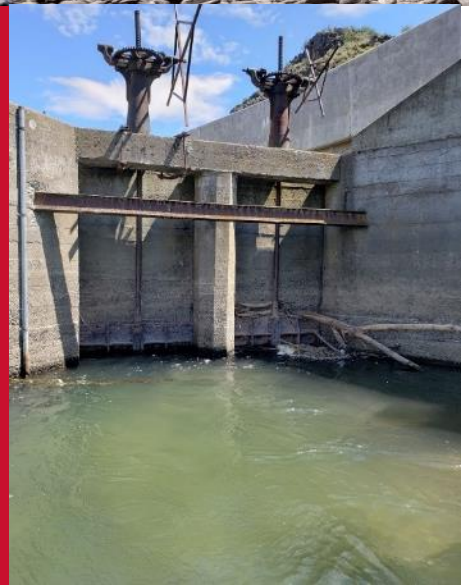


NELSON DAM REMOVAL PROJECT

Water Supply, Riverine Process, and Fish Passage Improvements

Project Update Meeting

October 8, 2020

01 TEAM MEMBERS

02 PROJECT OVERVIEW

03 HYDRAULIC DESIGN OVERVIEW

04 PERMITTING STATUS

05 PROJECT SCHEDULE

06 PROJECT FUNDING

01 TEAM MEMBERS

PROJECT DESIGN AND PERMITTING PROJECT TEAM

	City of Yakima	Yakima County	HDR	nhc northwest hydraulic consultants	HLA Engineering and Land Surveying, Inc.
Members	Dave Brown	Terry Keenhan	Mike Garello	Peter Brooks	Eric Herzog
	Mike Shane	Troy Havens	Becky Holloway	Vaughn Collins	Survey Crew
	Rich Sanislo	Joel Freudenthal	Anna Mallonee	Donnie Jones	
		Dale Meck			
Roles and Responsibilities	Project Owner	Funding Partner	Project Management	Geomorphic Analysis	Surveying
	Water Delivery – General Diversion	Flood Damage Reduction	Permitting Lead	Civil Design	Utility Location
	Operations	Restoration	Technical Lead	Hydraulic Modeling	Basemap Development
		Water Resources			

PROJECT PARTNERS AND PARTICIPANTS

The Wilderness Society; U.S. Department of the Interior Bureau of Reclamation; Natural Resources; Trout Unlimited; American Rivers; U.S. Fish & Wildlife Service; NOAA; NOAA Fisheries; Bonneville Power Administration; Washington Department of Fish and Wildlife

02 PROJECT OVERVIEW

PROJECT OVERVIEW

Project Purpose and Objectives

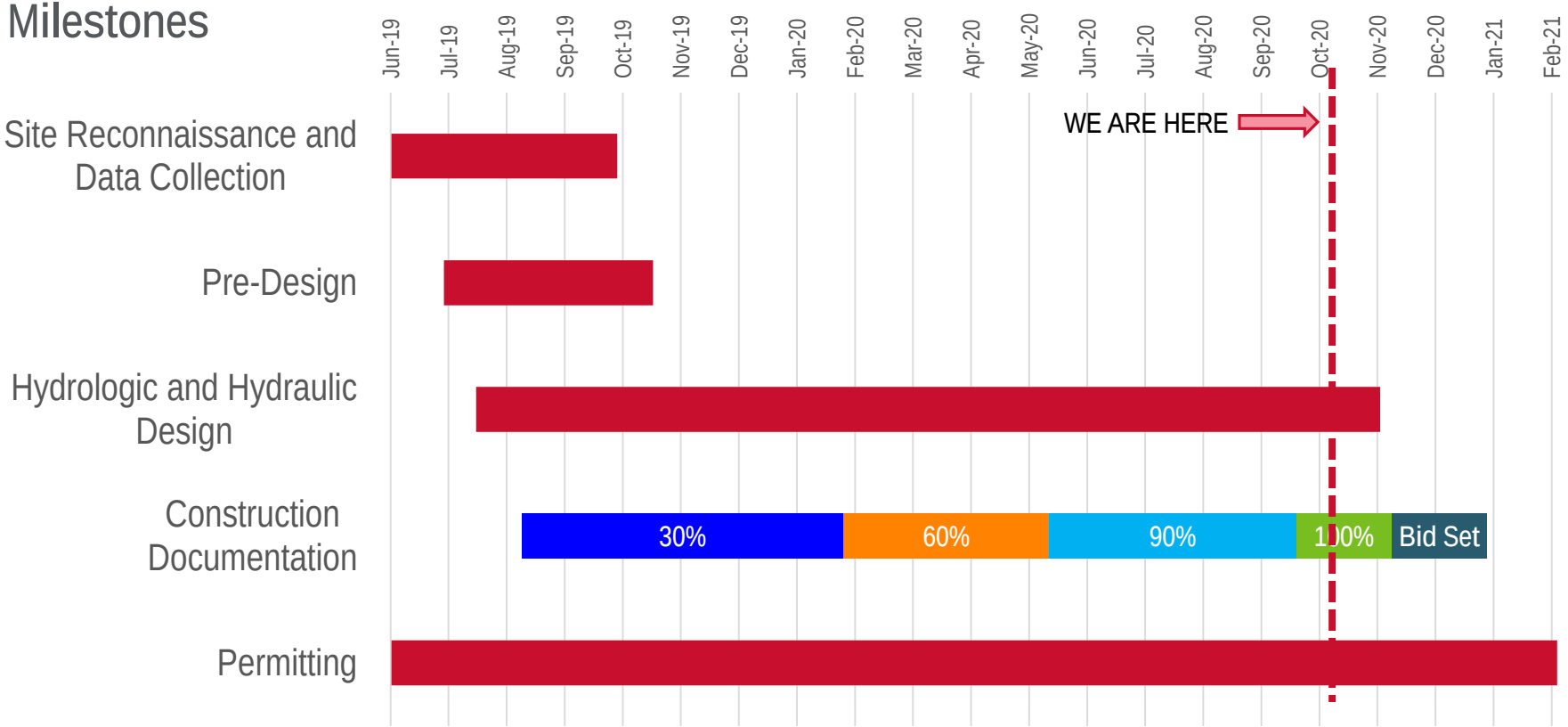
- Remove Nelson Dam and consolidate four existing diversions while achieving the following objectives
- Objectives:
  - More effective fish passage
  - Improve flood flow conveyance
  - Improve sediment continuity
  - Provide more reliable surface water delivery


Point of Diversion
5961 West Powerhouse Road
5 min
2.7 miles
6 min
2.7 miles
2301 Fruit
Nelson Dam
Naches River
City of Yakima
Naches-Cowiche Canal Company
Fruitvale
Old Union
Brown Ln
Greenview Dr
Pence Rd
W Powerhouse Rd
S Naches Rd
Tanglewood Ln
Hawks Point Dr
Glover Ln
Gartson Ln
12
N
0
200 ft


Fish Ladder
US 12 EB
US 12 WB
Greenway Trail Bridge
City Water Main
Powerhouse Road
Nelson Dam
Old Powerhouse Rd.
Abutments
Diversions and Fish
Screens
S. Naches Rd.
Google Earth
N
200 ft

