Permit No: _____

CHELAN COUNTY

DEPARTMENT OF COMMUNITY DEVELOPMENT
316 WASHINGTON STREET, SUITE 301, WENATCHEE, WA 98801
TELEPHONE: (509) 667-6225 FAX: (509) 667-6475

FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

Parcel Address: 10430 Motteler Road City/Zip: Leavenworth
Parcel Number (APN): 24-18-06-220-200
Abbreviated Legal Description: _____
Property Owner(s): Chelan County Easement/Right-of-Way
Mailing Address: _____ City/Zip: _____
E-mail: n/a Phone: _____

Applicant (if applicable): Chelan County Natural Resources Dept. - Allison Lutes/Habitat Program Manager
Mailing Address: 401 Wenatchee Ave, Suite 201 City/Zip: Wenatchee, 98801
Email: allison.lutes@co.chelan.wa.us Phone: 509-679-7095

Description of Proposed Project (Check all that apply):

☐ New Structure ☐ Addition ☐ Remodel/Alteration/Repair ☐ Propane Tanks ☐ Placement of Fill Material
☐ Mobile/Manufactured Home ☐ Excavation (not related to a structural development) ☐ Watercourse Alteration
☐ Grading ☐ Mining ☐ Drilling ☐ Dredging ☐ Drainage improvement (including culvert work)
☒ Roadway or Bridge Construction ☐ Individual Water or Sewer System ☐ Installation or Alteration of Utilities
☐ Routine Maintenance ☐ Other (not listed above): _____

Support Documentation Submitted (Check all that apply):

☒ Site Plan ☐ Stormwater Drainage Plan (CCC Chapter 13.16) ☒ "No-Rise" Certification (within floodway)
☐ Pre-Construction Elevation Certificate ☐ Flood Proofing Certificate (commercial projects)
☐ Final Elevation Certificate

Occupancy/Use of Involved Structure or Parcel (If applicable):

☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Not Applicable

If the development involves an existing structure, what is the initial date of construction for that structure?
Date of Construction: _____

Do you have an existing FEMA elevation certificate for this structure? ☐ Yes ☐ No
Please note that a preconstruction elevation certificate will be required as a condition of this permit for any development action that involves an improvement or repair to an existing structure in the 100-year floodplain.

FOR OFFICIAL USE ONLY

Received By & Date:	Plans: File / Large	Intake Fees Paid:	Final Fees Paid:

Permit No:_____

Narrative – Description of proposed project:

This project will replace a pipe arch culvert (10.9ft. span by 6.9ft. rise) with a single lane steel bridge 14-foot wide with a span of 54 feet. The existing culvert was assessed by Washington Department of Fish and Wildlife as a fish passage barrier due to slope of 1.25%. The culvert is located within a 60-foot Chelan County Easement on Motteler Road. By replacing this culvert with a bridge, this project will address the current fish passage barrier while improving the instream habitat in this section of Chumstick Creek.

I (We) certify (or declare) under penalty of perjury under the laws of the State of Washington that the foregoing is true, correct and complete to the best of my (our) knowledge. I (We) certify (or declare) that I (We) am the owner of the property or have been given authorization from the property owner to obtain this permit. I (We) further agree to comply with all applicable Chelan County Codes.

Owner/Applicant Signature: Allison Lutes **Date:** 03/09/2021

Permit No:_____

FOR INTERNAL USE ONLY

FLOOD HAZARD DESIGN INFORMATION
(TO BE COMPLETED BY FLOODPLAIN ADMINISTRATOR OR DESIGNEE)

1. List the source of flooding for the project area:

2. Flood Risk Zone Information: Subject property is located in:
☐ FEMA Mapped 100-Year Floodplain (Zone A, A 1-30, AE, AH, AO) ☐ FEMA Mapped Floodway

