed any of the predevelopment flow levels between 100% of the 2-year and 100% of the 50-year predevelopment peak flow values more than 10 percent of the time (110 Percent Threshold) then the flow duration requirement has not been met.*
3. *If more than 50 percent of the flow duration levels exceed the 100 percent threshold then the flow duration requirement has not been met."*

Bioretention 01

Stormwater runoff associated with the Onsite Basin 1 will be collected via series of open grate inlets and route to a Bioretention swale along the perimeter of Alder Lane. A sizing summary for the Bioretention Swale as modeled in WWHM2012 is provided below. A detailed sizing report is provided in Appendix C.

Bioretention Swale:

Modeled Dimensions (Internal): 800' X 3.5'
Modeled Bottom Area (Internal): 2,800 sf

Table 4.3.1 – Alder Lane Bioretention: WWHM Modeled Peak Flow Rates

Storm Event	*Predeveloped Rate (cfs)*	*Developed Rate (cfs)*
2-Year	0.1129	0.0
10-Year	0.2999	0.0
50-Year	0.6070	0.0
100-Year	0.7958	0.0

Bioretention 02

Stormwater runoff associated with the Onsite Basin 2 will be collected via series of open grate inlets and route to a Bioretention swale along the perimeter of Road A. A sizing summary for

the Bioretention Swale as modeled in WWHM2012 is provided below. A detailed sizing report is provided in Appendix C.

Bioretention Swale:

Modeled Dimensions (Internal): 250′ X 3.5′
Modeled Bottom Area (Internal): 875 sf

Table 4.3.1 – Onsite Basin: WWHM Modeled Peak Flow Rates

Storm Event	*Predeveloped Rate (cfs)*	*Developed Rate (cfs)*
2-Year	0.01928	0.0
10-Year	0.04979	0.0
50-Year	0.09880	0.0
100-Year	0.12854	0.0

Drywell For Each Lot

Stormwater runoff associated with the Onsite Basin 3A will be collected via yard drain and storm pipe system to drywell for each lot. A sizing summary for the Drywell as modeled in WWHM2012 is provided below. A detailed sizing report is provided in Appendix C.

Drywell:

Modeled Dry well depth: 4′
Modeled Well Diameter: 4′

Drywell For Frontage

Stormwater runoff associated with the Frontage Basin 1, 2 and 3 will be collected via drywell for each basin. A sizing summary for the Drywell as modeled in WWHM2012 is provided below. A detailed sizing report is provided in Appendix C.

Drywell:

Modeled Dry well depth: 5′
Modeled Well Diameter: 4′

4.4 WATER QUALITY

Per Minimum Requirement #6, Bioretention swale will be used for the basic water quality. See detailed sizing report provided in Appendix C.

4.5 LOW IMPACT DESIGN FEASIBILITY

The project design has accounted for Low Impact Design as much as is feasible, given site conditions. LID list #2 requirements were considered for stormwater management in accordance with Minimum Requirement # 5: On-site Stormwater Management. BMP T5.13 will be used as a part of List#2.

According to the geotechnical report, infiltration is feasible via infiltrating bio swale and drywells. BMP T5.13 Post Construction Soil Quality and Depth will also be applied to all disturbed landscape areas.

4.6 WETLAND PROTECTION ANALYSIS

To meet Minimum requirement #8: Wetland Protection for Wetland B & C and Wetland A per Appendix D: Guide Sheet 3-B, an analysis was performed to determine areas for existing onsite and offsite surfaces tributary to Wetland B & c and Wetland A. Criterion 2 was chosen to ensure +/- 15% monthly volumes were maintained post development

Predeveloped Onsite and Offsite areas modeled for Wetland input volumes are summarized in the following table. The Snohomish County Drainage Inventory was utilized to confirm existing tributary flow paths. Developed site flows will no longer be released to Wetland B & C or Wetland A. The property area will be modeled as predeveloped but removed from developed areas.

Wetland B & C:

Predeveloped Conditions Area:

Wetland B & C Basin	
Land Cover	AREA (acre)
Wetland B & C	1.6
Onsite Basin	5.51
TOTAL	**7.11**

Developed Conditions Area:

Wetland B & C Basin	
Land Cover	AREA (acre)
Wetland B & C	1.6
Onsite Basin	Forest Flat -4.31 Roof, Flat – 0.22
TOTAL	**6.13**

See Figure 7.0 – Wetland Tributary Basin Map in Appendix C for a full visual representation of all basins considered in this analysis.

As a result of the analysis, all monthly flows were determined to be within the +/-15% requirement, meeting Criterion 2 for Minimum requirement 8. The result summary is shown below. See Appendix C for the full WWHM results.

Wetlands Fluctuation for POC 1
Average Annual Volume (acft)

Month	Predevel	Mitigated	Percent	Pass/Fail
Jan	2.5040	2.1842	87.2	Pass
Feb	1.7984	1.5673	87.2	Pass
Mar	1.7714	1.5446	87.2	Pass
Apr	1.2208	1.0658	87.3	Pass
May	0.6254	0.5557	88.9	Pass
Jun	0.5647	0.5007	88.7	Pass
Jul	0.1505	0.1388	92.2	Pass
Aug	0.0752	0.0780	103.7	Pass
Sep	0.1584	0.1552	98.0	Pass
Oct	0.6147	0.5628	91.6	Pass
Nov	2.0302	1.7893	88.1	Pass
Dec	2.6651	2.3279	87.3	Pass

Wetland A:

Predeveloped Conditions Area:

Wetland A Basin	
Land Cover	AREA (acre)
Wetland A	8.65
Onsite Basin	7.77
TOTAL	**16.42**

Developed Conditions Area:

Wetland B & C Basin	
Land Cover	AREA (acre)
Wetland B & C	8.65
Onsite Basin	Forest Flat -4.56 Roof, Flat – 0.44
TOTAL	**13.65**

See Figure 7.0 – Wetland Tributary Basin Map in Appendix C for a full visual representation of all basins considered in this analysis.

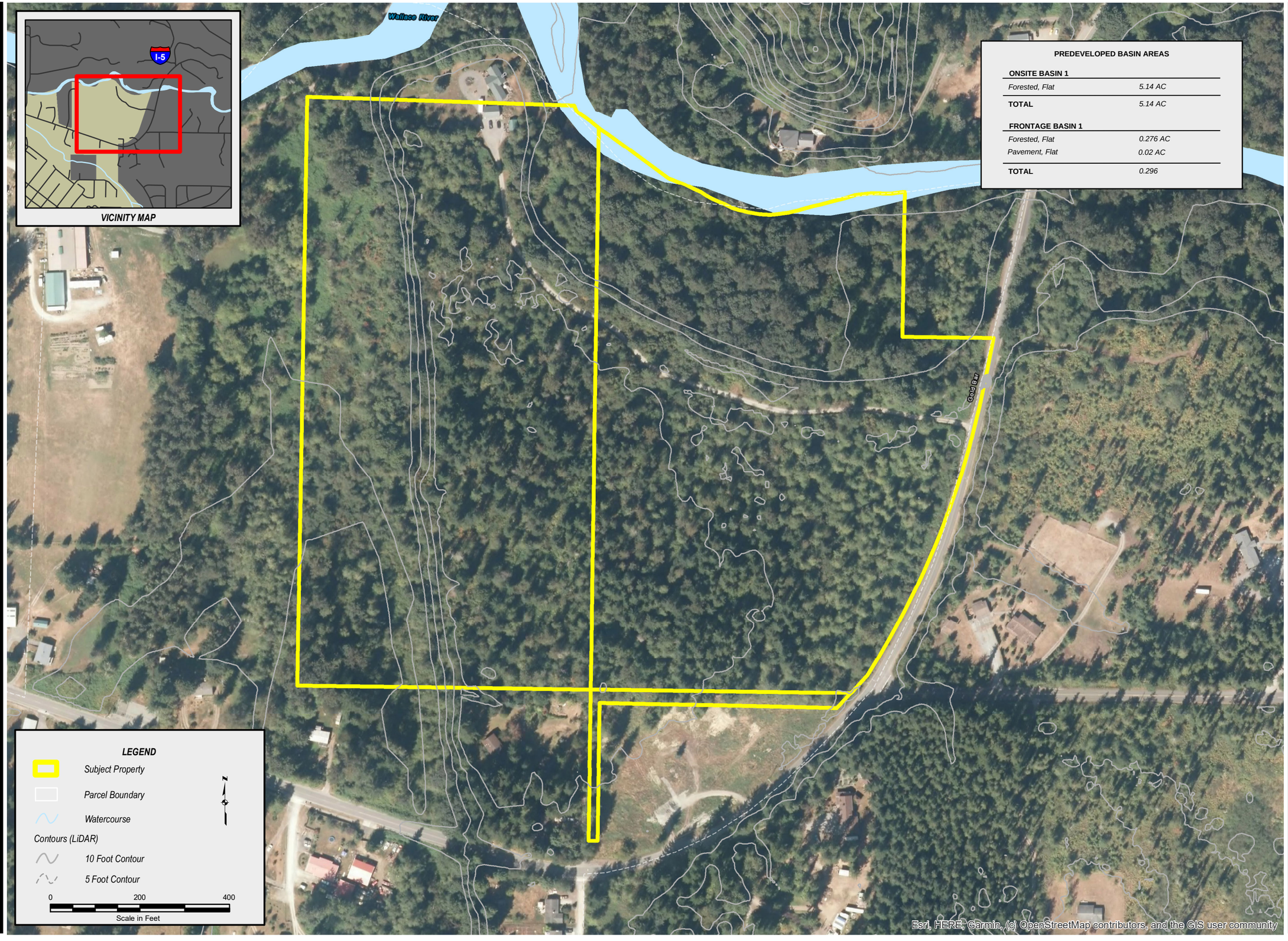
As a result of the analysis, all monthly flows were determined to be within the +/-15% requirement except August, meeting Criterion 2 for Minimum requirement 8. Predeveloped and Mitigated volumes for the month of August are very low, along with consideration for precipitation during the summer, the wetland volume fluctuation is very minimal. The result summary is shown below. See Appendix C for the full WWHM results.

Wetlands Fluctuation for POC 1
Average Annual Volume (acft)

Month	Predevel	Mitigated	Percent	Pass/Fail
Jan	5.7335	4.8925	85.3	Pass
Feb	4.1117	3.5012	85.2	Pass
Mar	4.0426	3.4461	85.2	Pass
Apr	2.7796	2.3755	85.5	Pass
May	1.4175	1.2607	88.9	Pass
Jun	1.2802	1.1331	88.5	Pass
Jul	0.3259	0.3155	96.8	Pass
Aug	0.1372	0.1788	130.3	Fail
Sep	0.3149	0.3534	112.2	Pass
Oct	1.3795	1.3120	95.1	Pass
Nov	4.6639	4.0743	87.4	Pass
Dec	6.0991	5.2208	85.6	Pass

Appendix C: Detention and Water Quality Analysis Data

1. Figure 5.0: Predeveloped Hydrology Map
2. Figure 6.0: Developed Hydrology Map
3. WWHM Output – Alder Lane Bioretention
4. WWHM Output – Road A Bioretention
5. WWHM Output – Drywell
6. WWHM Output – Frontage Drywell
7. Drywell Detail
8. Figure 7.0: Wetland Protection Basin Map
9. WWHM Output – Wetland B and C Protection Analysis
10. WWHM Output – Wetland A Protection Analysis



PREDEVELOPED BASIN AREAS

ONSITE BASIN 1	
Forested, Flat	*5.14 AC*
TOTAL	*5.14 AC*
FRONTAGE BASIN 1	
Forested, Flat	*0.276 AC*
Pavement, Flat	*0.02 AC*
TOTAL	*0.296*

SOURCE INFORMATION

SOURCE AGENCY	DESCRIPTION
SNOHOMISH COUNTY GIS	PARCEL BOUNDARY
SNOHOMISH COUNTY GIS	CONTOURS GENERATED FROM BARE EARTH LIDAR (KING COUNTY). THIS DATA HAS A STATED VERTICAL ACCURACY OF APPROXIMATELY 1 FOOT.

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FALL VIEW, LLC

FALL VIEW

PREDEVELOPED MAP

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME: C22-248-5
DESIGNER: PPATEL
DRAWING BY: PPATEL
DATE: 03/22/2023
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:
5.0

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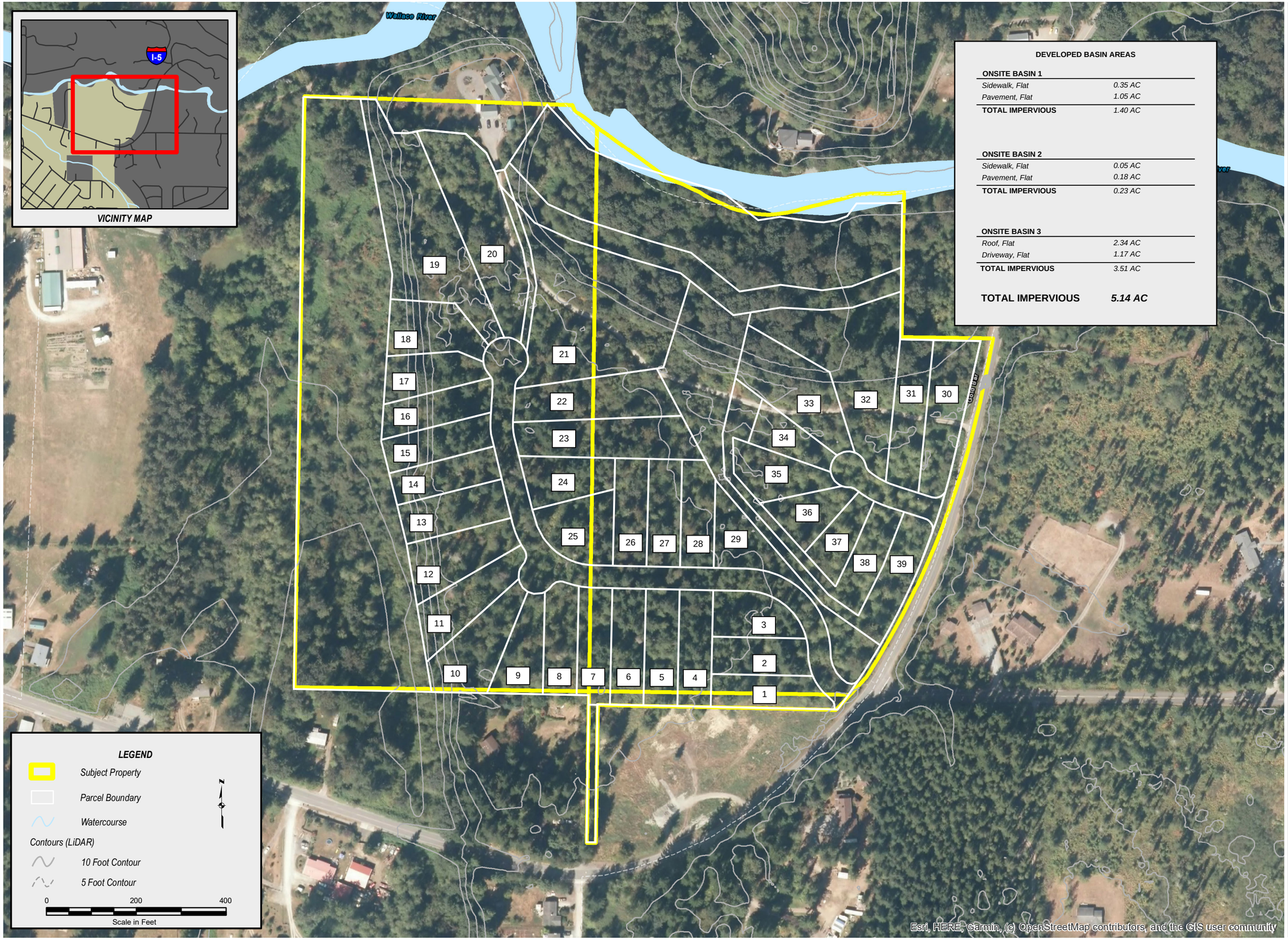
VICINITY MAP