PROJECT PROGRESS

Primary Milestones

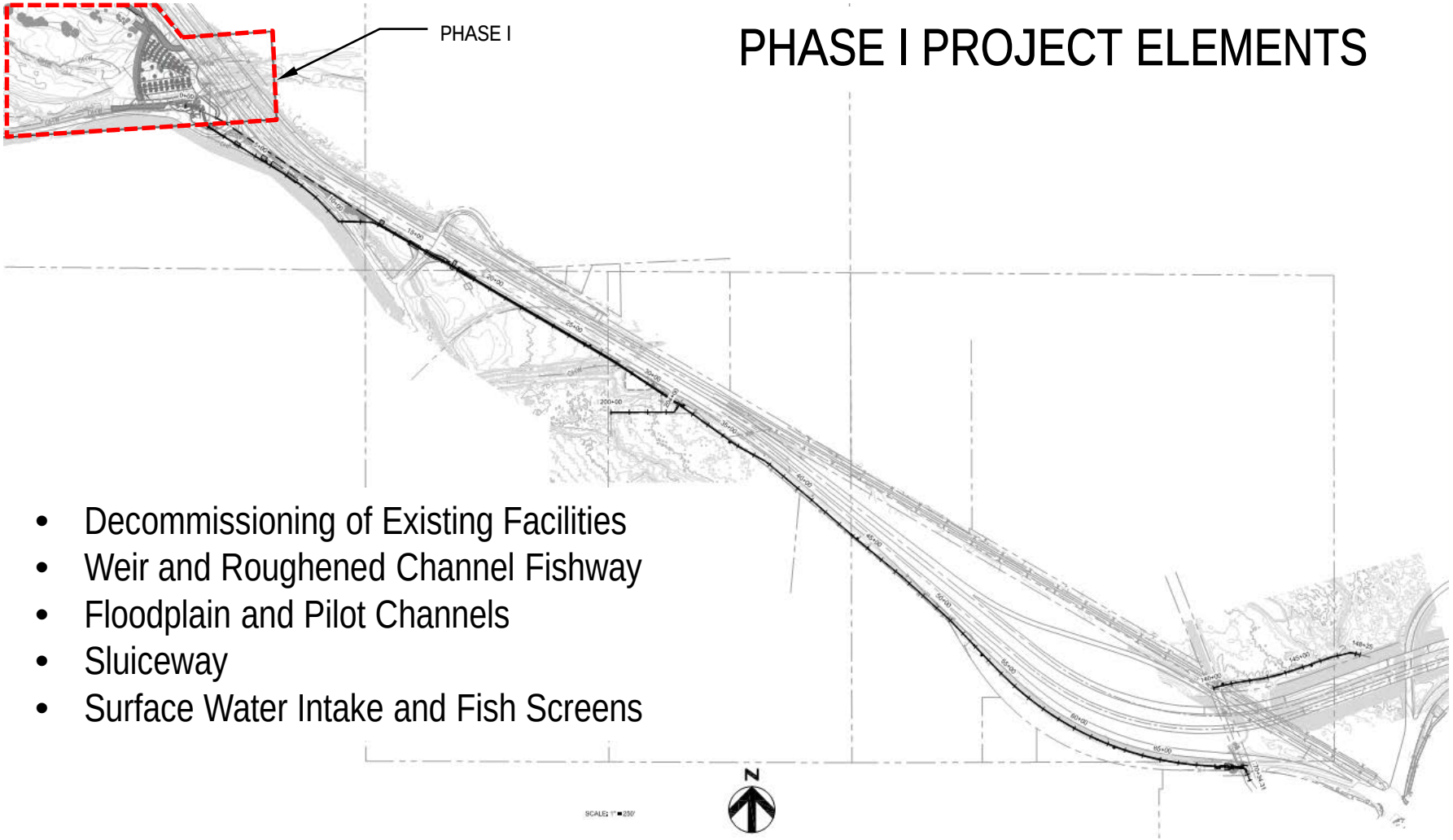


PROJECT OVERVIEW

Work Completed To Date

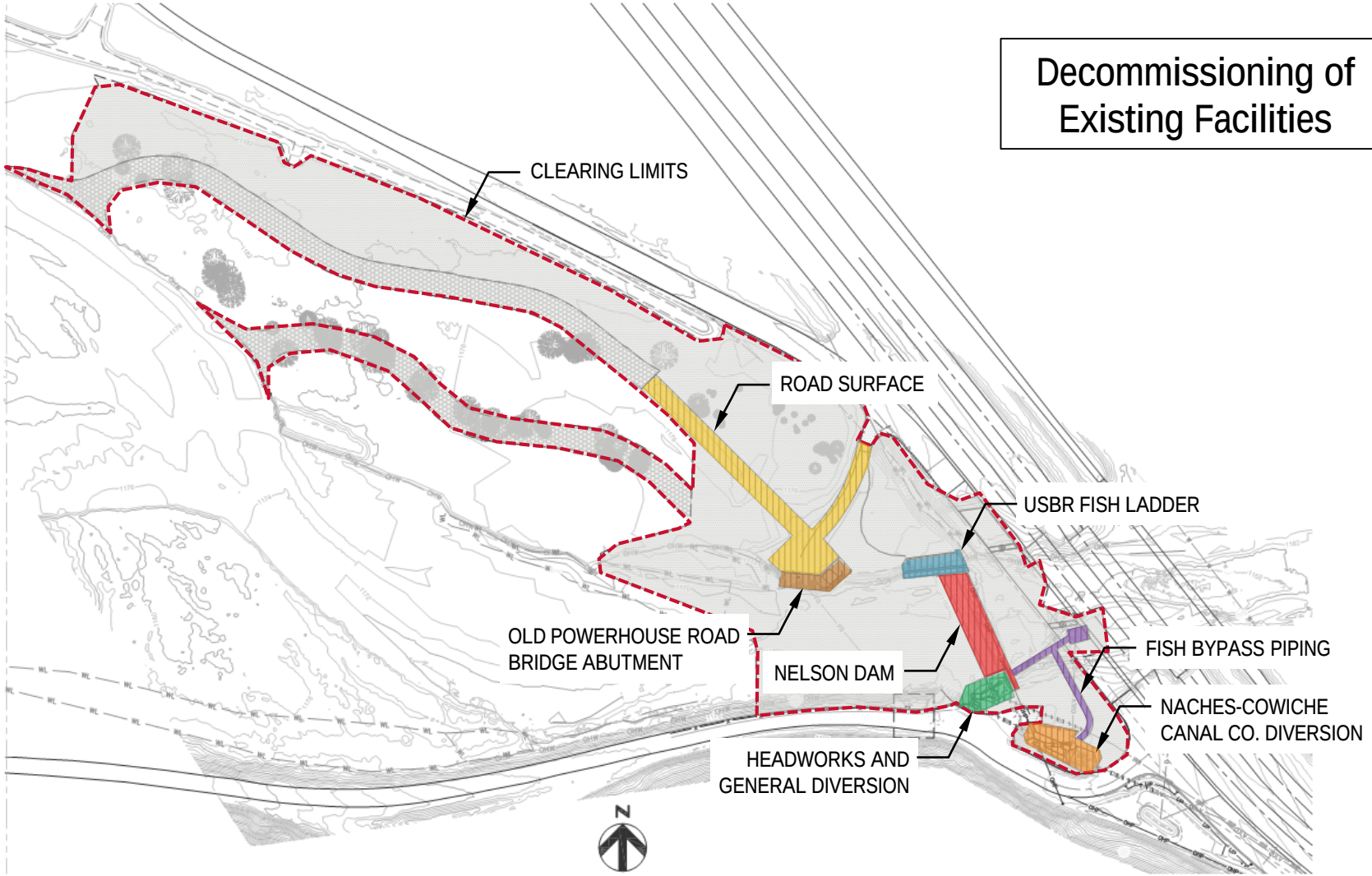
- Field investigations
- Environmental and cultural surveys
- Engineering Design Criteria Report
- Geotechnical Design Report
- 90% Construction Drawings
- 90% OPCC
- Numerical model development
- JARPA, ESA documents (BA), Functional Lift Assessment, Restoration Sheets, In-water Plan
- SEPA Checklist and Shoreline Exemption Forms
- WDFW APPs materials

PHASE I PROJECT ELEMENTS

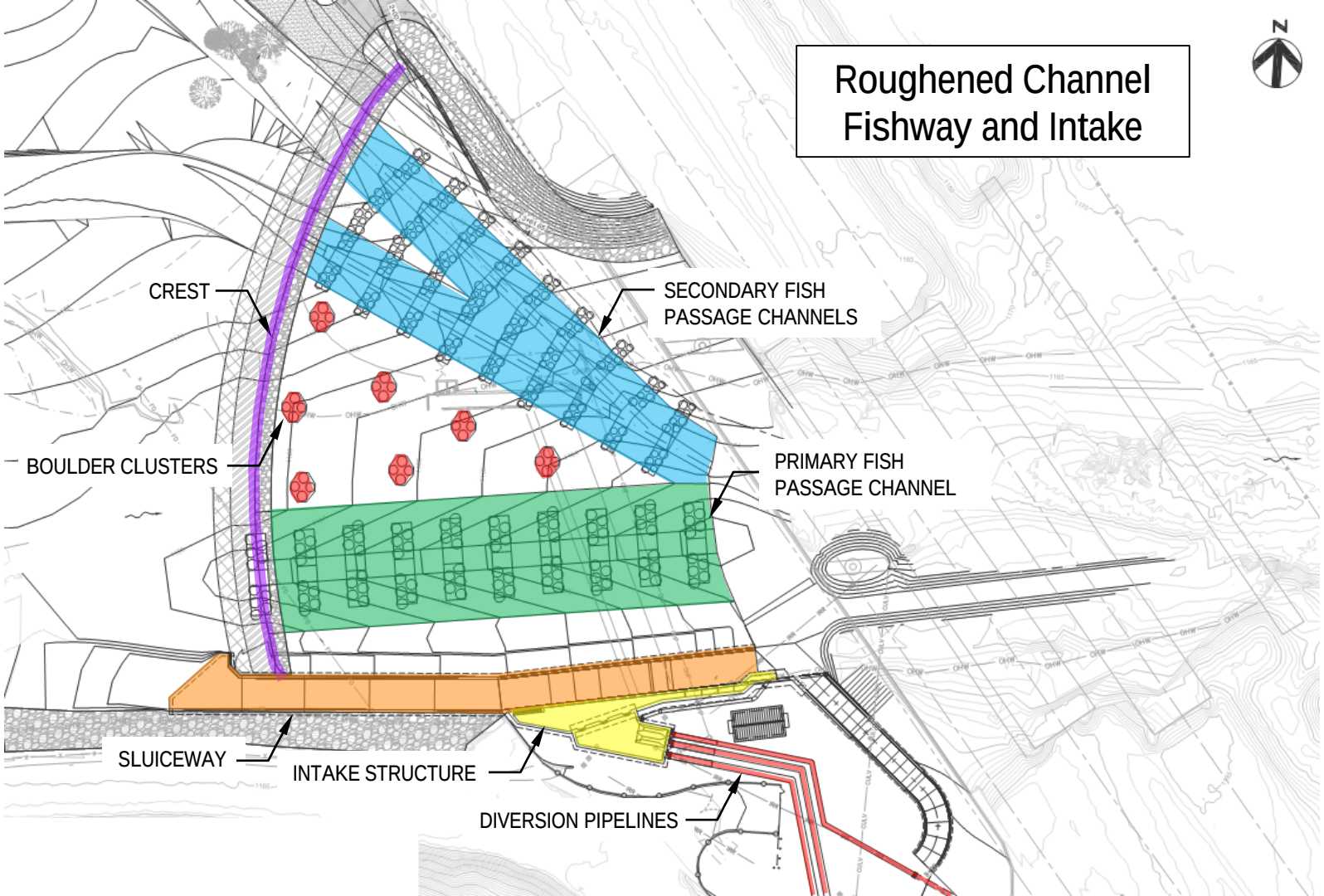


- Decommissioning of Existing Facilities
- Weir and Roughened Channel Fishway
- Floodplain and Pilot Channels
- Sluiceway
- Surface Water Intake and Fish Screens