3a. Panel #:	3b. Zone:	3c. BFE:	3d. Datum ☐ NGVD 29 ☐ NAVD 88

Source of data for 3c above: ☐ FIS ☐ FIRM ☐ Hydrologic & Hydraulic (H&H Study), List Study: _____
☐ Other (List Source): _____

4. Proposed development is located in a designated/regulated Floodway? ☐ Yes ☐ No
If occupancy is not residential, attach Completed H&H Analysis for a No-Rise Certificate (If required) ☐ N/A

5. The flood protection elevation for the proposed project is: _____ Feet

6. Other permits required (i.e. Corps of Engineer 404 Permit, Washington Fish and Wildlife HPA, Department of Ecology, Chelan County Shoreline Substantial Development Permit (SDP), Shoreline Exemption (SE), other)?
☐ Yes ☐ No ☐ Provided: _____

Flood Risk Management Design Requirements

7. Structure is:
☐ Elevated on Foundation ☐ Elevated on Fill ☐ Flood Proofed (non-residential only)
☐ Other: _____

8. Substantial Improvement/Damage:
If this development involves the improvement or repair to an existing structure, the following information is required:
Total costs of the improvement/repair (a): $ _____ Market value of structure (b): $_____
Percent of value change (a/b): _____% *(Disclaimer: Substantial improvement evaluation must be supported by project cost documentation and approved market evaluation. Attach supporting documentation.)*
Note: If the value of an improvement/repair to a structure equals or exceeds 50% of the value of the structure before the alteration or repair, the structure must be brought into compliance with current regulations.

9. Flood Development Permit: ☐ Approved ☐ Denied

Comments: _____

10. Associated Permit # (If applicable): _____ ☐ N/A

11. Name of Authorizing Official: _____	12. Phone: _____
13. Engineer Signature (if applicable): _____	14. Date: _____
15. Floodplain Administrator Signature: _____	16. Date: _____

17. Final Elevation Certificate Accepted? ☐ Yes ☐ No
EC was reviewed by: _____
Date Received: _____ Date Approved: _____

18. Permit Final Date: _____	19. C of O Issue Date: _____

20. Comments on Compliance: _____

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

To: Allison Lutes, CCNRD

Subject: **Motteler – Chumstick Creek – No Rise Analysis**

Date: February 22, 2021

Introduction

The Chelan County Natural Resources Department (CCNRD) is the project sponsor for a Washington State Grant Fish Passage Project on Chumstick Creek (Motteler Road) Figure 1. The project involves removing an undersized and fish barrier culvert and replacing it with a bridge. The current culvert size is 10.9-foot rise by 6.9-foot rise pipe arch CMP. The bankfull channel width is 18 feet. The proposed bridge is a 54-foot span by 14-foot-wide prefab steel structure. The channel width at the stream toe between the riprap revetment (footing protection) is 20 feet.