DEVELOPED BASIN AREAS

ONSITE BASIN 1	
Sidewalk, Flat	*0.35 AC*
Pavement, Flat	*1.05 AC*
TOTAL IMPERVIOUS	*1.40 AC*
ONSITE BASIN 2	
Sidewalk, Flat	*0.05 AC*
Pavement, Flat	*0.18 AC*
TOTAL IMPERVIOUS	*0.23 AC*
ONSITE BASIN 3	
Roof, Flat	*2.34 AC*
Driveway, Flat	*1.17 AC*
TOTAL IMPERVIOUS	*3.51 AC*
TOTAL IMPERVIOUS	***5.14 AC***

LEGEND

- *Subject Property*
- *Parcel Boundary*
- *Watercourse*

Contours (LiDAR)

- *10 Foot Contour*
- *5 Foot Contour*

0 200 400

Scale in Feet

N

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

SOURCE INFORMATION

SOURCE AGENCY	DESCRIPTION
SNOHOMISH COUNTY GIS	PARCEL BOUNDARY
SNOHOMISH COUNTY GIS	CONTOURS GENERATED FROM BARE EARTH LIDAR (KING COUNTY). THIS DATA HAS A STATED VERTICAL ACCURACY OF APPROXIMATELY 1 FOOT.

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FALL VIEW, LLC

FALL VIEW

DEVELOPED HYDROLOGY MAP

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME: C22-248
DESIGNER: PPATEL
DRAWING BY: PPATEL
DATE: 03/22/2022
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:

6.0

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3. WWHM OUTPUT – ALDER LANE BIORETENTION

WWHM2012
PROJECT REPORT

Project Name: WWHM Alder Lane Biofiltration
Site Name: FALL VIEW
Site Address: MAY CREEK AND LEY ROAD
City : GOLD BAR
Report Date: 11/29/2022
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.60
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	1.4
Pervious Total	1.4

Impervious Land Use	acre
Impervious Total	0
Basin Total	1.4

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS FLAT	1.05
SIDEWALKS FLAT	0.35
Impervious Total	1.4
Basin Total	1.4

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	Surface retention 1

Name : Bioretention 1
Bottom Length: 800.00 ft.
Bottom Width: 3.50 ft.
Material thickness of first layer: 1
Material type for first layer: SMMWW
Material thickness of second layer: 1
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 3.8
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 392.849
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 392.849
Percent Infiltrated: 100
Total Precip Applied to Facility: 23.747
Total Evap From Facility: 9.415
Underdrain not used
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.
Notch Type: Rectangular
Notch Width: 0.000 ft.
Notch Height: 0.000 ft.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.1758	0.0000	0.0000	0.0000
0.0385	0.1758	0.0005	0.0000	0.0000
0.0769	0.1743	0.0010	0.0000	0.0000
0.1154	0.1729	0.0015	0.0000	0.0000
0.1538	0.1715	0.0021	0.0000	0.0000
0.1923	0.1700	0.0026	0.0000	0.0000
0.2308	0.1686	0.0032	0.0000	0.0000
0.2692	0.1671	0.0037	0.0000	0.0000
0.3077	0.1657	0.0043	0.0000	0.0038
0.3462	0.1643	0.0049	0.0000	0.0060
0.3846	0.1628	0.0055	0.0000	0.0068
0.4231	0.1614	0.0061	0.0000	0.0106
0.4615	0.1600	0.0067	0.0000	0.0110
0.5000	0.1585	0.0074	0.0000	0.0165
0.5385	0.1571	0.0080	0.0000	0.0176
0.5769	0.1556	0.0087	0.0000	0.0238
0.6154	0.1542	0.0093	0.0000	0.0267
0.6538	0.1528	0.0100	0.0000	0.0332
0.6923	0.1513	0.0107	0.0000	0.0387
0.7308	0.1499	0.0114	0.0000	0.0447
0.7692	0.1485	0.0121	0.0000	0.0538
0.8077	0.1470	0.0128	0.0000	0.0588
0.8462	0.1456	0.0136	0.0000	0.0724
0.8846	0.1442	0.0143	0.0000	0.0756
0.9231	0.1427	0.0151	0.0000	0.0941
0.9615	0.1413	0.0158	0.0000	0.0964
1.0000	0.1399	0.0166	0.0000	0.1170
1.0385	0.1384	0.0174	0.0000	0.1238
1.0769	0.1370	0.0182	0.0000	0.1337
1.1154	0.1356	0.0190	0.0000	0.1454
1.1538	0.1341	0.0198	0.0000	0.1581
1.1923	0.1327	0.0206	0.0000	0.1760
1.2308	0.1313	0.0215	0.0000	0.1961
1.2692	0.1298	0.0223	0.0000	0.2109
1.3077	0.1284	0.0232	0.0000	0.2400
1.3462	0.1270	0.0241	0.0000	0.2502
1.3846	0.1255	0.0250	0.0000	0.2901
1.4231	0.1241	0.0258	0.0000	0.2943
1.4615	0.1227	0.0268	0.0000	0.3394
1.5000	0.1213	0.0277	0.0000	0.3511
1.5385	0.1198	0.0286	0.0000	0.3725
1.5769	0.1184	0.0295	0.0000	0.3981
1.6154	0.1170	0.0305	0.0000	0.4207
1.6538	0.1155	0.0314	0.0000	0.4584
1.6923	0.1141	0.0324	0.0000	0.4865
1.7308	0.1127	0.0334	0.0000	0.4920
1.7692	0.1113	0.0344	0.0000	0.4975
1.8077	0.1098	0.0354	0.0000	0.5030
1.8462	0.1084	0.0364	0.0000	0.5085
1.8846	0.1070	0.0374	0.0000	0.5139
1.9231	0.1055	0.0385	0.0000	0.5194
1.9615	0.1041	0.0395	0.0000	0.5194
2.0000	0.1027	0.0406	0.0000	0.5304
2.0385	0.1013	0.0417	0.0000	0.5359

2.0769	0.0998	0.0429	0.0000	0.5414
2.1154	0.0984	0.0440	0.0000	0.5469
2.1538	0.0970	0.0451	0.0000	0.5524
2.1923	0.0956	0.0463	0.0000	0.5579
2.2308	0.0941	0.0475	0.0000	0.5634
2.2692	0.0927	0.0486	0.0000	0.5689
2.3077	0.0913	0.0498	0.0000	0.5744
2.3462	0.0899	0.0510	0.0000	0.5799
2.3846	0.0884	0.0522	0.0000	0.5854
2.4231	0.0870	0.0535	0.0000	0.5909
2.4615	0.0856	0.0547	0.0000	0.5964
2.5000	0.0842	0.0559	0.0000	0.6019
2.5385	0.0827	0.0572	0.0000	0.6074
2.5769	0.0813	0.0585	0.0000	0.6129
2.6154	0.0799	0.0598	0.0000	0.6184
2.6538	0.0785	0.0611	0.0000	0.6239
2.6923	0.0771	0.0624	0.0000	0.6294
2.7308	0.0756	0.0637	0.0000	0.6349
2.7692	0.0742	0.0650	0.0000	0.6404
2.8077	0.0728	0.0663	0.0000	0.6460
2.8462	0.0714	0.0677	0.0000	0.6515
2.8846	0.0700	0.0691	0.0000	0.6570
2.9231	0.0685	0.0704	0.0000	0.6625
2.9615	0.0671	0.0718	0.0000	0.6680
3.0000	0.0657	0.0732	0.0000	0.6735
3.0000	0.0643	0.0732	0.0000	0.6735

Surface retention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.1758	0.0732	0.0000	0.6735	0.0055
3.0385	0.1772	0.0800	0.0000	0.6735	0.0110
3.0769	0.1787	0.0868	0.0000	0.6735	0.0166
3.1154	0.1801	0.0937	0.0000	0.6735	0.0221
3.1538	0.1815	0.1007	0.0000	0.6735	0.0276
3.1923	0.1830	0.1077	0.0000	0.6735	0.0331
3.2308	0.1844	0.1148	0.0000	0.6735	0.0387
3.2692	0.1859	0.1219	0.0000	0.6735	0.0442
3.3077	0.1873	0.1291	0.0000	0.6735	0.0497
3.3462	0.1888	0.1363	0.0000	0.6735	0.0552
3.3846	0.1902	0.1436	0.0000	0.6735	0.0608
3.4231	0.1916	0.1509	0.0000	0.6735	0.0663
3.4615	0.1931	0.1583	0.0000	0.6735	0.0718
3.5000	0.1945	0.1658	0.0000	0.6735	0.0718

Name : Surface retention 1

Element Flows To:

Outlet 1	**Outlet 2**
Bioretention 1	

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:1.4
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:1.4

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.112905
5 year	0.208826
10 year	0.29988
25 year	0.455313
50 year	0.607007
100 year	0.795778

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.223	0.000
1950	0.167	0.000
1951	0.089	0.000
1952	0.094	0.000
1953	0.169	0.000
1954	0.426	0.000
1955	0.174	0.000
1956	0.091	0.000
1957	0.184	0.000
1958	0.560	0.000
1959	0.084	0.000
1960	0.153	0.000
1961	1.125	0.000
1962	0.121	0.000
1963	0.274	0.000
1964	0.140	0.000
1965	0.064	0.000
1966	0.041	0.000
1967	0.116	0.000
1968	0.114	0.000
1969	0.569	0.000

1970	0.070	0.000
1971	0.122	0.000
1972	0.162	0.000
1973	0.103	0.000
1974	0.217	0.000
1975	0.129	0.000
1976	0.080	0.000
1977	0.057	0.000
1978	0.056	0.000
1979	0.306	0.000
1980	0.120	0.000
1981	0.059	0.000
1982	0.090	0.000
1983	0.183	0.000
1984	0.090	0.000
1985	0.115	0.000
1986	0.282	0.000
1987	0.099	0.000
1988	0.116	0.000
1989	0.109	0.000
1990	0.069	0.000
1991	0.073	0.000
1992	0.090	0.000
1993	0.068	0.000
1994	0.058	0.000
1995	0.072	0.000
1996	0.157	0.000
1997	0.345	0.000
1998	0.186	0.000
1999	0.058	0.000
2000	0.077	0.000
2001	0.029	0.000
2002	0.068	0.000
2003	0.054	0.000
2004	0.091	0.000
2005	0.066	0.000
2006	0.226	0.000
2007	0.182	0.000
2008	0.179	0.000
2009	0.061	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.1252	0.0000
2	0.5688	0.0000
3	0.5595	0.0000
4	0.4259	0.0000
5	0.3452	0.0000
6	0.3060	0.0000
7	0.2823	0.0000
8	0.2740	0.0000
9	0.2260	0.0000
10	0.2228	0.0000
11	0.2173	0.0000
12	0.1864	0.0000

13	0.1840	0.0000
14	0.1828	0.0000
15	0.1822	0.0000
16	0.1794	0.0000
17	0.1745	0.0000
18	0.1686	0.0000
19	0.1668	0.0000
20	0.1620	0.0000
21	0.1570	0.0000
22	0.1528	0.0000
23	0.1403	0.0000
24	0.1291	0.0000
25	0.1220	0.0000
26	0.1212	0.0000
27	0.1202	0.0000
28	0.1160	0.0000
29	0.1159	0.0000
30	0.1155	0.0000
31	0.1136	0.0000
32	0.1091	0.0000
33	0.1027	0.0000
34	0.0988	0.0000
35	0.0943	0.0000
36	0.0911	0.0000
37	0.0908	0.0000
38	0.0901	0.0000
39	0.0899	0.0000
40	0.0896	0.0000
41	0.0890	0.0000
42	0.0843	0.0000
43	0.0797	0.0000
44	0.0770	0.0000
45	0.0730	0.0000
46	0.0718	0.0000
47	0.0703	0.0000
48	0.0685	0.0000
49	0.0681	0.0000
50	0.0677	0.0000
51	0.0655	0.0000
52	0.0636	0.0000
53	0.0606	0.0000
54	0.0594	0.0000
55	0.0580	0.0000
56	0.0579	0.0000
57	0.0569	0.0000
58	0.0559	0.0000
59	0.0540	0.0000
60	0.0413	0.0000
61	0.0288	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0565	4718	0	0	Pass
0.0620	3133	0	0	Pass
0.0676	2190	0	0	Pass
0.0731	1562	0	0	Pass
0.0787	1247	0	0	Pass
0.0843	1001	0	0	Pass
0.0898	819	0	0	Pass
0.0954	683	0	0	Pass
0.1009	614	0	0	Pass
0.1065	546	0	0	Pass
0.1121	487	0	0	Pass
0.1176	429	0	0	Pass
0.1232	389	0	0	Pass
0.1287	361	0	0	Pass
0.1343	325	0	0	Pass
0.1399	294	0	0	Pass
0.1454	259	0	0	Pass
0.1510	232	0	0	Pass
0.1566	196	0	0	Pass
0.1621	157	0	0	Pass
0.1677	125	0	0	Pass
0.1732	92	0	0	Pass
0.1788	72	0	0	Pass
0.1844	51	0	0	Pass
0.1899	40	0	0	Pass
0.1955	31	0	0	Pass
0.2010	29	0	0	Pass
0.2066	28	0	0	Pass
0.2122	24	0	0	Pass
0.2177	22	0	0	Pass
0.2233	16	0	0	Pass
0.2288	15	0	0	Pass
0.2344	14	0	0	Pass
0.2400	14	0	0	Pass
0.2455	13	0	0	Pass
0.2511	12	0	0	Pass
0.2567	11	0	0	Pass
0.2622	11	0	0	Pass
0.2678	11	0	0	Pass
0.2733	9	0	0	Pass
0.2789	8	0	0	Pass
0.2845	7	0	0	Pass
0.2900	7	0	0	Pass
0.2956	7	0	0	Pass
0.3011	7	0	0	Pass
0.3067	6	0	0	Pass
0.3123	6	0	0	Pass
0.3178	6	0	0	Pass
0.3234	6	0	0	Pass
0.3289	6	0	0	Pass
0.3345	6	0	0	Pass
0.3401	6	0	0	Pass
0.3456	6	0	0	Pass
0.3512	5	0	0	Pass
0.3568	5	0	0	Pass
0.3623	5	0	0	Pass