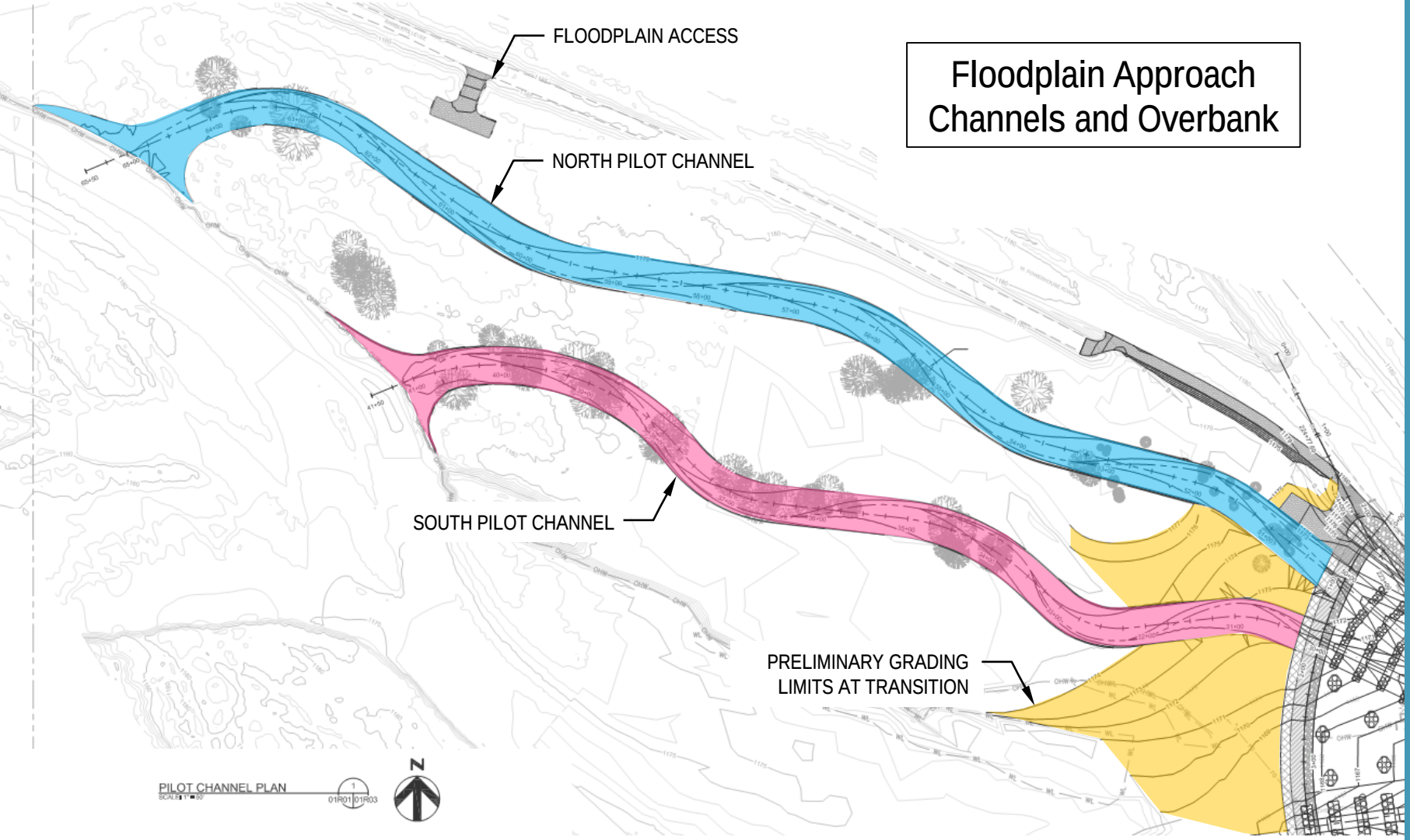
Decommissioning of Existing Facilities



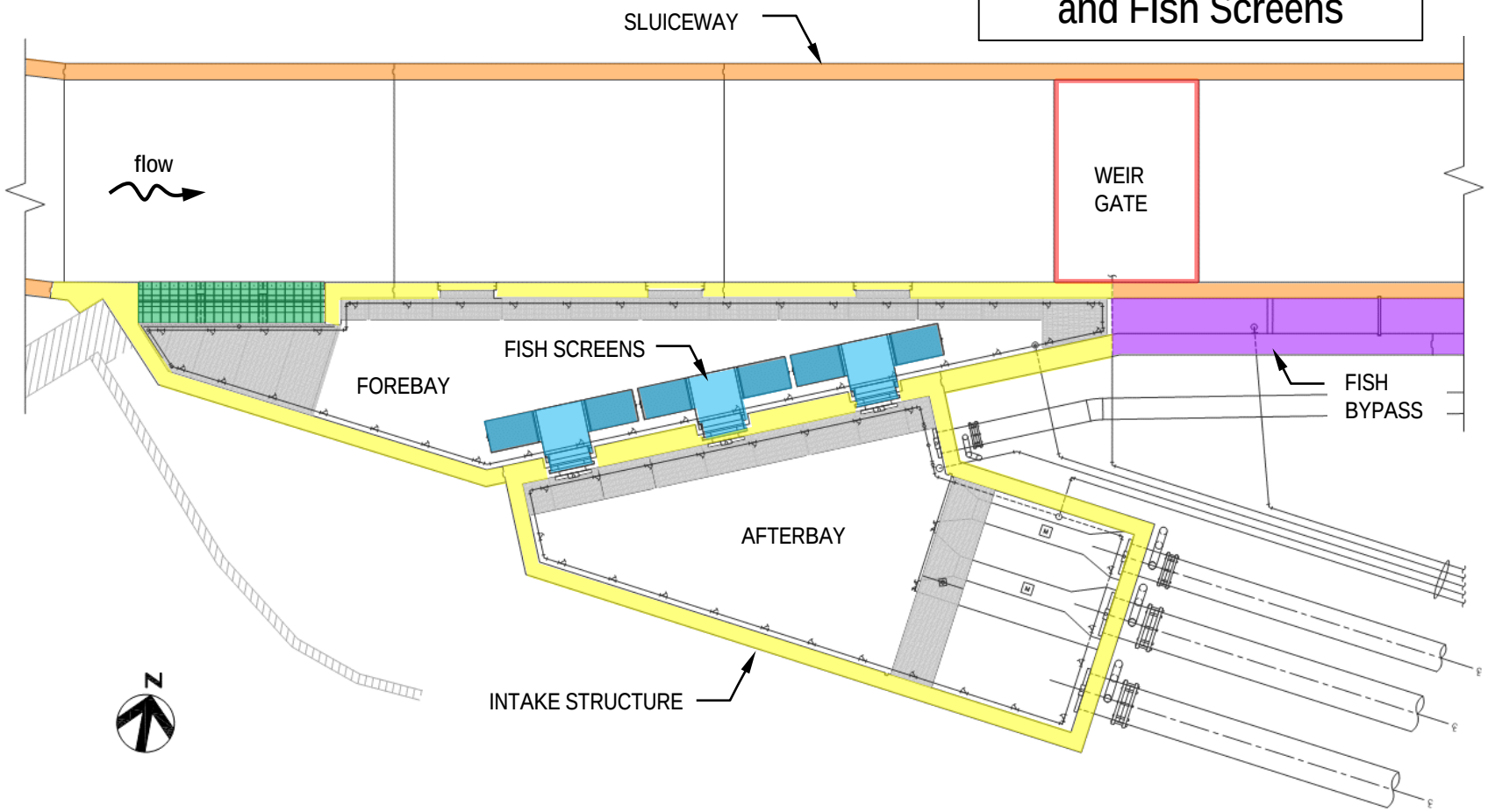
Roughened Channel Fishway and Intake



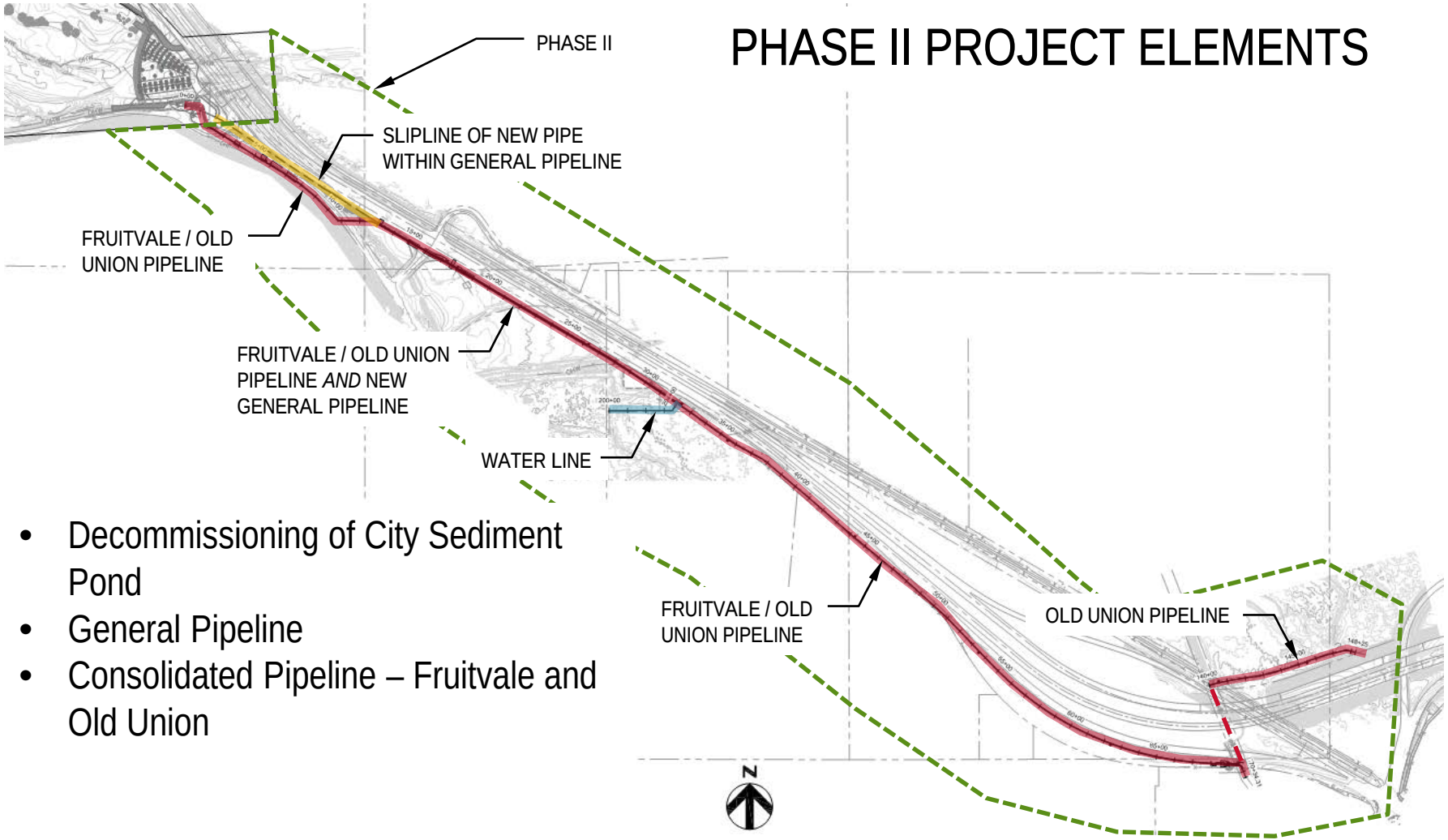
Floodplain Approach Channels and Overbank