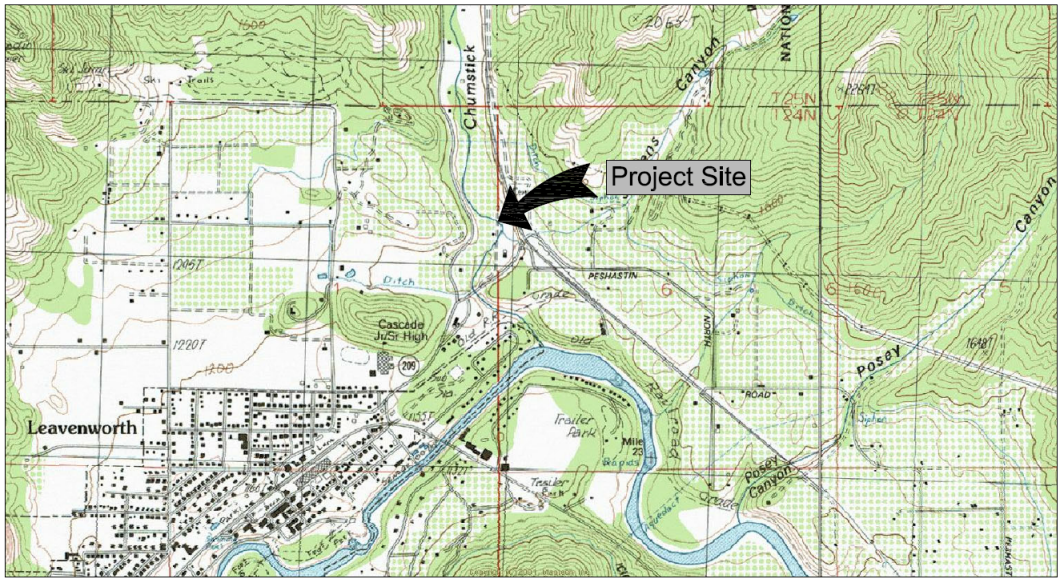

Figure 1 – Project Location.

Current Effective Model

The project location is within a FEMA flood insurance study area for Chelan County (study number 530015V000B) dated September 30, 2004. There are two cross sections in the proposed project area. The 100-year discharge is 1720 cfs, based on a regression model. The model shows

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

a 5 foot vertical drop through the road crossing. Water surface elevations are shown in Figure 4.

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second (cfs)) 10-Year	50-Year	100-Year	500-Year
Wenatchee River					
At Monitor Gage	1,301	26,500	38,500	48,700	82,000
At Dryden Gage	1,155	25,700	36,863	46,372	78,289
At Peshastin Gage	1,000	24,300	34,000	42,300	71,800
At South Line S34, T26N, R17E	606	17,600	21,500	23,000	26,000
At Plain Gage	591	17,500	26,500	34,100	62,800
At Lake Gage	273	10,000	12,100	13,000	14,800
Mission Creek					
At Southern City Limits of Cashmere	82	660	1,780	2,600	5,700
Peshastin Creek					
At Mouth	143	1,980	3,210	3,790	5,130
Icicle Creek					
At Mouth	213	7,930	11,000	12,360	15,650
Chumstick Creek					
At Mouth	82	900	1,430	1,720	2,810
At Eagle Creek Road	50	560	900	1,200	1,820
At Cross Section AP	41	470	760	930	1,520
At Sunitsch Canyon Road	31	400	640	770	1,250
Chiwawa River					
At Mouth	190	4,900	6,500	7,200	8,800
Nason Creek					
At Kahler Creek Bridge	98.6	4,270	5,860	6,590	8,250
Above Kahler Creek Confluence	91.2	3,990	5,490	6,170	7,720
Below Butcher Creek Confluence	87.5	3,850	5,290	5,960	7,460
Below Roaring Creek Confluence	76.3	3,430	4,720	5,320	6,670
Above Gill Creek Confluence	70.8	3,220	4,440	5,000	6,260
At Merritt	67.5	3,090	4,270	4,810	6,020
At Burlington Northern RR Bridge	64.2	2,960	4,090	4,610	5,780

Figure 2 – Discharges used for FEMA study. 100-year discharge noted as 1720 cfs.

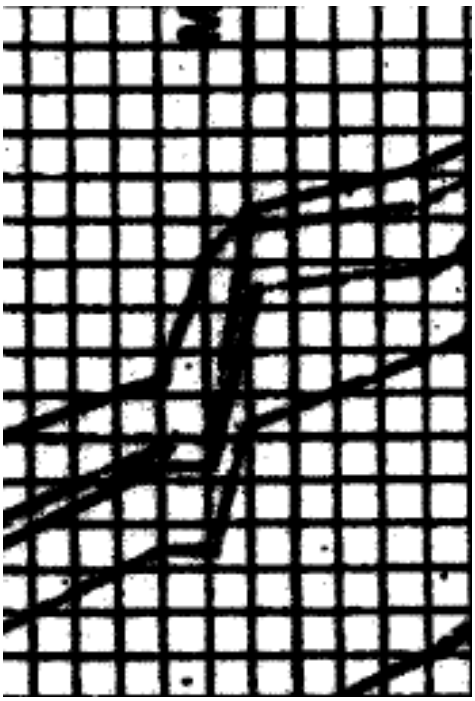

Figure 3 – FEMA water surface profile at Motteler Road.