0.3679	5	0	0	Pass
0.3734	5	0	0	Pass
0.3790	5	0	0	Pass
0.3846	5	0	0	Pass
0.3901	5	0	0	Pass
0.3957	5	0	0	Pass
0.4012	5	0	0	Pass
0.4068	5	0	0	Pass
0.4124	5	0	0	Pass
0.4179	5	0	0	Pass
0.4235	5	0	0	Pass
0.4290	4	0	0	Pass
0.4346	4	0	0	Pass
0.4402	4	0	0	Pass
0.4457	4	0	0	Pass
0.4513	4	0	0	Pass
0.4569	4	0	0	Pass
0.4624	4	0	0	Pass
0.4680	4	0	0	Pass
0.4735	4	0	0	Pass
0.4791	4	0	0	Pass
0.4847	4	0	0	Pass
0.4902	4	0	0	Pass
0.4958	4	0	0	Pass
0.5013	4	0	0	Pass
0.5069	4	0	0	Pass
0.5125	4	0	0	Pass
0.5180	4	0	0	Pass
0.5236	4	0	0	Pass
0.5292	4	0	0	Pass
0.5347	4	0	0	Pass
0.5403	4	0	0	Pass
0.5458	4	0	0	Pass
0.5514	4	0	0	Pass
0.5570	4	0	0	Pass
0.5625	3	0	0	Pass
0.5681	3	0	0	Pass
0.5736	2	0	0	Pass
0.5792	2	0	0	Pass
0.5848	2	0	0	Pass
0.5903	2	0	0	Pass
0.5959	2	0	0	Pass
0.6014	2	0	0	Pass
0.6070	2	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique		Used for Water Quality	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Percent Water Quality Treated	Comment
retention	1 POC	N	357.49			N	100.00		
Total Volume Infiltrated			357.49	0.00	0.00		100.00	0.00	0% No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run. POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.**Perlnd and Implnd Changes**

No changes have been made.

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4. WWHM OUTPUT – ROAD A BIORETENTION

WWHM2012
PROJECT REPORT

Project Name: WWHM Road A Biofiltration
Site Name: FALL VIEW
Site Address: MAY CREEK AND LEY ROAD
City : GOLD BAR
Report Date: 12/5/2022
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.60
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	.23
Pervious Total	**0.23**

Impervious Land Use	acre
Impervious Total	**0**
Basin Total	**0.23**

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS FLAT	0.18
SIDEWALKS FLAT	0.05
Impervious Total	0.23
Basin Total	0.23

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	Surface retention 1

Name : Bioretention 1
Bottom Length: 250.00 ft.
Bottom Width: 3.50 ft.
Material thickness of first layer: 1
Material type for first layer: SMMWW
Material thickness of second layer: 1
Material type for second layer: Sand
Material thickness of third layer: 1
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 3.8
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 64.432
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 64.432
Percent Infiltrated: 100
Total Precip Applied to Facility: 5.798
Total Evap From Facility: 3.548
Underdrain not used
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0545	0.0000	0.0000	0.0000
0.0385	0.0545	0.0003	0.0000	0.0000
0.0769	0.0541	0.0006	0.0000	0.0000
0.1154	0.0536	0.0010	0.0000	0.0000
0.1538	0.0532	0.0013	0.0000	0.0000
0.1923	0.0528	0.0016	0.0000	0.0000
0.2308	0.0523	0.0020	0.0000	0.0000
0.2692	0.0519	0.0023	0.0000	0.0000
0.3077	0.0514	0.0027	0.0000	0.0012
0.3462	0.0510	0.0031	0.0000	0.0019
0.3846	0.0505	0.0034	0.0000	0.0021
0.4231	0.0501	0.0038	0.0000	0.0033
0.4615	0.0497	0.0042	0.0000	0.0034
0.5000	0.0492	0.0046	0.0000	0.0051
0.5385	0.0488	0.0050	0.0000	0.0055
0.5769	0.0483	0.0054	0.0000	0.0074
0.6154	0.0479	0.0058	0.0000	0.0083
0.6538	0.0475	0.0063	0.0000	0.0103
0.6923	0.0470	0.0067	0.0000	0.0121
0.7308	0.0466	0.0071	0.0000	0.0140
0.7692	0.0461	0.0076	0.0000	0.0168
0.8077	0.0457	0.0080	0.0000	0.0183
0.8462	0.0453	0.0085	0.0000	0.0226
0.8846	0.0448	0.0089	0.0000	0.0236
0.9231	0.0444	0.0094	0.0000	0.0293
0.9615	0.0439	0.0099	0.0000	0.0301
1.0000	0.0435	0.0104	0.0000	0.0365
1.0385	0.0430	0.0109	0.0000	0.0386
1.0769	0.0426	0.0114	0.0000	0.0417
1.1154	0.0422	0.0119	0.0000	0.0453
1.1538	0.0417	0.0124	0.0000	0.0493
1.1923	0.0413	0.0129	0.0000	0.0548
1.2308	0.0408	0.0134	0.0000	0.0611
1.2692	0.0404	0.0139	0.0000	0.0657
1.3077	0.0400	0.0145	0.0000	0.0747
1.3462	0.0395	0.0150	0.0000	0.0779
1.3846	0.0391	0.0156	0.0000	0.0903
1.4231	0.0386	0.0161	0.0000	0.0916
1.4615	0.0382	0.0167	0.0000	0.1057
1.5000	0.0377	0.0173	0.0000	0.1093
1.5385	0.0373	0.0178	0.0000	0.1160
1.5769	0.0369	0.0184	0.0000	0.1239
1.6154	0.0364	0.0190	0.0000	0.1309
1.6538	0.0360	0.0196	0.0000	0.1427
1.6923	0.0355	0.0202	0.0000	0.1514
1.7308	0.0351	0.0208	0.0000	0.1531
1.7692	0.0347	0.0214	0.0000	0.1548
1.8077	0.0342	0.0221	0.0000	0.1565
1.8462	0.0338	0.0227	0.0000	0.1582
1.8846	0.0333	0.0233	0.0000	0.1599
1.9231	0.0329	0.0240	0.0000	0.1615
1.9615	0.0324	0.0246	0.0000	0.1615
2.0000	0.0320	0.0253	0.0000	0.1649
2.0385	0.0316	0.0260	0.0000	0.1666
2.0769	0.0311	0.0267	0.0000	0.1683

2.1154	0.0307	0.0274	0.0000	0.1700
2.1538	0.0302	0.0281	0.0000	0.1717
2.1923	0.0298	0.0288	0.0000	0.1734
2.2308	0.0294	0.0296	0.0000	0.1751
2.2692	0.0289	0.0303	0.0000	0.1768
2.3077	0.0285	0.0310	0.0000	0.1785
2.3462	0.0280	0.0318	0.0000	0.1802
2.3846	0.0276	0.0325	0.0000	0.1818
2.4231	0.0272	0.0333	0.0000	0.1835
2.4615	0.0267	0.0341	0.0000	0.1852
2.5000	0.0263	0.0348	0.0000	0.1869
2.5385	0.0258	0.0356	0.0000	0.1886
2.5769	0.0254	0.0364	0.0000	0.1903
2.6154	0.0249	0.0372	0.0000	0.1920
2.6538	0.0245	0.0380	0.0000	0.1937
2.6923	0.0241	0.0388	0.0000	0.1954
2.7308	0.0236	0.0396	0.0000	0.1971
2.7692	0.0232	0.0405	0.0000	0.1988
2.8077	0.0227	0.0413	0.0000	0.2005
2.8462	0.0223	0.0421	0.0000	0.2021
2.8846	0.0219	0.0430	0.0000	0.2038
2.9231	0.0214	0.0438	0.0000	0.2055
2.9615	0.0210	0.0447	0.0000	0.2072
3.0000	0.0205	0.0456	0.0000	0.2089
3.0000	0.0201	0.0456	0.0000	0.2089

Surface retention 1 Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
3.0000	0.0545	0.0456	0.0000	0.3325	0.0017
3.0385	0.0550	0.0477	0.0000	0.3325	0.0034
3.0769	0.0554	0.0498	0.0000	0.3610	0.0051
3.1154	0.0558	0.0519	0.0000	0.3769	0.0068
3.1538	0.0563	0.0541	0.0000	0.3929	0.0085
3.1923	0.0567	0.0563	0.0000	0.4092	0.0101
3.2308	0.0572	0.0584	0.0000	0.4191	0.0118
3.2692	0.0576	0.0607	0.0000	0.4263	0.0135
3.3077	0.0581	0.0629	0.0000	0.4336	0.0152
3.3462	0.0585	0.0651	0.0000	0.4408	0.0169
3.3846	0.0589	0.0674	0.0000	0.4480	0.0186
3.4231	0.0594	0.0697	0.0000	0.4552	0.0203
3.4615	0.0598	0.0719	0.0000	0.4625	0.0220
3.5000	0.0603	0.0743	0.0000	0.4697	0.0220

Name : Surface retention 1

Element Flows To:

Outlet 1	**Outlet 2**
Bioretention 1	

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.23
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.23

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.019271
5 year	0.03503
10 year	0.049793
25 year	0.074716
50 year	0.098803
100 year	0.128544

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.037	0.000
1950	0.028	0.000
1951	0.016	0.000
1952	0.016	0.000
1953	0.028	0.000
1954	0.071	0.000
1955	0.029	0.000
1956	0.016	0.000
1957	0.031	0.000
1958	0.092	0.000
1959	0.015	0.000
1960	0.026	0.000
1961	0.185	0.000
1962	0.020	0.000
1963	0.045	0.000
1964	0.024	0.000
1965	0.011	0.000
1966	0.008	0.000
1967	0.019	0.000
1968	0.019	0.000
1969	0.094	0.000
1970	0.012	0.000

1971	0.021	0.000
1972	0.027	0.000
1973	0.017	0.000
1974	0.036	0.000
1975	0.022	0.000
1976	0.014	0.000
1977	0.010	0.000
1978	0.010	0.000
1979	0.051	0.000
1980	0.020	0.000
1981	0.010	0.000
1982	0.015	0.000
1983	0.031	0.000
1984	0.015	0.000
1985	0.019	0.000
1986	0.047	0.000
1987	0.017	0.000
1988	0.019	0.000
1989	0.019	0.000
1990	0.012	0.000
1991	0.013	0.000
1992	0.015	0.000
1993	0.012	0.000
1994	0.010	0.000
1995	0.013	0.000
1996	0.026	0.000
1997	0.058	0.000
1998	0.031	0.000
1999	0.011	0.000
2000	0.013	0.000
2001	0.005	0.000
2002	0.012	0.000
2003	0.010	0.000
2004	0.015	0.000
2005	0.012	0.000
2006	0.038	0.000
2007	0.031	0.000
2008	0.030	0.000
2009	0.010	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1851	0.0000
2	0.0939	0.0000
3	0.0923	0.0000
4	0.0708	0.0000
5	0.0577	0.0000
6	0.0508	0.0000
7	0.0468	0.0000
8	0.0454	0.0000
9	0.0382	0.0000
10	0.0369	0.0000
11	0.0365	0.0000
12	0.0310	0.0000
13	0.0309	0.0000

14	0.0307	0.0000
15	0.0305	0.0000
16	0.0301	0.0000
17	0.0294	0.0000
18	0.0281	0.0000
19	0.0279	0.0000
20	0.0269	0.0000
21	0.0264	0.0000
22	0.0255	0.0000
23	0.0238	0.0000
24	0.0218	0.0000
25	0.0210	0.0000
26	0.0203	0.0000
27	0.0202	0.0000
28	0.0195	0.0000
29	0.0195	0.0000
30	0.0194	0.0000
31	0.0193	0.0000
32	0.0187	0.0000
33	0.0172	0.0000
34	0.0168	0.0000
35	0.0161	0.0000
36	0.0161	0.0000
37	0.0155	0.0000
38	0.0154	0.0000
39	0.0153	0.0000
40	0.0151	0.0000
41	0.0150	0.0000
42	0.0147	0.0000
43	0.0135	0.0000
44	0.0132	0.0000
45	0.0127	0.0000
46	0.0126	0.0000
47	0.0124	0.0000
48	0.0122	0.0000
49	0.0118	0.0000
50	0.0116	0.0000
51	0.0115	0.0000
52	0.0114	0.0000
53	0.0106	0.0000
54	0.0104	0.0000
55	0.0104	0.0000
56	0.0101	0.0000
57	0.0097	0.0000
58	0.0097	0.0000
59	0.0095	0.0000
60	0.0075	0.0000
61	0.0051	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs) Predev Mit Percentage Pass/Fail

0.0096	5597	0	0	Pass
0.0105	3758	0	0	Pass
0.0114	2665	0	0	Pass
0.0123	1810	0	0	Pass
0.0132	1368	0	0	Pass
0.0141	1091	0	0	Pass
0.0150	879	0	0	Pass
0.0159	730	0	0	Pass
0.0168	635	0	0	Pass
0.0177	581	0	0	Pass
0.0186	528	0	0	Pass
0.0195	461	0	0	Pass
0.0204	409	0	0	Pass
0.0213	378	0	0	Pass
0.0222	343	0	0	Pass
0.0231	310	0	0	Pass
0.0240	277	0	0	Pass
0.0249	247	0	0	Pass
0.0258	216	0	0	Pass
0.0267	185	0	0	Pass
0.0276	153	0	0	Pass
0.0285	117	0	0	Pass
0.0295	83	0	0	Pass
0.0304	67	0	0	Pass
0.0313	51	0	0	Pass
0.0322	37	0	0	Pass
0.0331	31	0	0	Pass
0.0340	28	0	0	Pass
0.0349	26	0	0	Pass
0.0358	23	0	0	Pass
0.0367	19	0	0	Pass
0.0376	16	0	0	Pass
0.0385	15	0	0	Pass
0.0394	14	0	0	Pass
0.0403	14	0	0	Pass
0.0412	13	0	0	Pass
0.0421	12	0	0	Pass
0.0430	11	0	0	Pass
0.0439	11	0	0	Pass
0.0448	10	0	0	Pass
0.0457	8	0	0	Pass
0.0466	8	0	0	Pass
0.0475	7	0	0	Pass
0.0484	7	0	0	Pass
0.0493	7	0	0	Pass
0.0502	7	0	0	Pass
0.0511	6	0	0	Pass
0.0520	6	0	0	Pass
0.0529	6	0	0	Pass
0.0538	6	0	0	Pass
0.0547	6	0	0	Pass
0.0556	6	0	0	Pass
0.0565	6	0	0	Pass
0.0574	6	0	0	Pass
0.0583	5	0	0	Pass
0.0592	5	0	0	Pass
0.0601	5	0	0	Pass