Surface Water Intake and Fish Screens

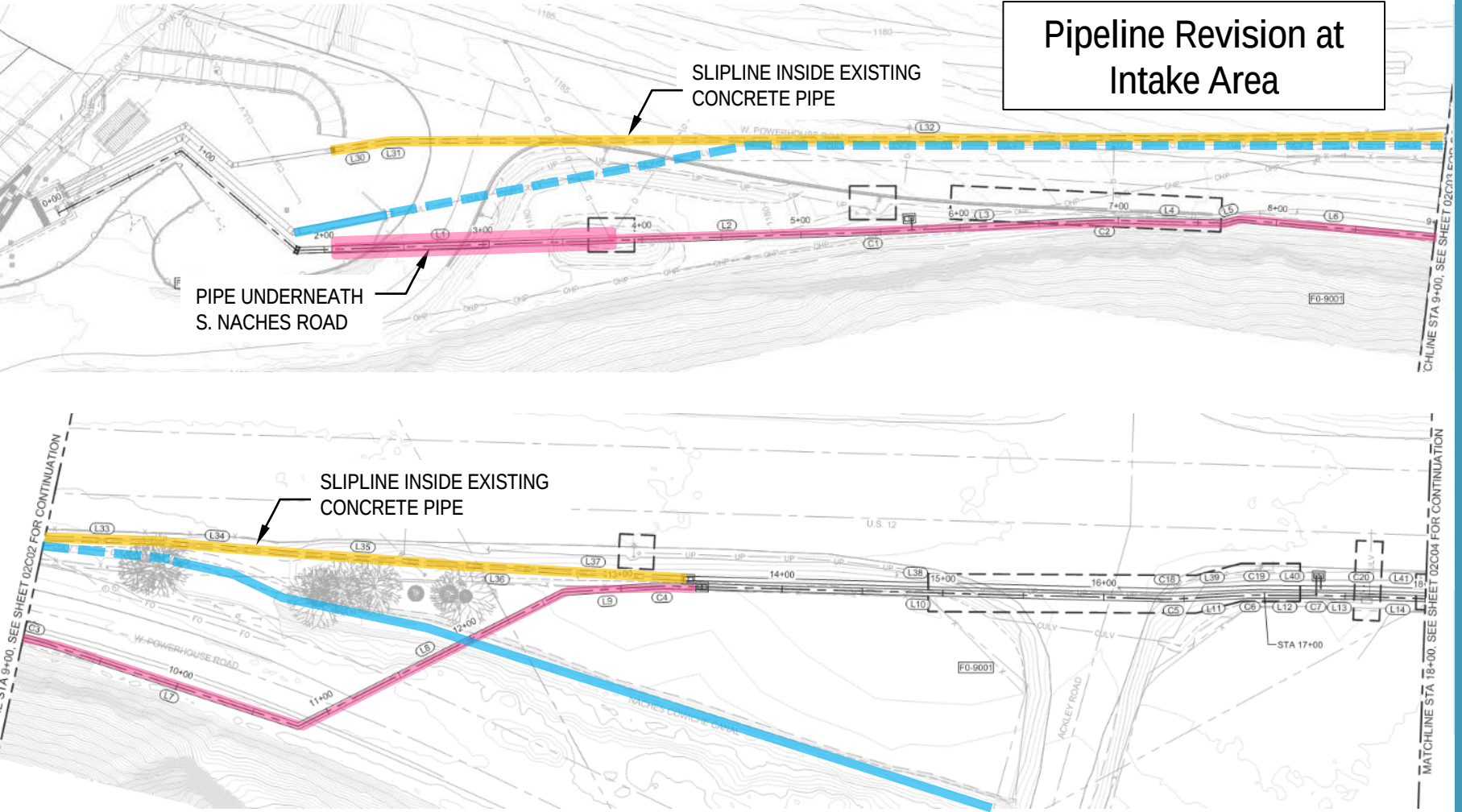


PHASE II PROJECT ELEMENTS

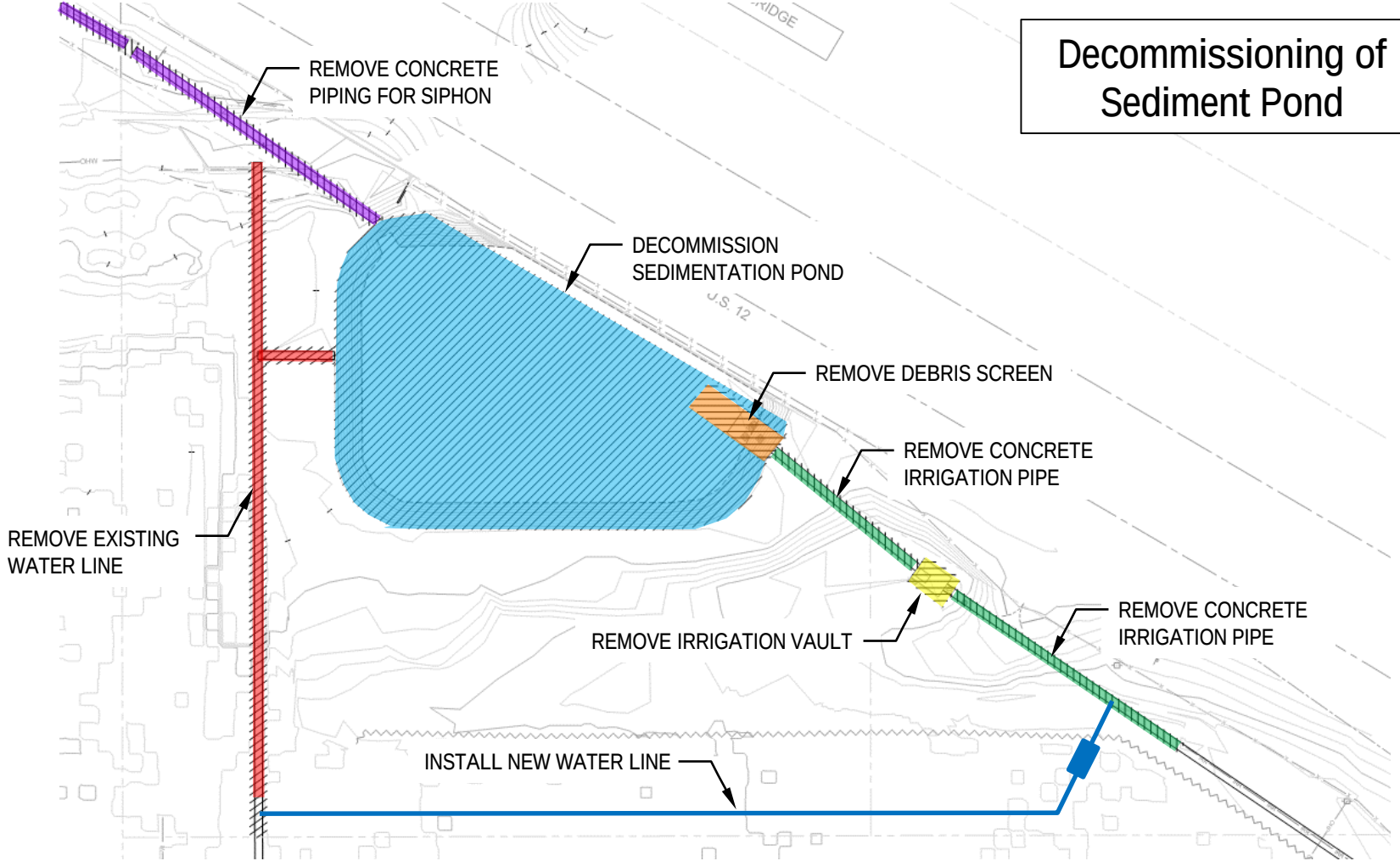


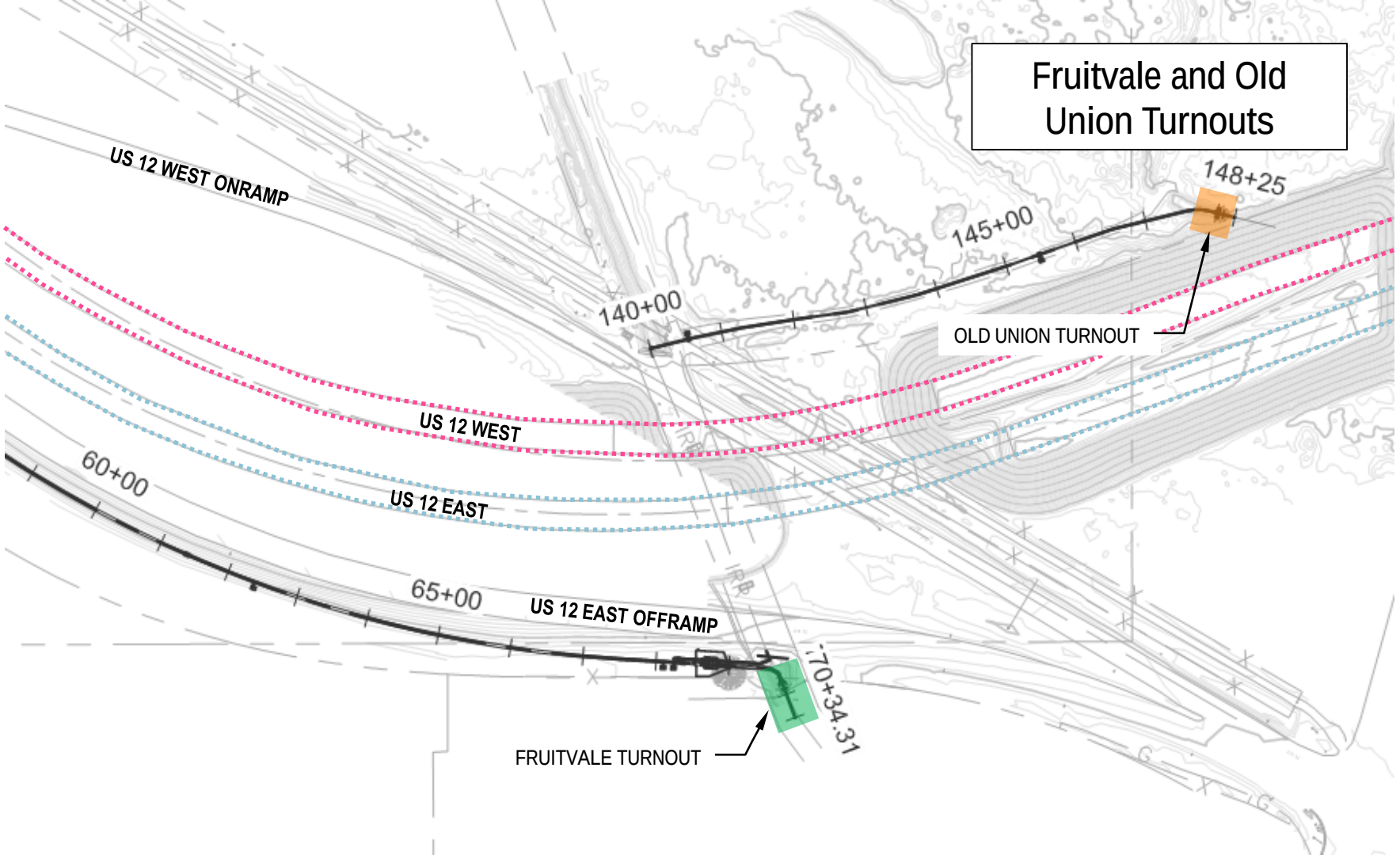
- Decommissioning of City Sediment Pond
- General Pipeline
- Consolidated Pipeline – Fruitvale and Old Union

Pipeline Revision at Intake Area



Decommissioning of Sediment Pond




Fruitvale and Old Union Turnouts
US 12 WEST ONRAMP
148+25
145+00
140+00
OLD UNION TURNOUT