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Icicle Creek (continued)							
C	1.48	1,800	6,452	1.9	1,115.0[2]	1,114.1[2]	0.9
D	2.20	120	1,388	8.9	1,117.7[2]	1,116.8[2]	0.9
E	2.44	480	3,228	3.8	1,120.3[2]	1,119.3[2]	1.0
F	2.50	120	1,714	7.2	1,121.2[2]	1,120.8[2]	0.4
G	2.78	115	1,540	8.0	1,122.7[2]	1,121.7[2]	1.0
H	2.93	200	2,289	5.4	1,123.5[2]	1,122.5[2]	1.0
Chumstick Creek							
A	0.03	37	181	9.5	1,081.9	1,081.5	0.4
B	0.14	24	147	11.7	1,108.3	1,108.0	0.3
C	0.27	29	183	9.4	1,119.1	1,118.5	0.6
D	0.33	24	221	7.8	1,125.0	1,124.0	1.0
E	0.40	51	360	4.8	1,127.8	1,126.8	1.0
F	0.47	21	139	12.4	1,129.6	1,129.3	0.3
G	0.49	55	482	3.6	1,134.9	1,134.9	0.0
H	0.53	60	356	4.8	1,135.3	1,135.3	0.0
I	0.59	52	230	7.5	1,138.2	1,137.8	0.4

Figure 4 – Base flood water surface elevations.

Duplicate Effective Model:

There was no current model to run.

Corrective Effective Model:

The current project model (HEC RAS 1D) was modified to match the results of the FEMA current effective model results. Using NOAAs Online vertical datum transformation for the conversion from NDVG29 to NAVD 88 you add 3.8 feet. So for the corrected elevations at Motteler Road the following are used:

Section G: 1138.7 (Note 5.3 feet of drop) through culvert, this section at road
Section H: 1139.1 (211 feet upstream road)

The exact location of sections was determined by assuming Section G is just downstream of the culvert (where the drop would be), and Section H is 211 feet upstream. Sections G and H are shown in Figure 5.