0.0610	5	0	0	Pass
0.0619	5	0	0	Pass
0.0628	5	0	0	Pass
0.0637	5	0	0	Pass
0.0646	5	0	0	Pass
0.0655	5	0	0	Pass
0.0664	5	0	0	Pass
0.0673	5	0	0	Pass
0.0682	5	0	0	Pass
0.0691	5	0	0	Pass
0.0700	5	0	0	Pass
0.0709	4	0	0	Pass
0.0718	4	0	0	Pass
0.0727	4	0	0	Pass
0.0736	4	0	0	Pass
0.0745	4	0	0	Pass
0.0754	4	0	0	Pass
0.0763	4	0	0	Pass
0.0772	4	0	0	Pass
0.0781	4	0	0	Pass
0.0790	4	0	0	Pass
0.0799	4	0	0	Pass
0.0808	4	0	0	Pass
0.0817	4	0	0	Pass
0.0826	4	0	0	Pass
0.0835	4	0	0	Pass
0.0844	4	0	0	Pass
0.0853	4	0	0	Pass
0.0862	4	0	0	Pass
0.0871	4	0	0	Pass
0.0880	4	0	0	Pass
0.0889	4	0	0	Pass
0.0898	4	0	0	Pass
0.0907	4	0	0	Pass
0.0916	4	0	0	Pass
0.0925	3	0	0	Pass
0.0934	3	0	0	Pass
0.0943	2	0	0	Pass
0.0952	2	0	0	Pass
0.0961	2	0	0	Pass
0.0970	2	0	0	Pass
0.0979	2	0	0	Pass
0.0988	2	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative

Percent	Water Quality	Percent Treatment?	Comment Needs Treatment (ac-ft)	Through Facility (ac-ft)	Volume (ac-ft.)	Volume Infiltration Credit	Volume Infiltrated	Volume Water Quality Treated
retention	1 POC	N	58.63			N	100.00	
Total Volume Infiltrated			58.63	0.00	0.00			
100.00	0.00	0%	No Treat. Credit					

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

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5. WWHM OUTPUT – DRYWELL FOR EACH LOT

WWHM2012
PROJECT REPORT

Project Name: WWHM Drywell
Site Name: FALL VIEW
Site Address: MAY CREEK AND LEY ROAD
City : GOLD BAR
Report Date: 3/21/2023
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
(adjusted) **Precip Scale:** 0.00
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Mod	.06
Pervious Total	0.06

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.06

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Roof
Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROOF TOPS FLAT	0.06
Impervious Total	0.06
Basin Total	0.06

Element Flows To:

Surface	Interflow	Groundwater
MaxWell 1	MaxWell 1	

Name : MaxWell 1
Total Dry Well Depth(ft): 4
Well Diameter (ft): 4
Settling Chamber Total Depth (ft) 4
Settling Chamber Freeboard(ft) 4
Settling Chamber Drain Time(hr) 24 Hours

Element Flows To:

Outlet 1	Outlet 2

MaxWell Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000	0.000	0.000	0.000
1.0000	0.000	0.000	0.000	0.017
2.0000	0.000	0.000	0.000	0.026
3.0000	0.000	0.001	0.000	0.035
4.0000	0.000	0.001	0.000	0.044
5.0000	0.000	0.001	0.000	0.053
6.0000	0.000	0.001	0.000	0.061
7.0000	0.000	1.001	10.00	0.070
8.0000	0.000	0.002	0.000	0.079

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.06
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.06

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.005861
5 year	0.011028
10 year	0.015779
25 year	0.023625
50 year	0.031033
100 year	0.039986

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.011	0.000
1950	0.009	0.000
1951	0.005	0.000
1952	0.005	0.000
1953	0.009	0.000
1954	0.023	0.000
1955	0.008	0.000
1956	0.005	0.000
1957	0.009	0.000
1958	0.031	0.002
1959	0.005	0.000
1960	0.009	0.000
1961	0.053	0.010
1962	0.007	0.000
1963	0.014	0.000
1964	0.008	0.000
1965	0.003	0.000
1966	0.002	0.000
1967	0.006	0.003
1968	0.005	0.000
1969	0.030	0.001
1970	0.003	0.000
1971	0.007	0.000

1972	0.008	0.000
1973	0.005	0.000
1974	0.012	0.000
1975	0.007	0.000
1976	0.004	0.000
1977	0.003	0.000
1978	0.003	0.000
1979	0.015	0.000
1980	0.007	0.000
1981	0.003	0.000
1982	0.004	0.000
1983	0.010	0.000
1984	0.005	0.000
1985	0.006	0.000
1986	0.016	0.000
1987	0.004	0.000
1988	0.007	0.000
1989	0.006	0.000
1990	0.004	0.000
1991	0.003	0.000
1992	0.005	0.000
1993	0.003	0.000
1994	0.003	0.000
1995	0.003	0.000
1996	0.008	0.000
1997	0.017	0.000
1998	0.009	0.000
1999	0.002	0.000
2000	0.004	0.000
2001	0.001	0.000
2002	0.003	0.000
2003	0.002	0.000
2004	0.005	0.000
2005	0.003	0.000
2006	0.013	0.000
2007	0.010	0.000
2008	0.008	0.000
2009	0.003	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0526	0.0098
2	0.0308	0.0032
3	0.0303	0.0015
4	0.0234	0.0006
5	0.0167	0.0003
6	0.0157	0.0000
7	0.0154	0.0000
8	0.0136	0.0000
9	0.0127	0.0000
10	0.0122	0.0000
11	0.0111	0.0000
12	0.0100	0.0000
13	0.0098	0.0000
14	0.0094	0.0000

15	0.0091	0.0000
16	0.0087	0.0000
17	0.0086	0.0000
18	0.0086	0.0000
19	0.0083	0.0000
20	0.0082	0.0000
21	0.0081	0.0000
22	0.0079	0.0000
23	0.0077	0.0000
24	0.0072	0.0000
25	0.0067	0.0000
26	0.0066	0.0000
27	0.0066	0.0000
28	0.0066	0.0000
29	0.0064	0.0000
30	0.0058	0.0000
31	0.0058	0.0000
32	0.0055	0.0000
33	0.0053	0.0000
34	0.0051	0.0000
35	0.0051	0.0000
36	0.0051	0.0000
37	0.0049	0.0000
38	0.0047	0.0000
39	0.0046	0.0000
40	0.0046	0.0000
41	0.0045	0.0000
42	0.0044	0.0000
43	0.0044	0.0000
44	0.0039	0.0000
45	0.0037	0.0000
46	0.0035	0.0000
47	0.0035	0.0000
48	0.0035	0.0000
49	0.0034	0.0000
50	0.0032	0.0000
51	0.0031	0.0000
52	0.0030	0.0000
53	0.0029	0.0000
54	0.0029	0.0000
55	0.0027	0.0000
56	0.0027	0.0000
57	0.0026	0.0000
58	0.0025	0.0000
59	0.0023	0.0000
60	0.0018	0.0000
61	0.0012	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0029	2046	5	0	Pass

0.0032	1457	4	0	Pass
0.0035	1123	3	0	Pass
0.0038	885	3	0	Pass
0.0041	732	2	0	Pass
0.0043	629	2	0	Pass
0.0046	553	2	0	Pass
0.0049	476	2	0	Pass
0.0052	423	2	0	Pass
0.0055	384	2	0	Pass
0.0058	339	2	0	Pass
0.0061	299	1	0	Pass
0.0063	260	1	0	Pass
0.0066	221	1	0	Pass
0.0069	179	1	0	Pass
0.0072	139	1	0	Pass
0.0075	103	1	0	Pass
0.0078	81	1	1	Pass
0.0080	65	1	1	Pass
0.0083	49	1	2	Pass
0.0086	43	1	2	Pass
0.0089	37	1	2	Pass
0.0092	34	1	2	Pass
0.0095	32	1	3	Pass
0.0097	30	1	3	Pass
0.0100	26	0	0	Pass
0.0103	23	0	0	Pass
0.0106	21	0	0	Pass
0.0109	20	0	0	Pass
0.0112	18	0	0	Pass
0.0114	18	0	0	Pass
0.0117	18	0	0	Pass
0.0120	16	0	0	Pass
0.0123	15	0	0	Pass
0.0126	15	0	0	Pass
0.0129	14	0	0	Pass
0.0131	14	0	0	Pass
0.0134	12	0	0	Pass
0.0137	10	0	0	Pass
0.0140	9	0	0	Pass
0.0143	9	0	0	Pass
0.0146	9	0	0	Pass
0.0149	9	0	0	Pass
0.0151	8	0	0	Pass
0.0154	7	0	0	Pass
0.0157	7	0	0	Pass
0.0160	6	0	0	Pass
0.0163	6	0	0	Pass
0.0166	6	0	0	Pass
0.0168	5	0	0	Pass
0.0171	5	0	0	Pass
0.0174	5	0	0	Pass
0.0177	5	0	0	Pass
0.0180	5	0	0	Pass
0.0183	5	0	0	Pass
0.0185	5	0	0	Pass
0.0188	5	0	0	Pass
0.0191	5	0	0	Pass

0.0194	5	0	0	Pass
0.0197	5	0	0	Pass
0.0200	5	0	0	Pass
0.0202	5	0	0	Pass
0.0205	5	0	0	Pass
0.0208	5	0	0	Pass
0.0211	5	0	0	Pass
0.0214	5	0	0	Pass
0.0217	5	0	0	Pass
0.0219	5	0	0	Pass
0.0222	5	0	0	Pass
0.0225	5	0	0	Pass
0.0228	5	0	0	Pass
0.0231	5	0	0	Pass
0.0234	5	0	0	Pass
0.0237	4	0	0	Pass
0.0239	4	0	0	Pass
0.0242	4	0	0	Pass
0.0245	4	0	0	Pass
0.0248	4	0	0	Pass
0.0251	4	0	0	Pass
0.0254	4	0	0	Pass
0.0256	4	0	0	Pass
0.0259	4	0	0	Pass
0.0262	4	0	0	Pass
0.0265	4	0	0	Pass
0.0268	4	0	0	Pass
0.0271	4	0	0	Pass
0.0273	4	0	0	Pass
0.0276	4	0	0	Pass
0.0279	4	0	0	Pass
0.0282	4	0	0	Pass
0.0285	4	0	0	Pass
0.0288	4	0	0	Pass
0.0290	4	0	0	Pass
0.0293	4	0	0	Pass
0.0296	4	0	0	Pass
0.0299	4	0	0	Pass
0.0302	4	0	0	Pass
0.0305	3	0	0	Pass
0.0307	3	0	0	Pass
0.0310	2	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for	Total Volume	Volume	Infiltration	Cumulative Percent	Water Quality	Percent	Comment

	Treatment? Water Quality Treated	Needs Treatment (ac-ft)	Through Facility (ac-ft)	Volume (ac-ft.)	Volume Infiltration Credit	Volume Infiltrated
MaxWell 1 POC	N	14.73			N	100.00
Total Volume Infiltrated		14.73	0.00	0.00		
100.00 0.00	0%	No Treat. Credit				

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

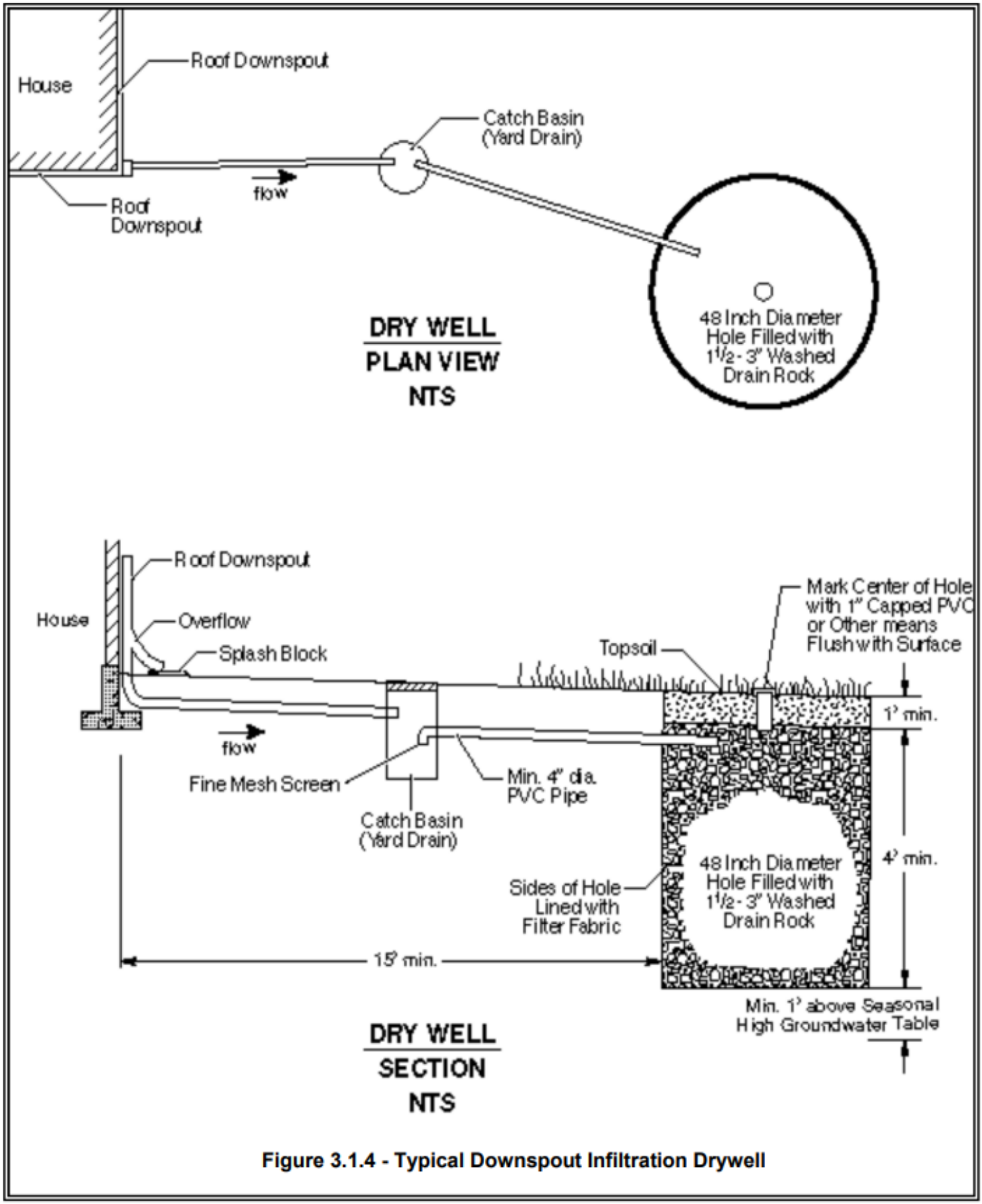

Figure 3.1.4 - Typical Downspout Infiltration Drywell

6. WWHM OUTPUT –DRYWELL FRONTAGE

WWHM2012
PROJECT REPORT

Project Name: WWHM Drywell Frontage
Site Name: FALL VIEW
Site Address: MAY CREEK AND LEY ROAD
City : GOLD BAR
Report Date: 4/7/2023
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.60
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Mod	.092
Pervious Total	0.092