US 12 WEST
US 12 EAST
60+00
65+00
US 12 EAST OFFRAMP
70+34.31
FRUITVALE TURNOUT

NEXT STEPS

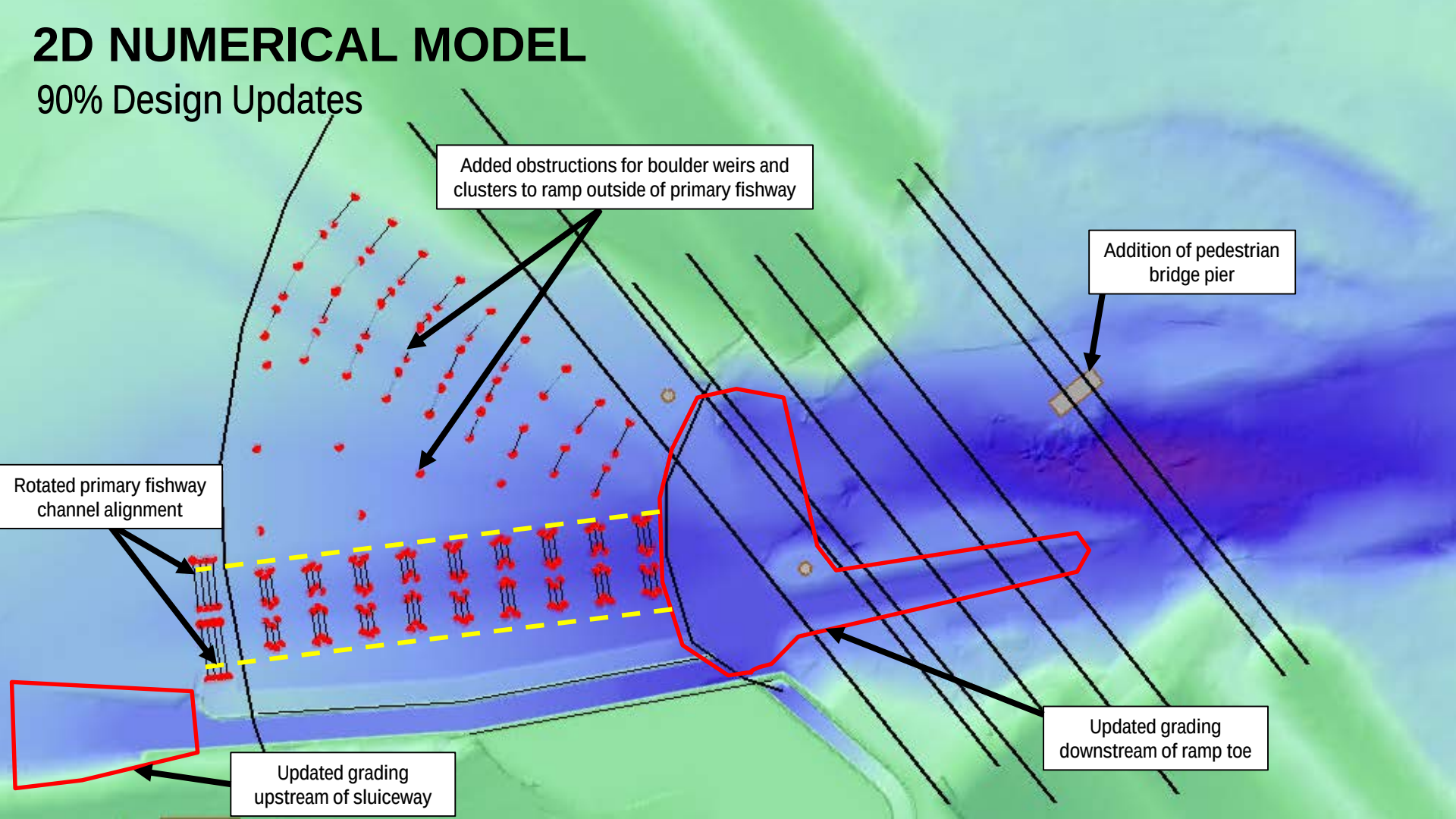
Final Design

- Complete 2D modeling and variability testing to confirm rock matrix composition and layering
- Complete assessment of protection measures for existing infrastructure
- Refine pilot channel alignments to reduce impacts to existing riparian vegetation
- Coordinate final changes with City, County, WSDOT, and others.