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

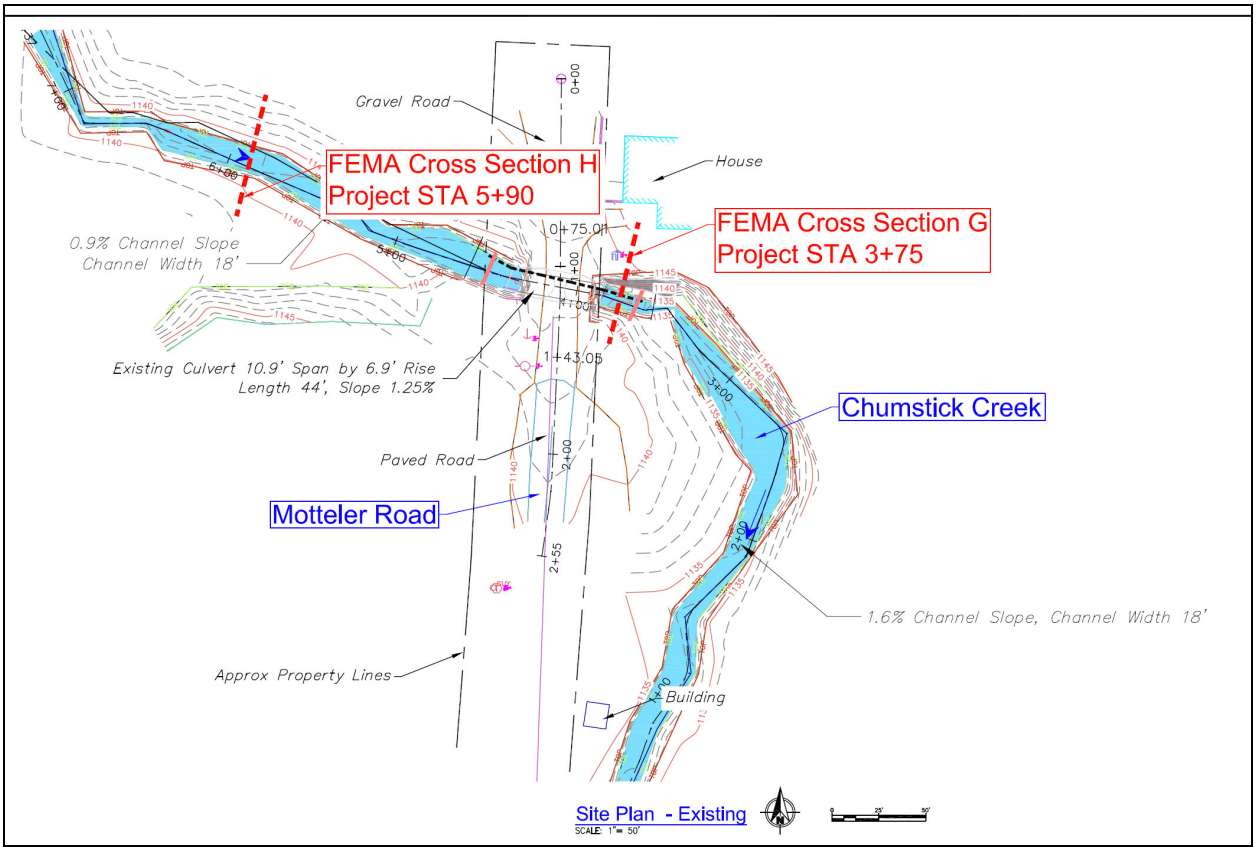

Figure 5 – Project site Map showing FEMA Cross Sections and Project Existing Layout.

Existing Model Conditions:

Reviewing aerial photography from Google Earth (2005, 2008, 2013, 2018) there appears to be no changes made to the culvert of road and stream channel within the project reach. The existing conditions model was calculated with same 100-year design discharge from the FEMA study. The geometry was the existing culvert. The 100-year water surface elevation is shown in Figure 6.

Proposed Model Conditions:

The proposed model conditions include the 54 foot long bridge and channel sections under the bridge and shown on the project final design. Mannings roughness (0.04) was held constant for the channel conditions to get a clear comparison of the changed water surface profile between the bridge and culvert.

The results show a decrease in the water level, therefor "no-rise" in the 100-year flood.

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

In 2004 when the FEMA model was developed, there was no current stream gage information for Chumstick Creek and a regression model based and drainage area and precipitation was use to develop the 100-year flood of 1720 cfs. In 2005, the Washington State Department of Ecology Developed a stream gage (45C060) at the mouth of Chumstick Creek. For the project this data was used to develop a hydrology model for Chumstick Creek. This model predicted a 100-year peak flood of 310 cfs. The water surface profile for the 310 cfs is shown in Figure 7 for comparison.