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.092

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS FLAT	0.092
Impervious Total	0.092
Basin Total	0.092

Element Flows To:

Surface	Interflow	Groundwater
MaxWell 3	MaxWell 3	

Name : MaxWell 3
Total Dry Well Depth(ft): 5
Well Diameter (ft): 4
Settling Chamber Total Depth (ft) 5
Settling Chamber Freeboard(ft) 5
Settling Chamber Drain Time(hr) 24 Hours

Element Flows To:

Outlet 1	Outlet 2

MaxWell Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000	0.000	0.000	0.000
1.0000	0.000	0.000	0.000	0.019
2.0000	0.000	0.000	0.000	0.029
3.0000	0.000	0.001	0.000	0.039
4.0000	0.000	0.001	0.000	0.049
5.0000	0.000	0.002	0.000	0.059
6.0000	0.000	0.002	0.000	0.069
7.0000	0.000	0.002	0.000	0.079
8.0000	0.000	1.002	10.00	0.089
9.0000	0.000	0.002	0.000	0.099

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.092
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.092

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.008987
5 year	0.01691
10 year	0.024195
25 year	0.036224
50 year	0.047583
100 year	0.061312

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.017	0.000
1950	0.013	0.000
1951	0.007	0.000
1952	0.008	0.000
1953	0.014	0.000
1954	0.036	0.000
1955	0.013	0.000
1956	0.007	0.000
1957	0.013	0.000
1958	0.047	0.009
1959	0.007	0.000
1960	0.013	0.000
1961	0.081	0.024
1962	0.010	0.000
1963	0.021	0.000
1964	0.012	0.000
1965	0.004	0.000
1966	0.003	0.000
1967	0.010	0.012
1968	0.008	0.000
1969	0.046	0.006

1970	0.005	0.000
1971	0.010	0.000
1972	0.013	0.003
1973	0.008	0.000
1974	0.019	0.000
1975	0.011	0.000
1976	0.007	0.000
1977	0.004	0.000
1978	0.004	0.000
1979	0.024	0.000
1980	0.010	0.000
1981	0.004	0.000
1982	0.007	0.000
1983	0.015	0.000
1984	0.008	0.000
1985	0.009	0.000
1986	0.024	0.000
1987	0.007	0.000
1988	0.010	0.000
1989	0.009	0.000
1990	0.006	0.000
1991	0.005	0.000
1992	0.008	0.000
1993	0.005	0.000
1994	0.005	0.000
1995	0.005	0.000
1996	0.012	0.000
1997	0.026	0.000
1998	0.014	0.000
1999	0.004	0.000
2000	0.006	0.006
2001	0.002	0.000
2002	0.004	0.000
2003	0.004	0.000
2004	0.008	0.004
2005	0.005	0.000
2006	0.019	0.000
2007	0.015	0.000
2008	0.012	0.000
2009	0.005	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0806	0.0235
2	0.0473	0.0124
3	0.0464	0.0095
4	0.0359	0.0063
5	0.0257	0.0059
6	0.0241	0.0043
7	0.0236	0.0025
8	0.0209	0.0002
9	0.0194	0.0001
10	0.0187	0.0000
11	0.0171	0.0000
12	0.0153	0.0000

13	0.0150	0.0000
14	0.0144	0.0000
15	0.0140	0.0000
16	0.0134	0.0000
17	0.0133	0.0000
18	0.0133	0.0000
19	0.0128	0.0000
20	0.0125	0.0000
21	0.0124	0.0000
22	0.0121	0.0000
23	0.0118	0.0000
24	0.0110	0.0000
25	0.0102	0.0000
26	0.0102	0.0000
27	0.0101	0.0000
28	0.0101	0.0000
29	0.0098	0.0000
30	0.0090	0.0000
31	0.0089	0.0000
32	0.0084	0.0000
33	0.0081	0.0000
34	0.0079	0.0000
35	0.0078	0.0000
36	0.0078	0.0000
37	0.0075	0.0000
38	0.0072	0.0000
39	0.0071	0.0000
40	0.0070	0.0000
41	0.0069	0.0000
42	0.0068	0.0000
43	0.0067	0.0000
44	0.0060	0.0000
45	0.0057	0.0000
46	0.0054	0.0000
47	0.0054	0.0000
48	0.0053	0.0000
49	0.0051	0.0000
50	0.0049	0.0000
51	0.0048	0.0000
52	0.0046	0.0000
53	0.0045	0.0000
54	0.0044	0.0000
55	0.0042	0.0000
56	0.0041	0.0000
57	0.0041	0.0000
58	0.0038	0.0000
59	0.0035	0.0000
60	0.0028	0.0000
61	0.0019	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0045	2046	12	0	Pass
0.0049	1457	12	0	Pass
0.0054	1123	10	0	Pass
0.0058	885	8	0	Pass
0.0062	732	7	0	Pass
0.0067	629	6	0	Pass
0.0071	553	6	1	Pass
0.0075	476	6	1	Pass
0.0080	423	6	1	Pass
0.0084	384	6	1	Pass
0.0088	339	6	1	Pass
0.0093	299	6	2	Pass
0.0097	260	5	1	Pass
0.0102	221	5	2	Pass
0.0106	180	4	2	Pass
0.0110	139	4	2	Pass
0.0115	103	4	3	Pass
0.0119	81	4	4	Pass
0.0123	65	4	6	Pass
0.0128	49	3	6	Pass
0.0132	43	3	6	Pass
0.0136	37	3	8	Pass
0.0141	34	3	8	Pass
0.0145	32	3	9	Pass
0.0149	30	3	10	Pass
0.0154	26	3	11	Pass
0.0158	23	1	4	Pass
0.0162	21	1	4	Pass
0.0167	20	1	5	Pass
0.0171	18	1	5	Pass
0.0176	18	1	5	Pass
0.0180	18	1	5	Pass
0.0184	16	1	6	Pass
0.0189	15	1	6	Pass
0.0193	15	1	6	Pass
0.0197	14	1	7	Pass
0.0202	14	1	7	Pass
0.0206	12	1	8	Pass
0.0210	10	1	10	Pass
0.0215	9	1	11	Pass
0.0219	9	1	11	Pass
0.0223	9	1	11	Pass
0.0228	9	1	11	Pass
0.0232	8	1	12	Pass
0.0236	7	0	0	Pass
0.0241	7	0	0	Pass
0.0245	6	0	0	Pass
0.0250	6	0	0	Pass
0.0254	6	0	0	Pass
0.0258	5	0	0	Pass
0.0263	5	0	0	Pass
0.0267	5	0	0	Pass
0.0271	5	0	0	Pass
0.0276	5	0	0	Pass
0.0280	5	0	0	Pass
0.0284	5	0	0	Pass

0.0289	5	0	0	Pass
0.0293	5	0	0	Pass
0.0297	5	0	0	Pass
0.0302	5	0	0	Pass
0.0306	5	0	0	Pass
0.0310	5	0	0	Pass
0.0315	5	0	0	Pass
0.0319	5	0	0	Pass
0.0323	5	0	0	Pass
0.0328	5	0	0	Pass
0.0332	5	0	0	Pass
0.0337	5	0	0	Pass
0.0341	5	0	0	Pass
0.0345	5	0	0	Pass
0.0350	5	0	0	Pass
0.0354	5	0	0	Pass
0.0358	5	0	0	Pass
0.0363	4	0	0	Pass
0.0367	4	0	0	Pass
0.0371	4	0	0	Pass
0.0376	4	0	0	Pass
0.0380	4	0	0	Pass
0.0384	4	0	0	Pass
0.0389	4	0	0	Pass
0.0393	4	0	0	Pass
0.0397	4	0	0	Pass
0.0402	4	0	0	Pass
0.0406	4	0	0	Pass
0.0411	4	0	0	Pass
0.0415	4	0	0	Pass
0.0419	4	0	0	Pass
0.0424	4	0	0	Pass
0.0428	4	0	0	Pass
0.0432	4	0	0	Pass
0.0437	4	0	0	Pass
0.0441	4	0	0	Pass
0.0445	4	0	0	Pass
0.0450	4	0	0	Pass
0.0454	4	0	0	Pass
0.0458	4	0	0	Pass
0.0463	4	0	0	Pass
0.0467	3	0	0	Pass
0.0471	3	0	0	Pass
0.0476	2	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

LID Report

LID Technique	Used for Water Quality Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Infiltrated	Comment
MaxWell 3 POC	N	22.60			N	99.99	
Total Volume Infiltrated		22.60	0.00	0.00		99.99	
0.00	0%	No Treat. Credit					

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

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6. WWHM OUTPUT –DRYWELL FRONTAGE

WWHM2012
PROJECT REPORT

Project Name: WWHM Drywell Frontage
Site Name: FALL VIEW
Site Address: MAY CREEK AND LEY ROAD
City : GOLD BAR
Report Date: 3/21/2023
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.60
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Mod	.092
Pervious Total	0.092

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.092

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
ROADS FLAT	0.092
Impervious Total	0.092
Basin Total	0.092

Element Flows To:

Surface	Interflow	Groundwater
MaxWell 3	MaxWell 3	

Name : MaxWell 3
Total Dry Well Depth(ft): 12
Well Diameter (ft): 4
Settling Chamber Total Depth (ft) 12
Settling Chamber Freeboard(ft) 12
Settling Chamber Drain Time(hr) 24 Hours

Element Flows To:

Outlet 1	Outlet 2

MaxWell Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000	0.000	0.000	0.000
1.0000	0.000	0.000	0.000	0.008
2.0000	0.000	0.000	0.000	0.013
3.0000	0.000	0.001	0.000	0.017
4.0000	0.000	0.001	0.000	0.022
5.0000	0.000	0.002	0.000	0.026
6.0000	0.000	0.002	0.000	0.031
7.0000	0.000	0.002	0.000	0.035
8.0000	0.000	0.003	0.000	0.039
9.0000	0.000	0.003	0.000	0.044
10.000	0.000	0.004	0.000	0.048
11.000	0.000	0.004	0.000	0.053
12.000	0.000	0.004	0.000	0.057
13.000	0.000	0.005	0.000	0.061
14.000	0.000	0.005	0.000	0.066
15.000	0.000	1.005	10.00	0.070

16.000	0.000	0.004	0.000	0.075

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.092
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.092

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.008987
5 year	0.01691
10 year	0.024195
25 year	0.036224
50 year	0.047583
100 year	0.061312

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.017	0.000
1950	0.013	0.000
1951	0.007	0.000
1952	0.008	0.000
1953	0.014	0.000
1954	0.036	0.000
1955	0.013	0.000
1956	0.007	0.000
1957	0.013	0.000
1958	0.047	0.001
1959	0.007	0.000
1960	0.013	0.000
1961	0.081	0.010
1962	0.010	0.000

1963	0.021	0.000
1964	0.012	0.000
1965	0.004	0.000
1966	0.003	0.000
1967	0.010	0.008
1968	0.008	0.000
1969	0.046	0.000
1970	0.005	0.000
1971	0.010	0.000
1972	0.013	0.000
1973	0.008	0.000
1974	0.019	0.000
1975	0.011	0.000
1976	0.007	0.000
1977	0.004	0.000
1978	0.004	0.000
1979	0.024	0.000
1980	0.010	0.000
1981	0.004	0.000
1982	0.007	0.000
1983	0.015	0.000
1984	0.008	0.000
1985	0.009	0.000
1986	0.024	0.000
1987	0.007	0.000
1988	0.010	0.000
1989	0.009	0.000
1990	0.006	0.000
1991	0.005	0.000
1992	0.008	0.000
1993	0.005	0.000
1994	0.005	0.000
1995	0.005	0.000
1996	0.012	0.000
1997	0.026	0.000
1998	0.014	0.000
1999	0.004	0.000
2000	0.006	0.000
2001	0.002	0.000
2002	0.004	0.000
2003	0.004	0.000
2004	0.008	0.000
2005	0.005	0.000
2006	0.019	0.000
2007	0.015	0.000
2008	0.012	0.000
2009	0.005	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0806	0.0103
2	0.0473	0.0084
3	0.0464	0.0008
4	0.0359	0.0000
5	0.0257	0.0000

6	0.0241	0.0000
7	0.0236	0.0000
8	0.0209	0.0000
9	0.0194	0.0000
10	0.0187	0.0000
11	0.0171	0.0000
12	0.0153	0.0000
13	0.0150	0.0000
14	0.0144	0.0000
15	0.0140	0.0000
16	0.0134	0.0000
17	0.0133	0.0000
18	0.0133	0.0000
19	0.0128	0.0000
20	0.0125	0.0000
21	0.0124	0.0000
22	0.0121	0.0000
23	0.0118	0.0000
24	0.0110	0.0000
25	0.0102	0.0000
26	0.0102	0.0000
27	0.0101	0.0000
28	0.0101	0.0000
29	0.0098	0.0000
30	0.0090	0.0000
31	0.0089	0.0000
32	0.0084	0.0000
33	0.0081	0.0000
34	0.0079	0.0000
35	0.0078	0.0000
36	0.0078	0.0000
37	0.0075	0.0000
38	0.0072	0.0000
39	0.0071	0.0000
40	0.0070	0.0000
41	0.0069	0.0000
42	0.0068	0.0000
43	0.0067	0.0000
44	0.0060	0.0000
45	0.0057	0.0000
46	0.0054	0.0000
47	0.0054	0.0000
48	0.0053	0.0000
49	0.0051	0.0000
50	0.0049	0.0000
51	0.0048	0.0000
52	0.0046	0.0000
53	0.0045	0.0000
54	0.0044	0.0000
55	0.0042	0.0000
56	0.0041	0.0000
57	0.0041	0.0000
58	0.0038	0.0000
59	0.0035	0.0000
60	0.0028	0.0000
61	0.0019	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0045	2046	5	0	Pass
0.0049	1457	4	0	Pass
0.0054	1123	3	0	Pass
0.0058	885	3	0	Pass
0.0062	732	3	0	Pass
0.0067	629	3	0	Pass
0.0071	553	3	0	Pass
0.0075	476	2	0	Pass
0.0080	423	2	0	Pass
0.0084	384	2	0	Pass
0.0088	339	1	0	Pass
0.0093	299	1	0	Pass
0.0097	260	1	0	Pass
0.0102	221	1	0	Pass
0.0106	180	0	0	Pass
0.0110	139	0	0	Pass
0.0115	103	0	0	Pass
0.0119	81	0	0	Pass
0.0123	65	0	0	Pass
0.0128	49	0	0	Pass
0.0132	43	0	0	Pass
0.0136	37	0	0	Pass
0.0141	34	0	0	Pass
0.0145	32	0	0	Pass
0.0149	30	0	0	Pass
0.0154	26	0	0	Pass
0.0158	23	0	0	Pass
0.0162	21	0	0	Pass
0.0167	20	0	0	Pass
0.0171	18	0	0	Pass
0.0176	18	0	0	Pass
0.0180	18	0	0	Pass
0.0184	16	0	0	Pass
0.0189	15	0	0	Pass
0.0193	15	0	0	Pass
0.0197	14	0	0	Pass
0.0202	14	0	0	Pass
0.0206	12	0	0	Pass
0.0210	10	0	0	Pass
0.0215	9	0	0	Pass
0.0219	9	0	0	Pass
0.0223	9	0	0	Pass
0.0228	9	0	0	Pass
0.0232	8	0	0	Pass
0.0236	7	0	0	Pass
0.0241	7	0	0	Pass
0.0245	6	0	0	Pass
0.0250	6	0	0	Pass
0.0254	6	0	0	Pass