03 HYDRAULIC DESIGN OVERVIEW

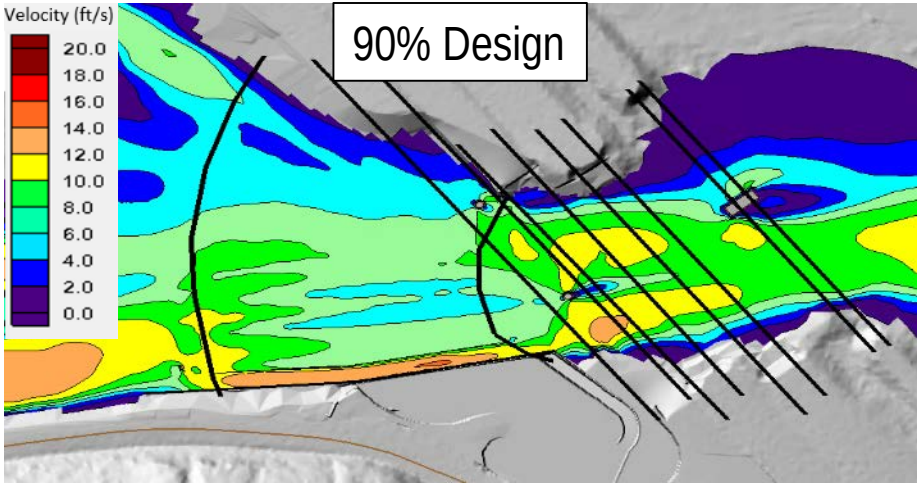
2D NUMERICAL MODEL

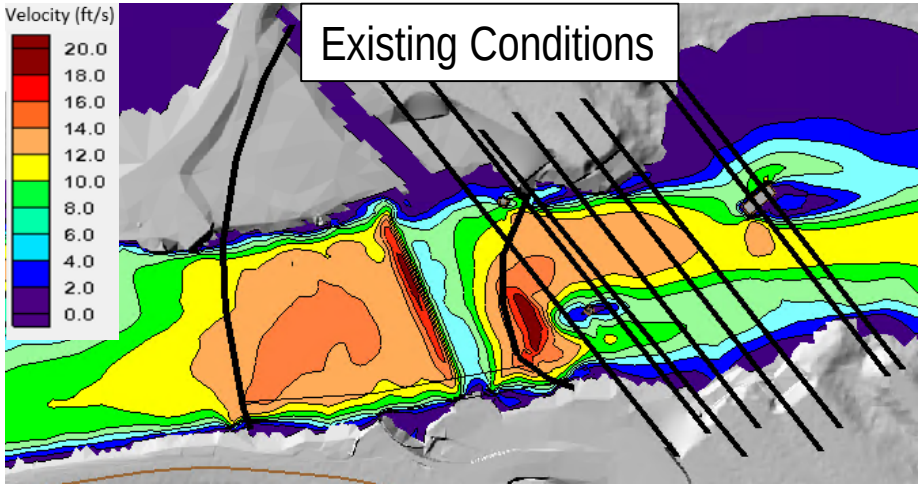
90% Design Updates



2D NUMERICAL MODEL

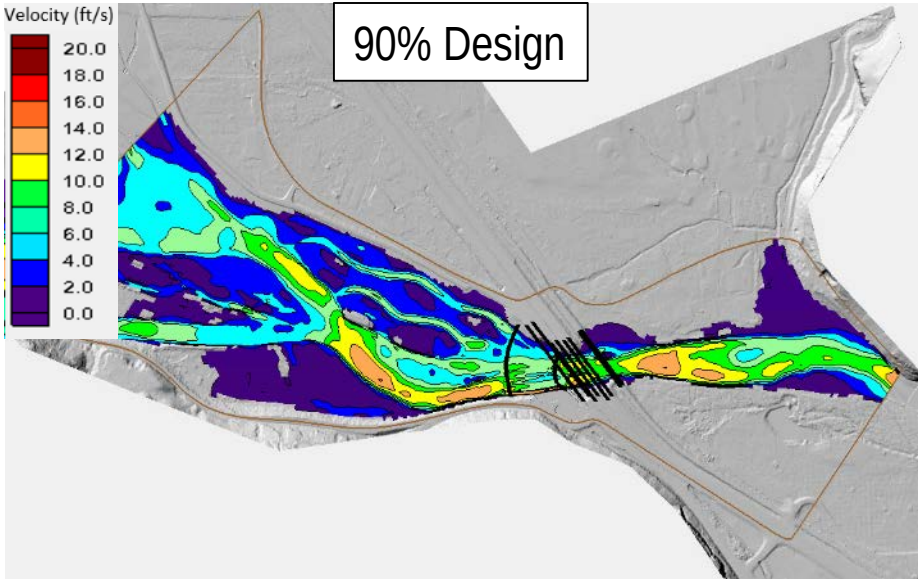
10-year Flood -13,356 cfs

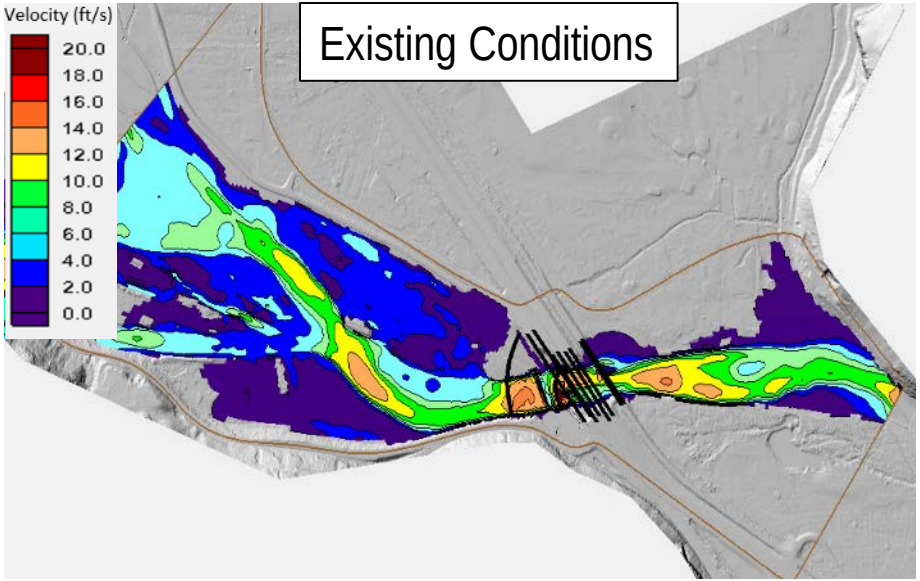




2D NUMERICAL MODEL

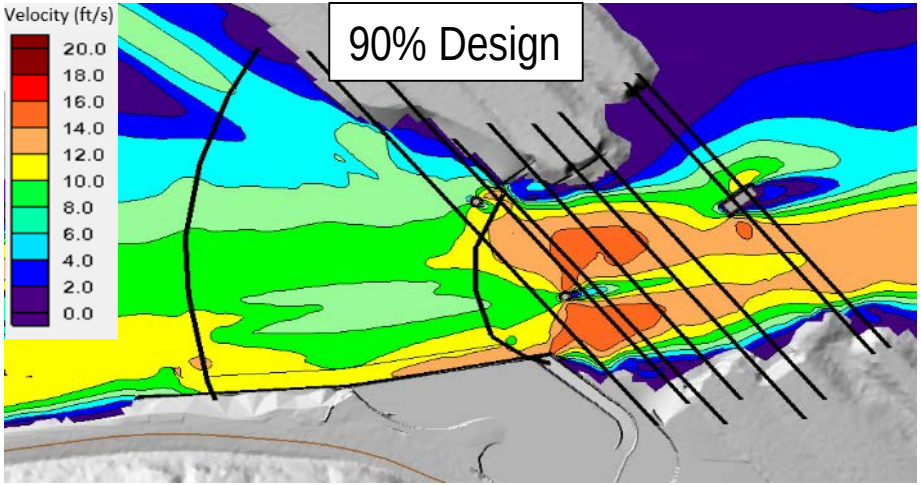
10-year Flood -13,356 cfs

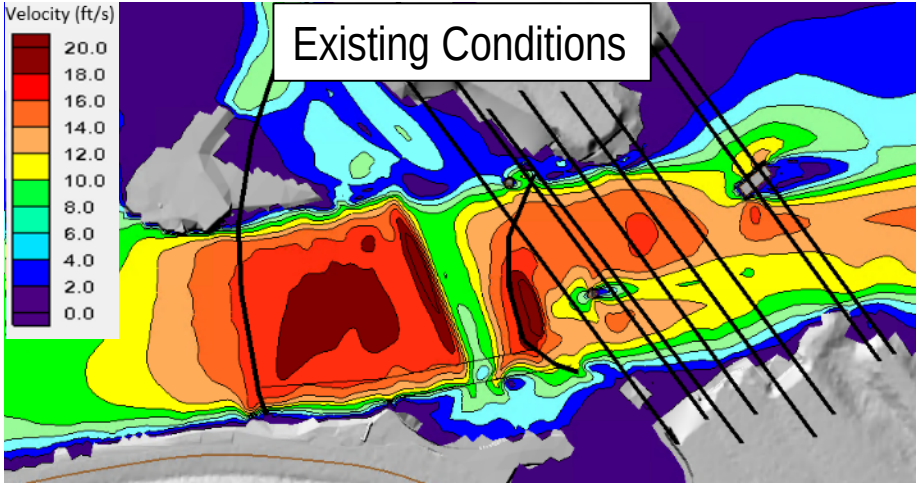




2D NUMERICAL MODEL