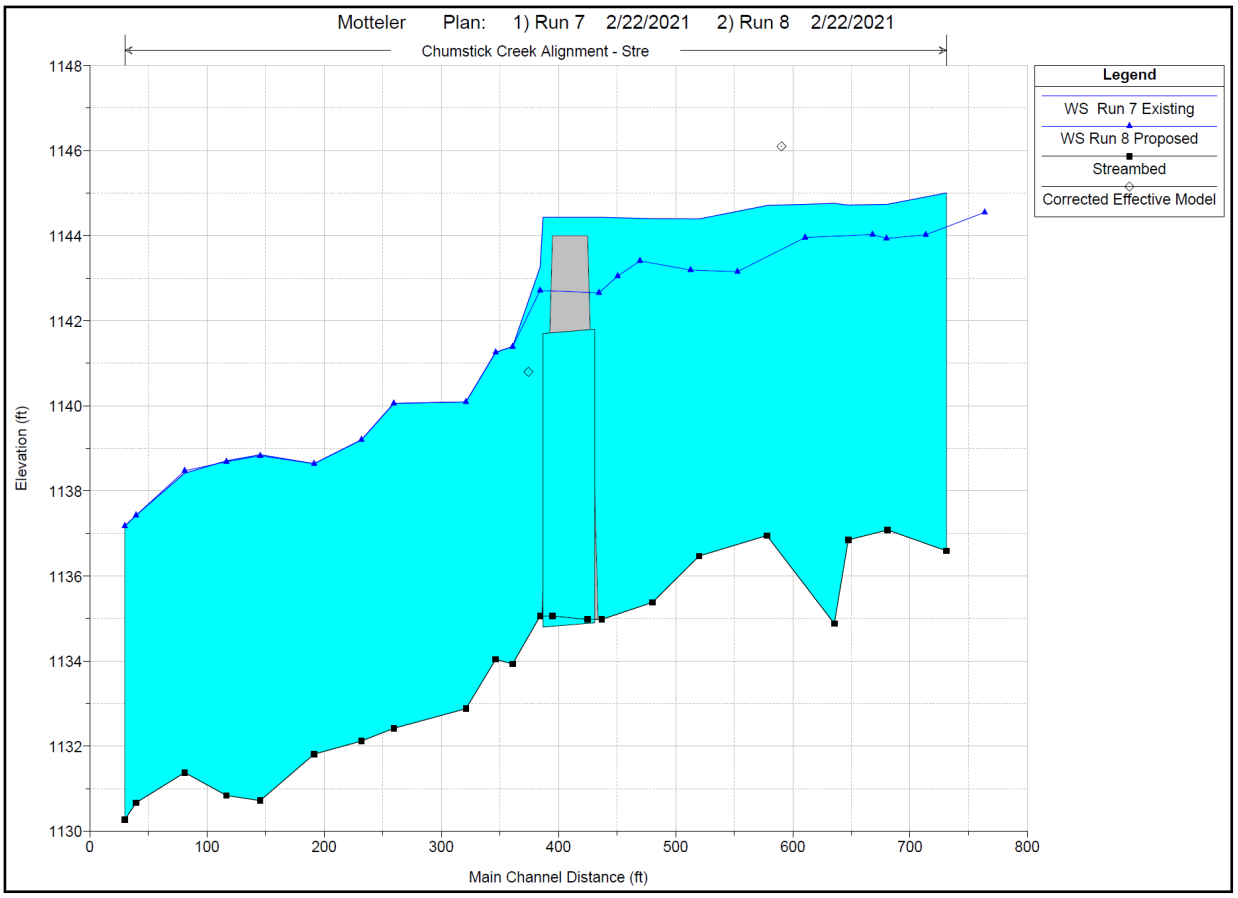

Figure 6 – HEC RAS model run showing the estimated Corrected Effective Model (two point), the Existing Conditions Model (Run 7), and the Proposed Model (Run 8).

Patrick D. Powers, P.E.
9427 Delphi Rd SW
Olympia, WA 98512
360-352-5773
waterfallengineering@comcast.net