0.0258	5	0	0	Pass
0.0263	5	0	0	Pass
0.0267	5	0	0	Pass
0.0271	5	0	0	Pass
0.0276	5	0	0	Pass
0.0280	5	0	0	Pass
0.0284	5	0	0	Pass
0.0289	5	0	0	Pass
0.0293	5	0	0	Pass
0.0297	5	0	0	Pass
0.0302	5	0	0	Pass
0.0306	5	0	0	Pass
0.0310	5	0	0	Pass
0.0315	5	0	0	Pass
0.0319	5	0	0	Pass
0.0323	5	0	0	Pass
0.0328	5	0	0	Pass
0.0332	5	0	0	Pass
0.0337	5	0	0	Pass
0.0341	5	0	0	Pass
0.0345	5	0	0	Pass
0.0350	5	0	0	Pass
0.0354	5	0	0	Pass
0.0358	5	0	0	Pass
0.0363	4	0	0	Pass
0.0367	4	0	0	Pass
0.0371	4	0	0	Pass
0.0376	4	0	0	Pass
0.0380	4	0	0	Pass
0.0384	4	0	0	Pass
0.0389	4	0	0	Pass
0.0393	4	0	0	Pass
0.0397	4	0	0	Pass
0.0402	4	0	0	Pass
0.0406	4	0	0	Pass
0.0411	4	0	0	Pass
0.0415	4	0	0	Pass
0.0419	4	0	0	Pass
0.0424	4	0	0	Pass
0.0428	4	0	0	Pass
0.0432	4	0	0	Pass
0.0437	4	0	0	Pass
0.0441	4	0	0	Pass
0.0445	4	0	0	Pass
0.0450	4	0	0	Pass
0.0454	4	0	0	Pass
0.0458	4	0	0	Pass
0.0463	4	0	0	Pass
0.0467	3	0	0	Pass
0.0471	3	0	0	Pass
0.0476	2	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**

Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

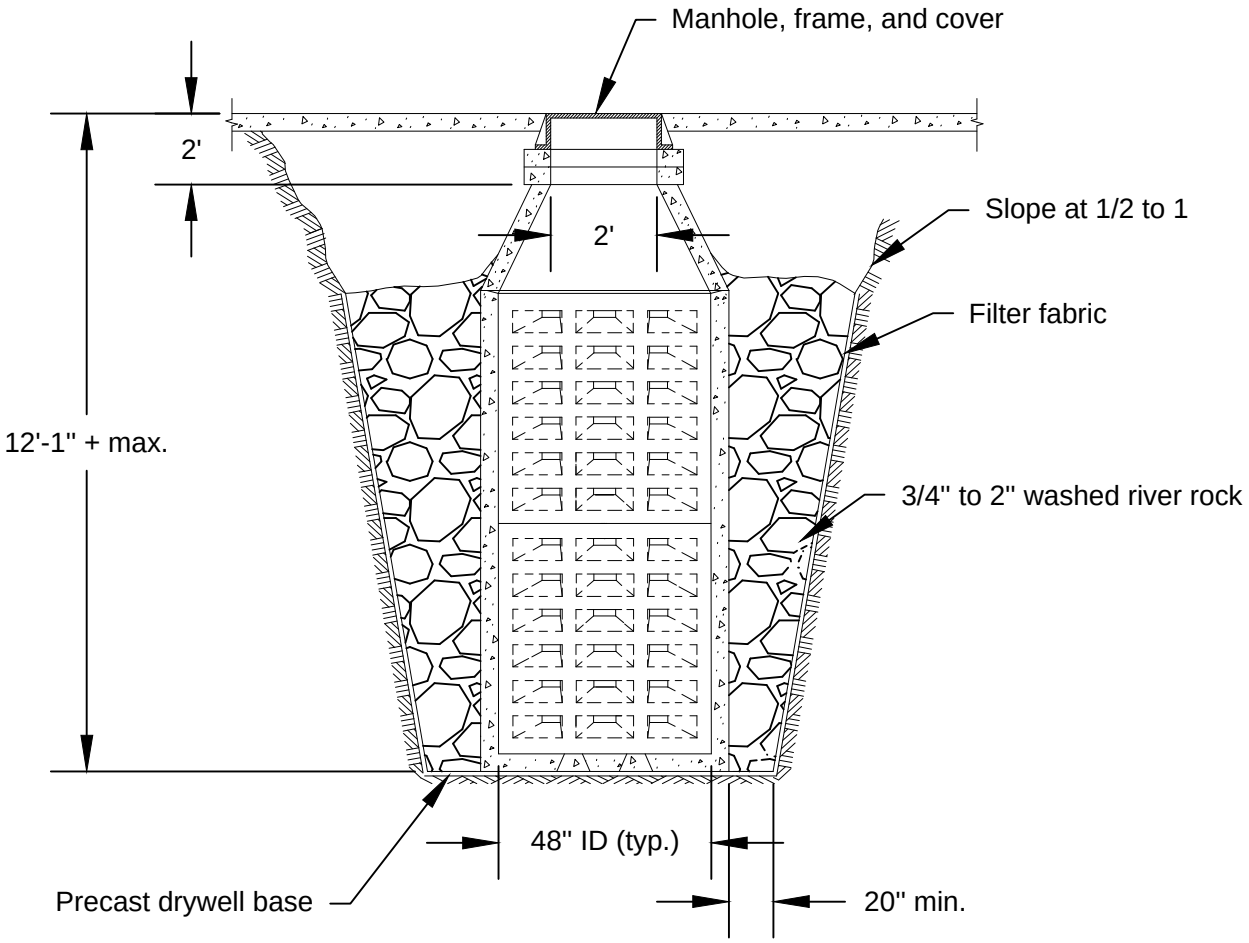
LID Report

LID Technique	Used for Water Quality Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Water Quality Volume	Percent Volume Infiltrated	Comment Treated
MaxWell 3 POC	N	22.62			N	100.00		
Total Volume Infiltrated		22.62	0.00	0.00		100.00	0.00	0% No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.



Notes:

1. Backfill above filter fabric to base of asphalt with crushed surfacing base course.

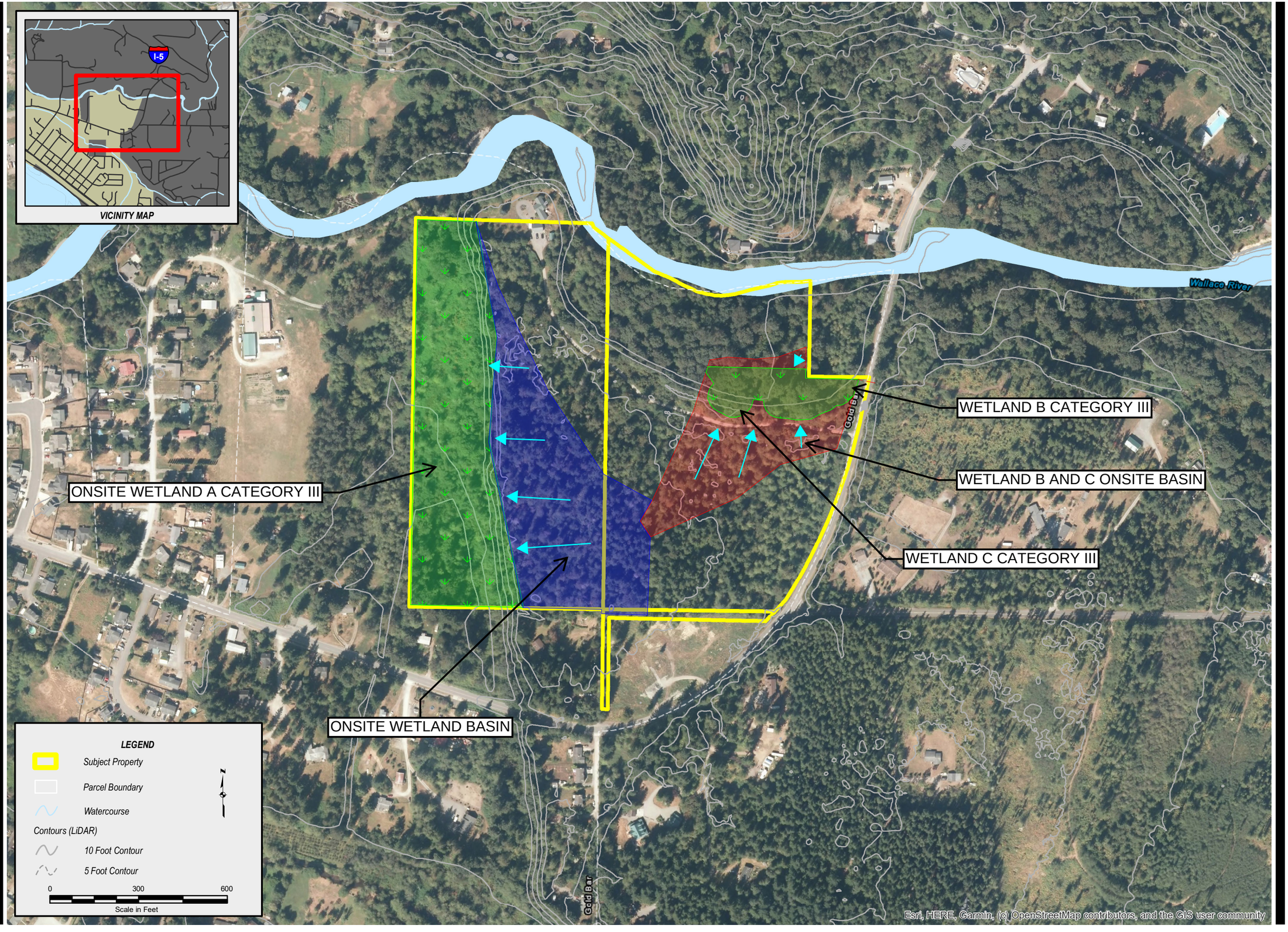
2. Size and spacing of drywells determined by drainage analysis.

NOT TO SCALE

DEPARTMENT OF ECOLOGY
State of Washington

Typical Infiltration Drywell Type 2

Revised June 2018



2022 1021_GIS_TIME.mxd | MOD: 12/6/2022 | ctiweyang

SOURCE INFORMATION

SOURCE AGENCY	DESCRIPTION
SNOHOMISH COUNTY GIS	PARCEL BOUNDARY
SNOHOMISH COUNTY GIS	CONTOURS GENERATED FROM BARE EARTH LIDAR (KING COUNTY). THIS DATA HAS A STATED VERTICAL ACCURACY OF APPROXIMATELY 1 FOOT.

LDC
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Planning
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Kent
1851 Central Pl S, #101
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FALL VIEW, LLC
FALL VIEW
WETLAND TRIBUTARY BASIN MAP

NAD 1983 HARN
STATEPLANE WASHINGTON
NORTH FIPS 4601 FEET

REVISION:
JOB NUMBER: C22-248
DRAWING NAME:C22-248-7
DESIGNER: CTIWEYANG
DRAWING BY:CTIWEYANG
DATE: 12/6/2022
SCALE: AS SHOWN
JURISDICTION: GOLD BAR

FIGURE:
7.0

9.0 WWHM Output – Wetland B and C Protection Analysis

WWHM2012
PROJECT REPORT

Project Name: WWHM Wetland B & C Protection
Site Name: FALL VIEW
Site Address: LEY ROAD AND MAY CREEK
City : GOLD BAR
Report Date: 12/9/2022
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
(adjusted) **Precip Scale:** 0.00
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : WETLAND B & C BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Steep	1.6
Pervious Total	1.6

Impervious Land Use	acre
Impervious Total	0
Basin Total	1.6

Element Flows To:

Surface	Interflow	Groundwater

Name : ONSITE BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	5.36
Pervious Total	5.36

Impervious Land Use	acre
DRIVEWAYS FLAT	0.15
Impervious Total	0.15
Basin Total	5.51

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : WETLAND B & C BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Steep	1.6
Pervious Total	1.6

Impervious Land Use	acre
Impervious Total	0
Basin Total	1.6

Element Flows To:

Surface	Interflow	Groundwater

Name : ONSITE BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	4.31

Pervious Total	4.31

Impervious Land Use	acre
ROOF TOPS FLAT	0.22

Impervious Total	0.22

Basin Total	4.53

Element Flows To:

Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:6.96
Total Impervious Area:0.15

Mitigated Landuse Totals for POC #1
Total Pervious Area:5.91
Total Impervious Area:0.22

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.712482
5 year	1.286125
10 year	1.820664
25 year	2.71907
50 year	3.583971
100 year	4.64849

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.673387
5 year	1.191364
10 year	1.666687
25 year	2.455369
50 year	3.206114
100 year	4.121759

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.305	1.195
1950	1.042	0.974
1951	0.574	0.539
1952	0.624	0.597
1953	1.086	1.021
1954	2.535	2.294
1955	1.032	0.954
1956	0.557	0.511
1957	1.070	0.975
1958	3.674	3.371
1959	0.584	0.568
1960	0.979	0.914
1961	6.256	5.558
1962	0.780	0.729
1963	1.624	1.480
1964	0.870	0.793
1965	0.362	0.326
1966	0.281	0.307
1967	0.755	0.713
1968	0.735	0.691
1969	3.249	2.926
1970	0.461	0.442
1971	0.810	0.762
1972	1.015	0.965
1973	0.692	0.674
1974	1.340	1.232
1975	0.868	0.828
1976	0.480	0.436
1977	0.360	0.344
1978	0.370	0.357
1979	1.803	1.635
1980	0.753	0.701
1981	0.397	0.384
1982	0.545	0.502
1983	1.103	1.000
1984	0.618	0.600
1985	0.701	0.644
1986	1.728	1.584
1987	0.586	0.576
1988	0.829	0.793
1989	0.712	0.678
1990	0.470	0.459
1991	0.433	0.398
1992	0.641	0.623
1993	0.429	0.422
1994	0.361	0.343
1995	0.406	0.369
1996	0.979	0.903
1997	1.977	1.773
1998	1.134	1.056
1999	0.347	0.337
2000	0.490	0.582
2001	0.220	0.231
2002	0.391	0.355
2003	0.312	0.282
2004	0.653	0.642