100-year Flood -27,000 cfs

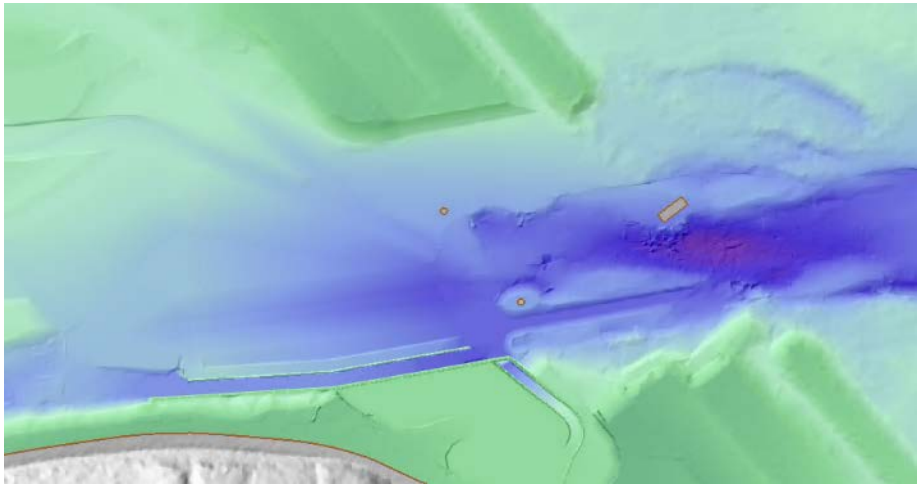




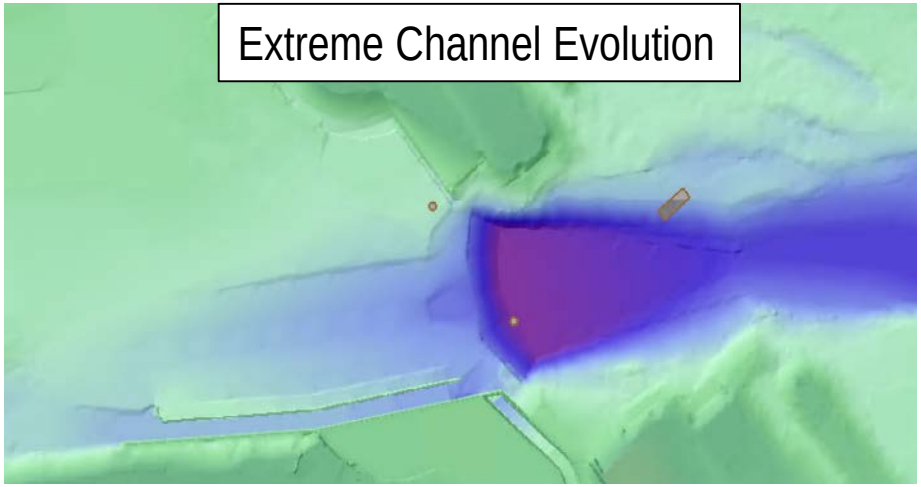
2D NUMERICAL MODEL

Variability Assessments

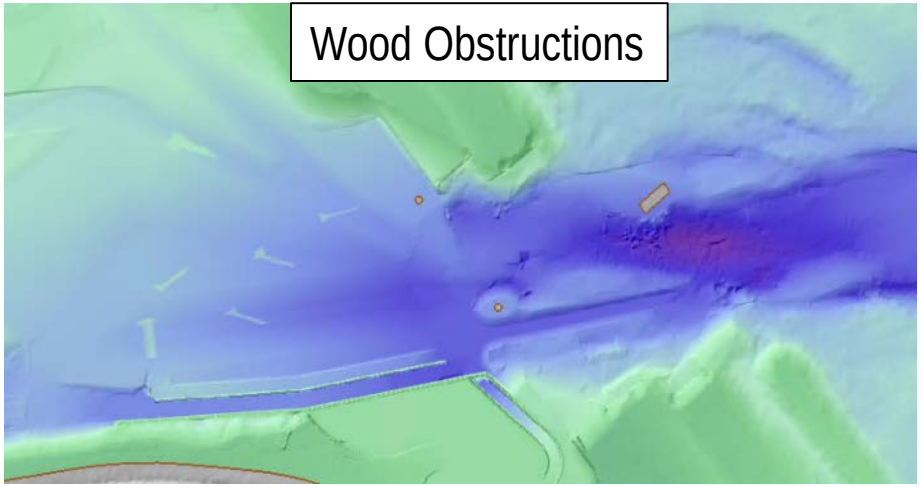
Widened WSDOT Bridges



Extreme Channel Evolution



Wood Obstructions

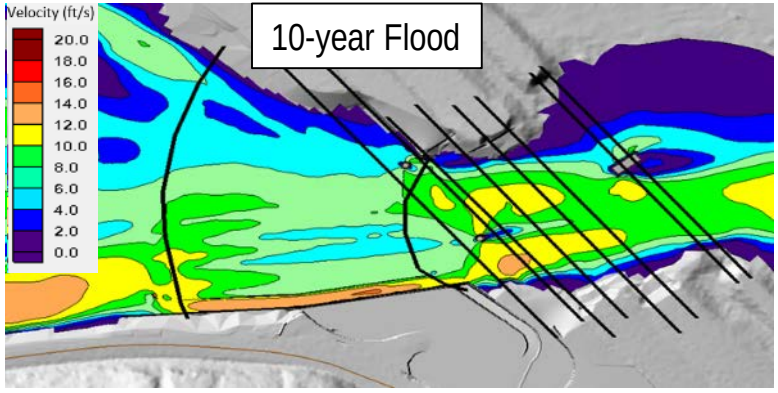


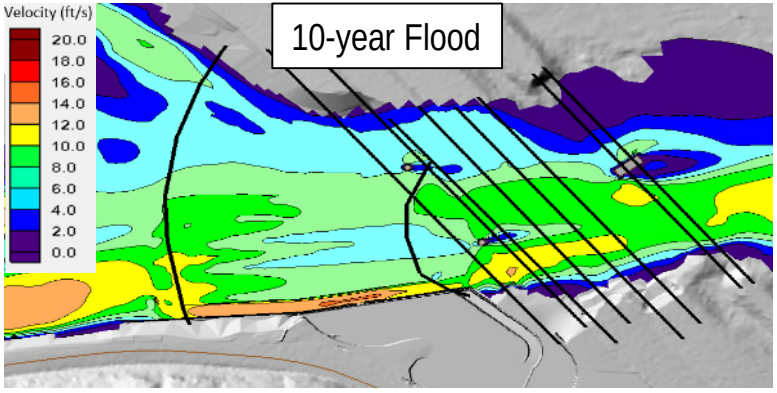
2D NUMERICAL MODEL

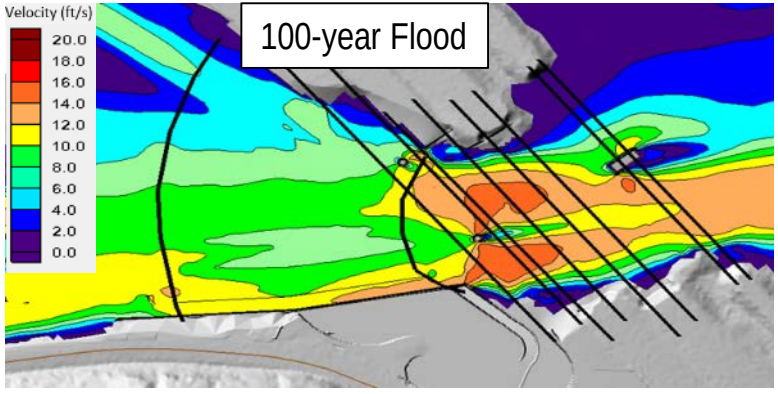
Widened WSDOT Bridges Variability Assessment