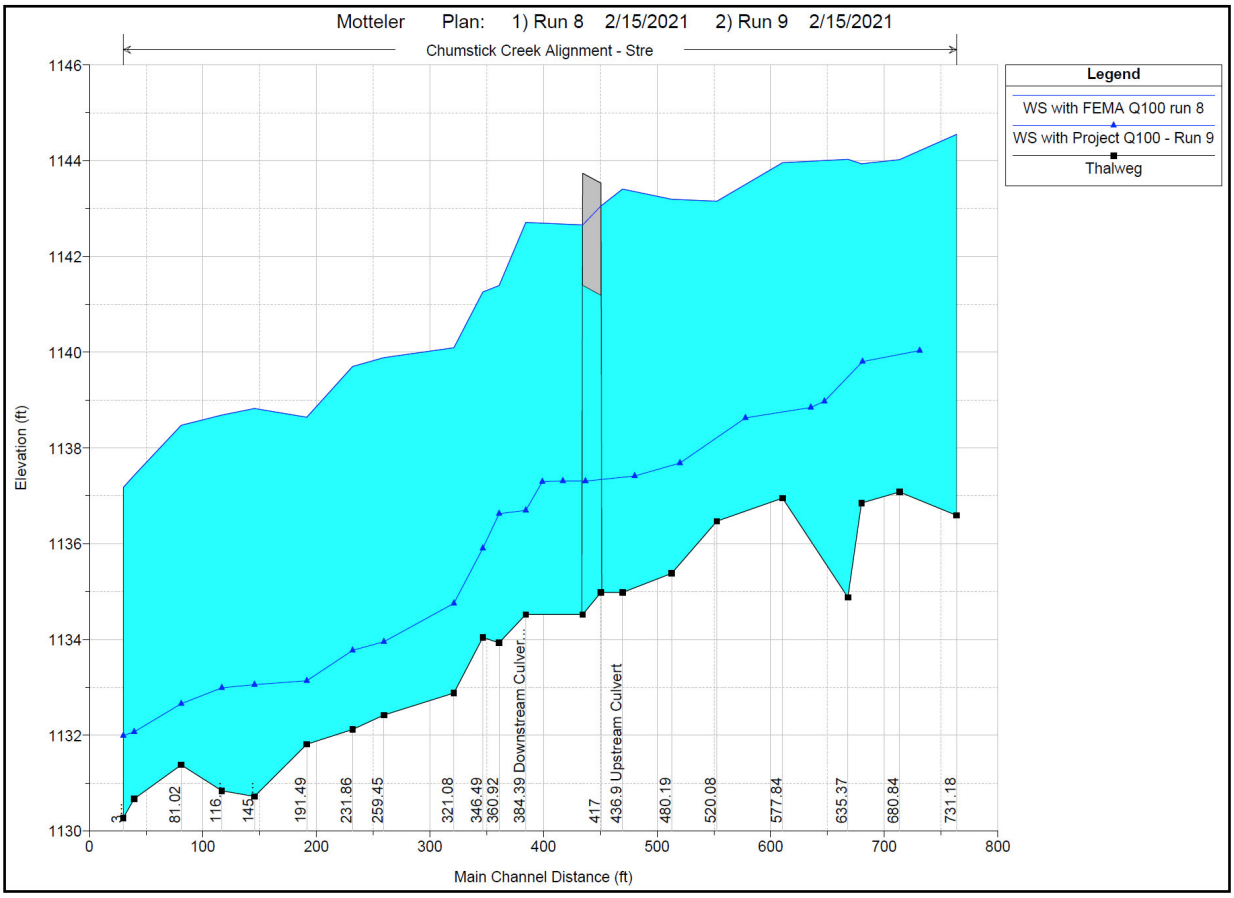

Figure 7 – Comparison of FEMA Q100 versus Project Q100 from Hydrology Study.

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of Washington .

It is to further certify that the attached technical data supports the fact that proposed Motteler - Chumstick Creek Fish Passage _will
(Name of Development)
not impact the 100-year flood elevations, floodway elevations and floodway widths on Chumstick Creek at published sections
(Name of Stream)
in the Flood Insurance Study for Cross Section G and H ,
(Name of Community)
dated September 30, 2004 _ and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

No Rise Analysis Memo

Project Plans and Design Report

_ (Date) 2/15/2021

(Signature) Patrick D. Powers

(Title) - Owner

(Seal

PATRICK D. POWERS
STATE OF WASHINGTON
23514
REGISTERED
PROFESSIONAL ENGINEER

9427 Delphi Rd SW
Olympia, WA 98512