2005	0.439	0.429
2006	1.422	1.306
2007	1.168	1.083
2008	1.029	0.921
2009	0.390	0.371

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	6.2565	5.5583
2	3.6736	3.3713
3	3.2485	2.9258
4	2.5348	2.2942
5	1.9769	1.7727
6	1.8034	1.6347
7	1.7284	1.5836
8	1.6241	1.4804
9	1.4216	1.3061
10	1.3398	1.2320
11	1.3050	1.1950
12	1.1676	1.0830
13	1.1341	1.0557
14	1.1027	1.0215
15	1.0859	1.0004
16	1.0695	0.9754
17	1.0416	0.9740
18	1.0324	0.9650
19	1.0293	0.9539
20	1.0147	0.9209
21	0.9795	0.9143
22	0.9785	0.9035
23	0.8696	0.8280
24	0.8680	0.7932
25	0.8295	0.7931
26	0.8095	0.7623
27	0.7803	0.7293
28	0.7550	0.7133
29	0.7531	0.7009
30	0.7348	0.6909
31	0.7122	0.6783
32	0.7011	0.6741
33	0.6925	0.6439
34	0.6534	0.6420
35	0.6410	0.6228
36	0.6242	0.6003
37	0.6179	0.5975
38	0.5862	0.5824
39	0.5841	0.5760
40	0.5744	0.5682
41	0.5567	0.5394
42	0.5445	0.5115
43	0.4904	0.5025
44	0.4804	0.4588
45	0.4695	0.4425
46	0.4605	0.4365
47	0.4393	0.4287

48	0.4327	0.4216
49	0.4290	0.3976
50	0.4061	0.3837
51	0.3971	0.3714
52	0.3907	0.3686
53	0.3902	0.3572
54	0.3700	0.3554
55	0.3624	0.3440
56	0.3606	0.3433
57	0.3600	0.3373
58	0.3467	0.3262
59	0.3123	0.3072
60	0.2810	0.2822
61	0.2200	0.2305

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.3562	2635	1647	62	Pass
0.3888	1870	1195	63	Pass
0.4214	1314	958	72	Pass
0.4541	1066	770	72	Pass
0.4867	877	636	72	Pass
0.5193	722	545	75	Pass
0.5519	611	478	78	Pass
0.5845	538	426	79	Pass
0.6171	473	377	79	Pass
0.6497	435	332	76	Pass
0.6823	388	285	73	Pass
0.7149	347	253	72	Pass
0.7475	316	219	69	Pass
0.7801	275	166	60	Pass
0.8127	248	131	52	Pass
0.8453	215	106	49	Pass
0.8779	177	80	45	Pass
0.9105	137	62	45	Pass
0.9431	114	51	44	Pass
0.9757	92	41	44	Pass
1.0083	64	38	59	Pass
1.0409	50	36	72	Pass
1.0735	42	32	76	Pass
1.1061	36	29	80	Pass
1.1387	33	25	75	Pass
1.1713	30	22	73	Pass
1.2039	30	20	66	Pass
1.2365	27	17	62	Pass
1.2691	22	16	72	Pass
1.3017	20	16	80	Pass
1.3343	18	14	77	Pass
1.3669	16	13	81	Pass
1.3995	16	11	68	Pass
1.4322	15	11	73	Pass

1.4648	14	10	71	Pass
1.4974	13	9	69	Pass
1.5300	11	8	72	Pass
1.5626	11	8	72	Pass
1.5952	10	7	70	Pass
1.6278	9	7	77	Pass
1.6604	8	6	75	Pass
1.6930	8	6	75	Pass
1.7256	8	6	75	Pass
1.7582	7	6	85	Pass
1.7908	7	5	71	Pass
1.8234	6	5	83	Pass
1.8560	6	5	83	Pass
1.8886	6	5	83	Pass
1.9212	6	5	83	Pass
1.9538	6	5	83	Pass
1.9864	5	5	100	Pass
2.0190	5	5	100	Pass
2.0516	5	5	100	Pass
2.0842	5	5	100	Pass
2.1168	5	5	100	Pass
2.1494	5	5	100	Pass
2.1820	5	5	100	Pass
2.2146	5	5	100	Pass
2.2472	5	5	100	Pass
2.2798	5	5	100	Pass
2.3124	5	4	80	Pass
2.3450	5	4	80	Pass
2.3776	5	4	80	Pass
2.4103	5	4	80	Pass
2.4429	5	4	80	Pass
2.4755	5	4	80	Pass
2.5081	5	4	80	Pass
2.5407	4	4	100	Pass
2.5733	4	4	100	Pass
2.6059	4	4	100	Pass
2.6385	4	4	100	Pass
2.6711	4	4	100	Pass
2.7037	4	4	100	Pass
2.7363	4	4	100	Pass
2.7689	4	4	100	Pass
2.8015	4	4	100	Pass
2.8341	4	4	100	Pass
2.8667	4	4	100	Pass
2.8993	4	4	100	Pass
2.9319	4	3	75	Pass
2.9645	4	3	75	Pass
2.9971	4	3	75	Pass
3.0297	4	3	75	Pass
3.0623	4	3	75	Pass
3.0949	4	3	75	Pass
3.1275	4	3	75	Pass
3.1601	4	3	75	Pass
3.1927	4	3	75	Pass
3.2253	4	3	75	Pass
3.2579	3	3	100	Pass
3.2905	3	3	100	Pass

3.3231	3	3	100	Pass
3.3557	3	3	100	Pass
3.3884	3	2	66	Pass
3.4210	3	2	66	Pass
3.4536	3	2	66	Pass
3.4862	3	2	66	Pass
3.5188	3	2	66	Pass
3.5514	3	2	66	Pass
3.5840	3	2	66	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Wetlands Input Volume
Average Annual Volume (acft)
Series 1: 501 POC 1 Predeveloped flow
Series 2: 801 POC 1 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	2.5040	2.1842	87.2	Pass
Feb	1.7984	1.5673	87.2	Pass
Mar	1.7714	1.5446	87.2	Pass
Apr	1.2208	1.0658	87.3	Pass
May	0.6254	0.5557	88.9	Pass
Jun	0.5647	0.5007	88.7	Pass
Jul	0.1505	0.1388	92.2	Pass
Aug	0.0752	0.0780	103.7	Pass
Sep	0.1584	0.1552	98.0	Pass
Oct	0.6147	0.5628	91.6	Pass
Nov	2.0302	1.7893	88.1	Pass
Dec	2.6651	2.3279	87.3	Pass

Day	Series 1	Series 2	Percent	Pass/Fail
Jan1	0.0948	0.0828	87.3	Pass
2	0.0850	0.0737	86.8	Pass
3	0.0785	0.0681	86.8	Pass
4	0.0895	0.0788	88.1	Pass
5	0.0902	0.0783	86.8	Pass
6	0.0858	0.0751	87.6	Pass
7	0.1019	0.0893	87.6	Pass
8	0.0967	0.0840	86.9	Pass
9	0.0813	0.0705	86.6	Pass
10	0.0667	0.0577	86.6	Pass
11	0.0666	0.0580	87.0	Pass
12	0.0651	0.0570	87.5	Pass
13	0.0848	0.0749	88.3	Pass
14	0.0918	0.0798	87.0	Pass
15	0.0829	0.0725	87.4	Pass
16	0.0848	0.0738	87.1	Pass
17	0.0946	0.0830	87.7	Pass

18	0.0935	0.0810	86.7	Pass
19	0.0792	0.0684	86.4	Pass
20	0.0686	0.0597	86.9	Pass
21	0.0684	0.0598	87.5	Pass
22	0.0788	0.0691	87.8	Pass
23	0.0910	0.0798	87.6	Pass
24	0.0759	0.0654	86.2	Pass
25	0.0622	0.0539	86.8	Pass
26	0.0544	0.0472	86.8	Pass
27	0.0619	0.0543	87.8	Pass
28	0.0792	0.0695	87.7	Pass
29	0.0823	0.0718	87.2	Pass
30	0.0745	0.0649	87.1	Pass
31	0.0708	0.0614	86.7	Pass
Feb1	0.0646	0.0559	86.5	Pass
2	0.0515	0.0445	86.6	Pass
3	0.0613	0.0537	87.6	Pass
4	0.0606	0.0530	87.5	Pass
5	0.0645	0.0563	87.2	Pass
6	0.0571	0.0497	87.0	Pass
7	0.0692	0.0606	87.5	Pass
8	0.0557	0.0481	86.3	Pass
9	0.0444	0.0386	86.9	Pass
10	0.0464	0.0406	87.5	Pass
11	0.0581	0.0513	88.2	Pass
12	0.0653	0.0572	87.5	Pass
13	0.0623	0.0544	87.3	Pass
14	0.0630	0.0550	87.2	Pass
15	0.0644	0.0564	87.5	Pass
16	0.0733	0.0641	87.5	Pass
17	0.0722	0.0632	87.5	Pass
18	0.0742	0.0642	86.6	Pass
19	0.0602	0.0522	86.7	Pass
20	0.0647	0.0568	87.8	Pass
21	0.0682	0.0592	86.7	Pass
22	0.0614	0.0533	86.8	Pass
23	0.0791	0.0692	87.5	Pass
24	0.0761	0.0664	87.2	Pass
25	0.0711	0.0616	86.6	Pass
26	0.0606	0.0524	86.5	Pass
27	0.0620	0.0542	87.4	Pass
28	0.0616	0.0537	87.2	Pass
29	0.0672	0.0587	87.4	Pass
Mar1	0.0675	0.0589	87.3	Pass
2	0.0696	0.0607	87.2	Pass
3	0.0690	0.0600	86.9	Pass
4	0.0566	0.0492	86.9	Pass
5	0.0440	0.0377	85.7	Pass
6	0.0486	0.0427	88.0	Pass
7	0.0490	0.0430	87.8	Pass
8	0.0715	0.0630	88.1	Pass
9	0.0643	0.0561	87.1	Pass
10	0.0668	0.0582	87.2	Pass
11	0.0618	0.0538	87.1	Pass
12	0.0588	0.0511	86.8	Pass
13	0.0529	0.0460	86.9	Pass
14	0.0546	0.0477	87.4	Pass

15	0.0549	0.0479	87.3	Pass
16	0.0541	0.0473	87.3	Pass
17	0.0571	0.0499	87.4	Pass
18	0.0552	0.0480	87.0	Pass
19	0.0559	0.0487	87.3	Pass
20	0.0454	0.0393	86.5	Pass
21	0.0534	0.0471	88.2	Pass
22	0.0625	0.0548	87.6	Pass
23	0.0603	0.0525	87.0	Pass
24	0.0579	0.0503	86.9	Pass
25	0.0619	0.0541	87.5	Pass
26	0.0533	0.0461	86.5	Pass
27	0.0544	0.0475	87.4	Pass
28	0.0500	0.0435	87.0	Pass
29	0.0455	0.0395	86.8	Pass
30	0.0475	0.0414	87.3	Pass
31	0.0474	0.0414	87.4	Pass
Apr1	0.0458	0.0400	87.2	Pass
2	0.0462	0.0404	87.5	Pass
3	0.0526	0.0461	87.7	Pass
4	0.0533	0.0464	87.1	Pass
5	0.0486	0.0422	86.8	Pass
6	0.0387	0.0335	86.7	Pass
7	0.0477	0.0419	87.9	Pass
8	0.0442	0.0383	86.6	Pass
9	0.0403	0.0351	87.0	Pass
10	0.0453	0.0397	87.7	Pass
11	0.0495	0.0434	87.8	Pass
12	0.0459	0.0401	87.4	Pass
13	0.0398	0.0346	86.7	Pass
14	0.0404	0.0353	87.5	Pass
15	0.0519	0.0455	87.7	Pass
16	0.0465	0.0403	86.8	Pass
17	0.0363	0.0315	86.8	Pass
18	0.0444	0.0392	88.4	Pass
19	0.0473	0.0408	86.3	Pass
20	0.0266	0.0226	85.0	Pass
21	0.0211	0.0185	87.4	Pass
22	0.0349	0.0309	88.7	Pass
23	0.0419	0.0367	87.4	Pass
24	0.0319	0.0277	86.6	Pass
25	0.0232	0.0200	86.5	Pass
26	0.0280	0.0249	88.8	Pass
27	0.0375	0.0329	87.8	Pass
28	0.0308	0.0271	87.8	Pass
29	0.0329	0.0287	87.4	Pass
30	0.0261	0.0227	86.9	Pass
May1	0.0225	0.0198	88.0	Pass
2	0.0253	0.0224	88.3	Pass
3	0.0243	0.0213	87.5	Pass
4	0.0286	0.0252	88.1	Pass
5	0.0231	0.0202	87.3	Pass
6	0.0156	0.0134	85.9	Pass
7	0.0120	0.0106	89.0	Pass
8	0.0115	0.0104	90.5	Pass
9	0.0236	0.0213	90.2	Pass
10	0.0303	0.0271	89.4	Pass

11	0.0240	0.0209	87.1	Pass
12	0.0224	0.0198	88.6	Pass
13	0.0217	0.0193	89.1	Pass
14	0.0239	0.0209	87.5	Pass
15	0.0211	0.0187	88.6	Pass
16	0.0141	0.0124	87.4	Pass
17	0.0133	0.0119	89.8	Pass
18	0.0167	0.0151	90.4	Pass
19	0.0191	0.0171	89.5	Pass
20	0.0169	0.0151	89.2	Pass
21	0.0145	0.0128	88.4	Pass
22	0.0129	0.0115	89.1	Pass
23	0.0140	0.0127	91.2	Pass
24	0.0149	0.0133	89.1	Pass
25	0.0180	0.0162	89.9	Pass
26	0.0216	0.0197	90.9	Pass
27	0.0234	0.0208	88.6	Pass
28	0.0177	0.0160	90.5	Pass
29	0.0201	0.0179	89.4	Pass
30	0.0322	0.0292	90.7	Pass
31	0.0287	0.0251	87.3	Pass
Jun1	0.0269	0.0237	88.1	Pass
2	0.0317	0.0281	88.6	Pass
3	0.0261	0.0228	87.3	Pass
4	0.0193	0.0170	88.0	Pass
5	0.0186	0.0164	88.4	Pass
6	0.0247	0.0218	88.3	Pass
7	0.0222	0.0195	87.8	Pass
8	0.0202	0.0178	88.2	Pass
9	0.0276	0.0251	90.7	Pass
10	0.0322	0.0282	87.8	Pass
11	0.0243	0.0216	88.6	Pass
12	0.0183	0.0161	87.6	Pass
13	0.0100	0.0086	86.2	Pass
14	0.0073	0.0066	90.4	Pass
15	0.0152	0.0138	90.5	Pass
16	0.0234	0.0210	89.5	Pass
17	0.0222	0.0196	88.4	Pass
18	0.0218	0.0192	88.2	Pass
19	0.0139	0.0120	86.3	Pass
20	0.0105	0.0093	88.2	Pass
21	0.0090	0.0083	92.1	Pass
22	0.0102	0.0092	90.7	Pass
23	0.0182	0.0166	91.5	Pass
24	0.0183	0.0164	89.7	Pass
25	0.0164	0.0144	88.1	Pass
26	0.0134	0.0120	89.4	Pass
27	0.0088	0.0079	89.4	Pass
28	0.0139	0.0126	90.3	Pass
29	0.0114	0.0102	89.2	Pass
30	0.0137	0.0125	91.6	Pass
Jul1	0.0204	0.0182	89.1	Pass
2	0.0139	0.0125	89.8	Pass
3	0.0088	0.0078	88.1	Pass
4	0.0087	0.0080	91.9	Pass
5	0.0060	0.0053	88.3	Pass
6	0.0034	0.0031	91.7	Pass

7	0.0060	0.0056	94.0	Pass
8	0.0076	0.0071	93.8	Pass
9	0.0060	0.0053	87.8	Pass
10	0.0036	0.0034	95.2	Pass
11	0.0041	0.0037	89.5	Pass
12	0.0053	0.0050	94.9	Pass
13	0.0056	0.0051	90.8	Pass
14	0.0039	0.0035	88.7	Pass
15	0.0066	0.0066	99.6	Pass
16	0.0061	0.0055	90.3	Pass
17	0.0038	0.0034	87.7	Pass
18	0.0027	0.0027	100.9	Pass
19	0.0025	0.0024	97.2	Pass
20	0.0022	0.0019	86.5	Pass
21	0.0021	0.0021	100.3	Pass
22	0.0010	0.0009	94.0	Pass
23	0.0006	0.0006	102.4	Pass
24	0.0006	0.0007	122.0	Fail
25	0.0012	0.0015	123.6	Fail
26	0.0008	0.0008	111.0	Pass
27	0.0013	0.0014	110.2	Pass
28	0.0014	0.0014	102.5	Pass
29	0.0005	0.0005	91.1	Pass
30	0.0003	0.0004	106.7	Pass
31	0.0002	0.0003	115.2	Pass
Aug1	0.0003	0.0003	127.7	Fail
2	0.0004	0.0005	132.7	Fail
3	0.0004	0.0006	132.7	Fail
4	0.0004	0.0005	126.2	Fail
5	0.0022	0.0026	116.1	Pass
6	0.0030	0.0032	107.1	Pass
7	0.0019	0.0017	89.2	Pass
8	0.0012	0.0012	98.7	Pass
9	0.0006	0.0006	101.9	Pass
10	0.0004	0.0005	116.6	Pass
11	0.0005	0.0007	129.9	Fail
12	0.0011	0.0016	138.6	Fail
13	0.0006	0.0008	133.2	Fail
14	0.0019	0.0024	124.7	Fail
15	0.0023	0.0024	107.6	Pass
16	0.0036	0.0035	95.0	Pass
17	0.0029	0.0030	105.3	Pass
18	0.0042	0.0044	105.8	Pass
19	0.0039	0.0036	92.6	Pass
20	0.0020	0.0019	95.6	Pass
21	0.0026	0.0031	118.3	Pass
22	0.0037	0.0043	115.4	Pass
23	0.0056	0.0055	98.4	Pass
24	0.0046	0.0044	95.4	Pass
25	0.0072	0.0070	98.0	Pass
26	0.0073	0.0071	96.1	Pass
27	0.0037	0.0036	97.2	Pass
28	0.0024	0.0024	100.7	Pass
29	0.0019	0.0020	105.2	Pass
30	0.0021	0.0024	112.5	Pass
31	0.0028	0.0032	114.4	Pass
Sep1	0.0035	0.0033	95.6	Pass

2	0.0027	0.0028	100.8	Pass
3	0.0034	0.0033	97.9	Pass
4	0.0034	0.0033	97.7	Pass
5	0.0035	0.0038	109.8	Pass
6	0.0019	0.0021	109.3	Pass
7	0.0021	0.0025	116.1	Pass
8	0.0053	0.0054	101.3	Pass
9	0.0050	0.0053	105.0	Pass
10	0.0068	0.0067	98.7	Pass
11	0.0037	0.0033	88.2	Pass
12	0.0031	0.0031	100.6	Pass
13	0.0047	0.0048	101.9	Pass
14	0.0057	0.0055	96.7	Pass
15	0.0044	0.0047	107.3	Pass
16	0.0095	0.0095	99.7	Pass
17	0.0063	0.0058	91.8	Pass
18	0.0042	0.0042	101.9	Pass
19	0.0034	0.0037	108.5	Pass
20	0.0063	0.0058	92.5	Pass
21	0.0111	0.0106	95.2	Pass
22	0.0169	0.0153	90.7	Pass
23	0.0122	0.0110	90.1	Pass
24	0.0061	0.0056	92.3	Pass
25	0.0038	0.0038	100.9	Pass
26	0.0032	0.0033	102.7	Pass
27	0.0030	0.0031	104.2	Pass
28	0.0052	0.0050	97.1	Pass
29	0.0053	0.0054	101.7	Pass
30	0.0075	0.0073	97.5	Pass
Oct1	0.0088	0.0081	92.5	Pass
2	0.0060	0.0059	98.9	Pass
3	0.0062	0.0065	104.3	Pass
4	0.0069	0.0068	98.9	Pass
5	0.0197	0.0183	92.9	Pass
6	0.0159	0.0144	90.5	Pass
7	0.0132	0.0126	95.9	Pass
8	0.0111	0.0105	94.5	Pass
9	0.0117	0.0111	94.4	Pass
10	0.0147	0.0136	92.4	Pass
11	0.0106	0.0098	92.0	Pass
12	0.0095	0.0091	95.3	Pass
13	0.0099	0.0095	95.4	Pass
14	0.0095	0.0088	92.9	Pass
15	0.0116	0.0111	95.9	Pass
16	0.0202	0.0189	93.7	Pass
17	0.0254	0.0228	89.6	Pass
18	0.0241	0.0223	92.4	Pass
19	0.0351	0.0321	91.5	Pass
20	0.0315	0.0284	90.0	Pass
21	0.0282	0.0254	90.0	Pass
22	0.0299	0.0268	89.6	Pass
23	0.0284	0.0258	90.9	Pass
24	0.0307	0.0276	90.1	Pass
25	0.0321	0.0294	91.5	Pass
26	0.0340	0.0306	90.2	Pass
27	0.0376	0.0339	90.2	Pass
28	0.0291	0.0257	88.6	Pass

29	0.0301	0.0270	89.5	Pass
30	0.0256	0.0228	89.2	Pass
31	0.0298	0.0271	90.7	Pass
Nov1	0.0405	0.0359	88.7	Pass
2	0.0392	0.0354	90.3	Pass
3	0.0535	0.0480	89.6	Pass
4	0.0434	0.0384	88.5	Pass
5	0.0419	0.0371	88.5	Pass
6	0.0408	0.0361	88.7	Pass
7	0.0390	0.0347	88.9	Pass
8	0.0451	0.0403	89.3	Pass
9	0.0502	0.0452	89.9	Pass
10	0.0587	0.0524	89.3	Pass
11	0.0770	0.0685	88.9	Pass
12	0.0774	0.0683	88.2	Pass
13	0.0720	0.0630	87.4	Pass
14	0.0660	0.0580	87.9	Pass
15	0.0678	0.0596	87.8	Pass
16	0.0665	0.0587	88.2	Pass
17	0.0681	0.0599	88.0	Pass
18	0.0823	0.0733	89.0	Pass
19	0.1068	0.0941	88.1	Pass
20	0.0971	0.0844	86.9	Pass
21	0.0713	0.0618	86.7	Pass
22	0.0714	0.0627	87.9	Pass
23	0.1004	0.0886	88.3	Pass
24	0.1130	0.0994	88.0	Pass
25	0.0866	0.0748	86.4	Pass
26	0.0847	0.0740	87.4	Pass
27	0.0718	0.0624	86.8	Pass
28	0.0791	0.0695	87.8	Pass
29	0.0886	0.0780	88.0	Pass
30	0.0934	0.0820	87.8	Pass
Dec1	0.0905	0.0792	87.5	Pass
2	0.1082	0.0950	87.9	Pass
3	0.1024	0.0894	87.3	Pass
4	0.0959	0.0841	87.6	Pass
5	0.0982	0.0855	87.1	Pass
6	0.0767	0.0665	86.6	Pass
7	0.0717	0.0624	87.1	Pass
8	0.0716	0.0629	87.9	Pass
9	0.0805	0.0707	87.9	Pass
10	0.0882	0.0774	87.7	Pass
11	0.0961	0.0843	87.7	Pass
12	0.0894	0.0776	86.8	Pass
13	0.0859	0.0752	87.6	Pass
14	0.1129	0.0991	87.8	Pass
15	0.1016	0.0884	87.0	Pass
16	0.0919	0.0796	86.6	Pass
17	0.0759	0.0658	86.7	Pass
18	0.0775	0.0679	87.5	Pass
19	0.0853	0.0746	87.4	Pass
20	0.0849	0.0741	87.3	Pass
21	0.0767	0.0668	87.0	Pass
22	0.0768	0.0672	87.6	Pass
23	0.0840	0.0735	87.6	Pass
24	0.0864	0.0754	87.3	Pass

25	**0.0805**	**0.0702**	**87.2**	**Pass**
26	**0.0869**	**0.0760**	**87.4**	**Pass**
27	**0.0713**	**0.0619**	**86.8**	**Pass**
28	**0.0764**	**0.0669**	**87.6**	**Pass**
29	**0.0770**	**0.0670**	**87.0**	**Pass**
30	**0.0704**	**0.0615**	**87.3**	**Pass**
31	**0.0933**	**0.0821**	**87.9**	**Pass**

LID Report

LID Technique	Used for Water Quality?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

10.0 WWHM Output – Wetland A Protection Analysis

WWHM2012
PROJECT REPORT

Project Name: WWHM Wetland A Protection Analysis
Site Name: FALL VIEW
Site Address: LEY ROAD AND MAY CREEK
City : GOLD BAR
Report Date: 12/12/2022
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
(adjusted) **Precip Scale:** 0.00
Version Date: 2021/08/18
Version : 4.2.18

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : WETLAND A BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Steep	8.65
Pervious Total	8.65

Impervious Land Use	acre
Impervious Total	0
Basin Total	8.65

Element Flows To:

Surface	Interflow	Groundwater

Name : ONSITE BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	7.77
Pervious Total	7.77

Impervious Land Use	acre
Impervious Total	0
Basin Total	7.77

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : WETLAND A BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Steep	8.65
Pervious Total	8.65

Impervious Land Use	acre
Impervious Total	0
Basin Total	8.65

Element Flows To:

Surface	Interflow	Groundwater

Name : ONSITE UNDISTURBED BASIN
Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Flat	4.56
Pervious Total	4.56

Impervious Land Use	acre
ROOF TOPS FLAT	0.44
Impervious Total	0.44
Basin Total	5

Element Flows To:

Surface	Interflow	Groundwater

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:16.42
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:13.21
Total Impervious Area:0.44

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	1.712324
5 year	3.148923
10 year	4.476877
25 year	6.687422
50 year	8.793842
100 year	11.362083

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	1.720976
5 year	3.049583
10 year	4.243736
25 year	6.186134
50 year	8.000146
100 year	10.176564

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated

1949	3.017	2.866
1950	2.438	2.417
1951	1.390	1.385
1952	1.435	1.496
1953	2.599	2.602
1954	6.339	5.858
1955	2.333	2.262
1956	1.361	1.298
1957	2.486	2.340
1958	10.025	9.480
1959	1.380	1.479
1960	2.408	2.368
1961	15.091	13.427
1962	1.920	1.893
1963	3.913	3.674
1964	2.244	2.103
1965	0.869	0.794
1966	0.617	0.749
1967	1.799	1.818
1968	1.772	1.771
1969	7.743	7.091
1970	1.023	1.080
1971	2.014	2.013
1972	2.201	2.281
1973	1.508	1.641
1974	3.313	3.161
1975	2.080	2.141
1976	1.206	1.129
1977	0.776	0.813
1978	0.816	0.871
1979	4.412	4.092
1980	1.812	1.774
1981	0.891	0.950
1982	1.296	1.248
1983	2.790	2.589
1984	1.402	1.509
1985	1.710	1.625
1986	4.292	4.066
1987	1.361	1.461
1988	2.143	2.195
1989	1.642	1.693
1990	1.030	1.128
1991	1.009	0.969
1992	1.529	1.633
1993	1.049	1.061
1994	0.826	0.852
1995	1.004	0.909
1996	2.419	2.327
1997	4.825	4.378
1998	2.703	2.773
1999	0.801	0.839
2000	1.083	1.628
2001	0.444	0.573
2002	0.952	0.874
2003	0.757	0.697
2004	1.637	1.772
2005	1.061	1.140

2006	3.637	3.458
2007	2.950	2.859
2008	2.576	2.326
2009	0.995	0.962

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	15.0912	13.4272
2	10.0249	9.4798
3	7.7427	7.0915
4	6.3390	5.8578
5	4.8255	4.3775
6	4.4115	4.0918
7	4.2924	4.0655
8	3.9134	3.6739
9	3.6367	3.4579
10	3.3129	3.1611
11	3.0172	2.8657
12	2.9496	2.8592
13	2.7896	2.7727
14	2.7030	2.6020
15	2.5986	2.5891
16	2.5761	2.4172
17	2.4862	2.3684
18	2.4381	2.3398
19	2.4187	2.3268
20	2.4081	2.3259
21	2.3329	2.2809
22	2.2440	2.2616
23	2.2011	2.1951
24	2.1427	2.1410
25	2.0801	2.1027
26	2.0137	2.0126
27	1.9201	1.8929
28	1.8116	1.8177
29	1.7988	1.7743
30	1.7715	1.7717
31	1.7100	1.7710
32	1.6417	1.6930
33	1.6370	1.6410
34	1.5292	1.6330
35	1.5078	1.6277
36	1.4352	1.6247
37	1.4020	1.5088
38	1.3902	1.4959
39	1.3799	1.4792
40	1.3614	1.4607
41	1.3614	1.3854
42	1.2955	1.2979
43	1.2061	1.2483
44	1.0832	1.1400
45	1.0607	1.1291
46	1.0487	1.1279
47	1.0295	1.0802
48	1.0233	1.0605