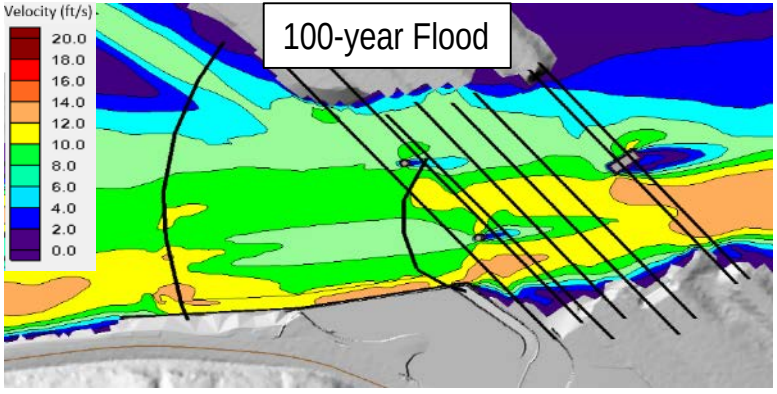
Post-Project Conditions

With Widened Bridges





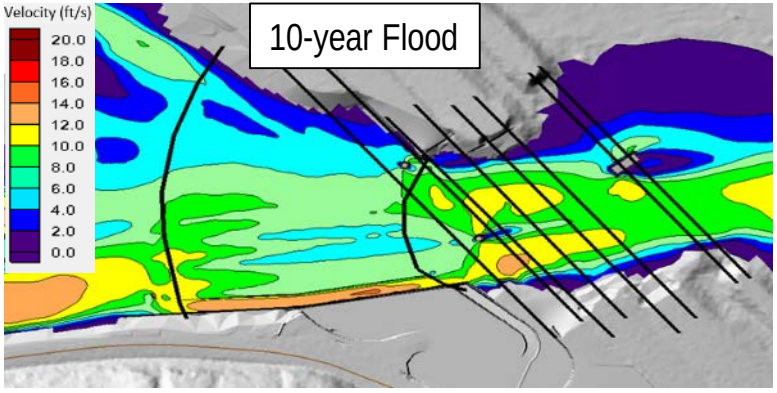


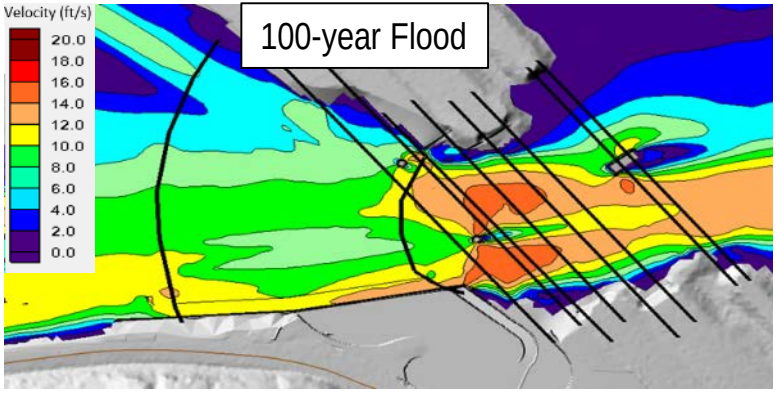


2D NUMERICAL MODEL

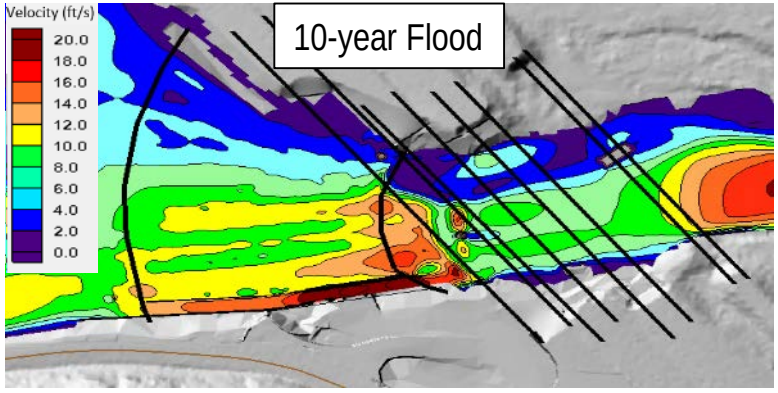
Evolved Channel Variability Assessment

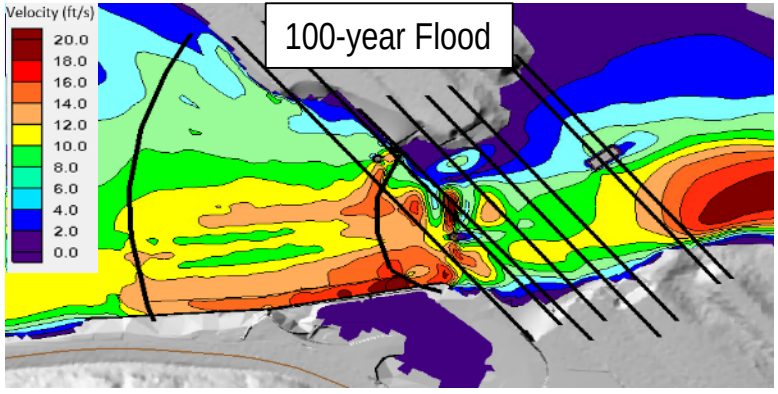
Post-Project Conditions





With Evolved Channel

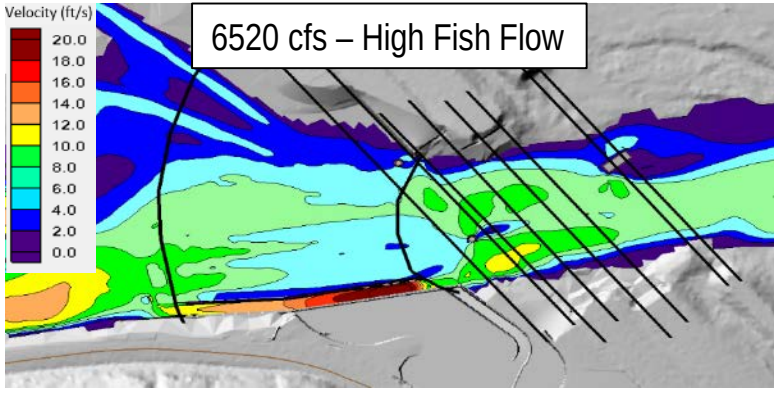


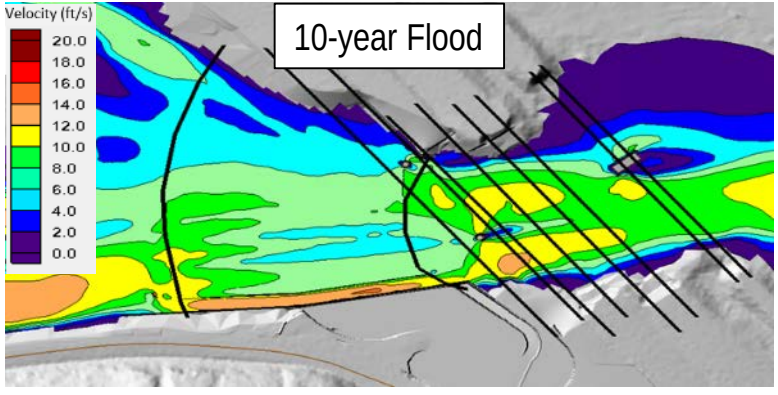


2D NUMERICAL MODEL

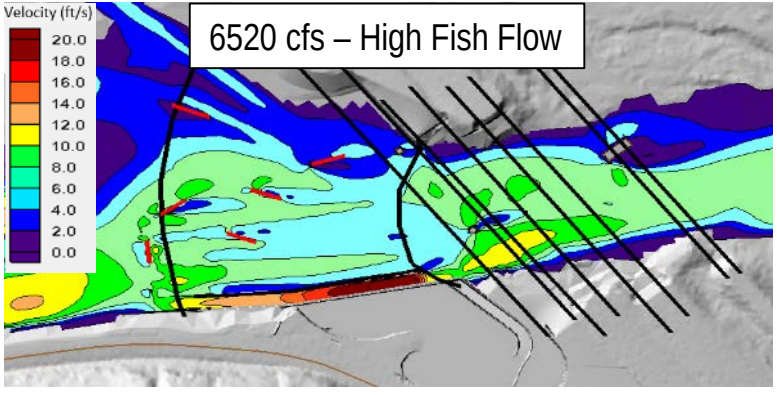
Wood Obstructions Variability Assessment

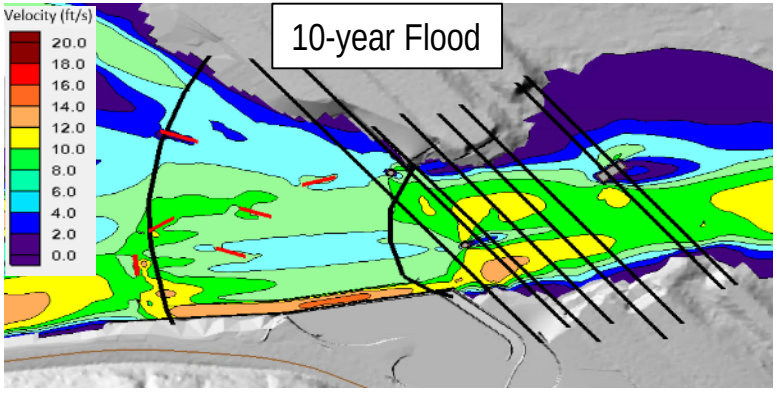
Post-Project Conditions





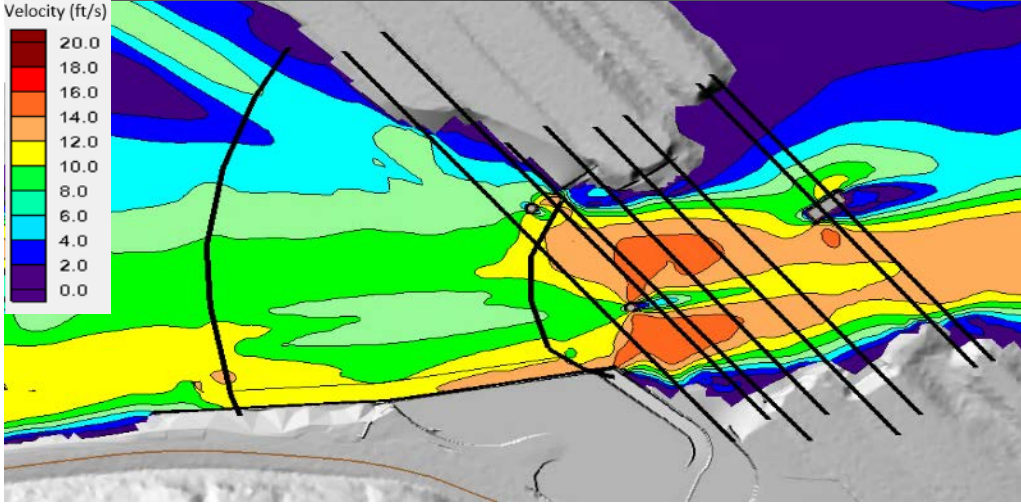
With Woody Debris Caught on Ramp





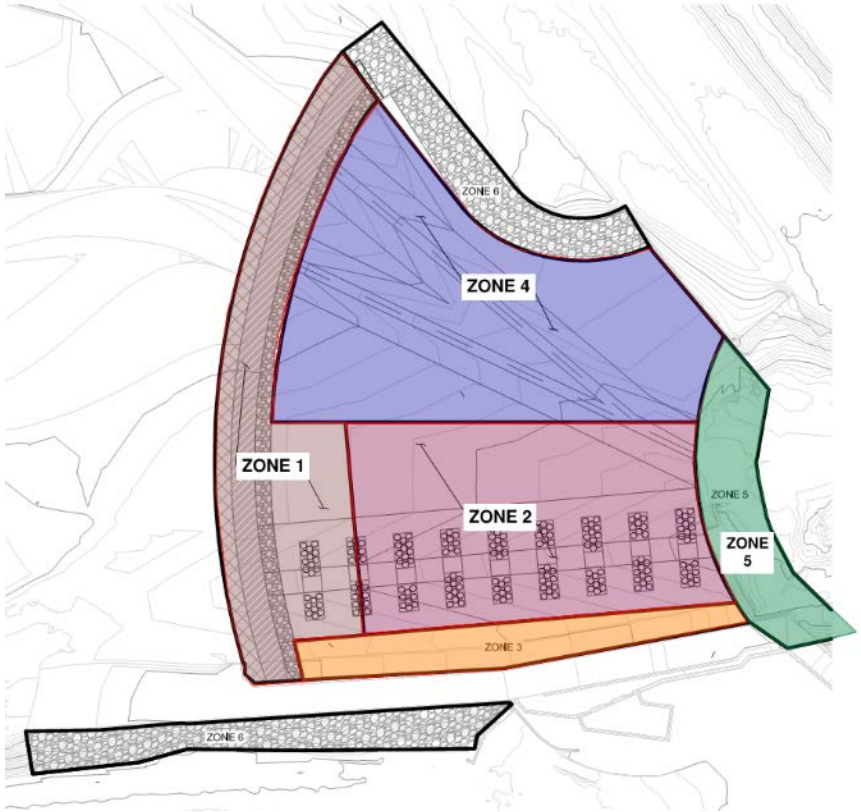
INFRASTRUCTURE RISK AND DESIGN

- South Naches Road Embankment
- Bridge Scour Potential
  - Powerhouse Road (Deep Drilled Shaft Piers)
  - WSDOT Bridge Abutments



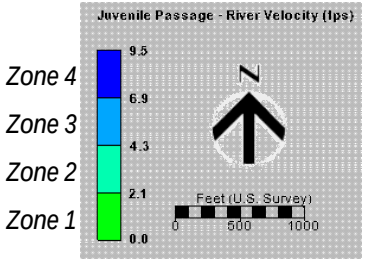
ARMOR ZONES
ROCK SIZING

- Rock Sizing
  - Physical model and standard design equations
    - Account for sensitivity to variability assessments
    - Additional stability analyses for sizing checks
  - Anticipated Rock Sizes
    - D50 ~2-3 feet
    - Boulders 4-6 feet
    - Angular rock with sand/gravel infill



FISH PASSAGE CONSIDERATIONS

Juvenile Passage



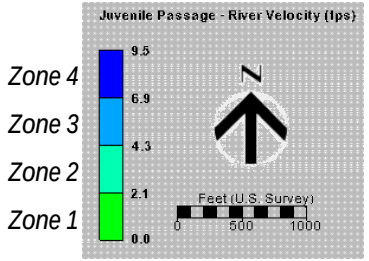
- Flow velocity vs. fish swimming distance relationships

Fish Length	Time	Passage Zone	Water Velocity (fps)	Swim Distance (ft)	Correlated Swim Speed (fps)
250mm (10 in)	5 seconds	Zone 4	9.5	16.4	12.8
	20 seconds	Zone 3	6.9	45.9	9.2
	3 minutes	Zone 2	4.3	229.6	5.5
	30 minutes	Zone 1	2.1	1,312.0	2.9

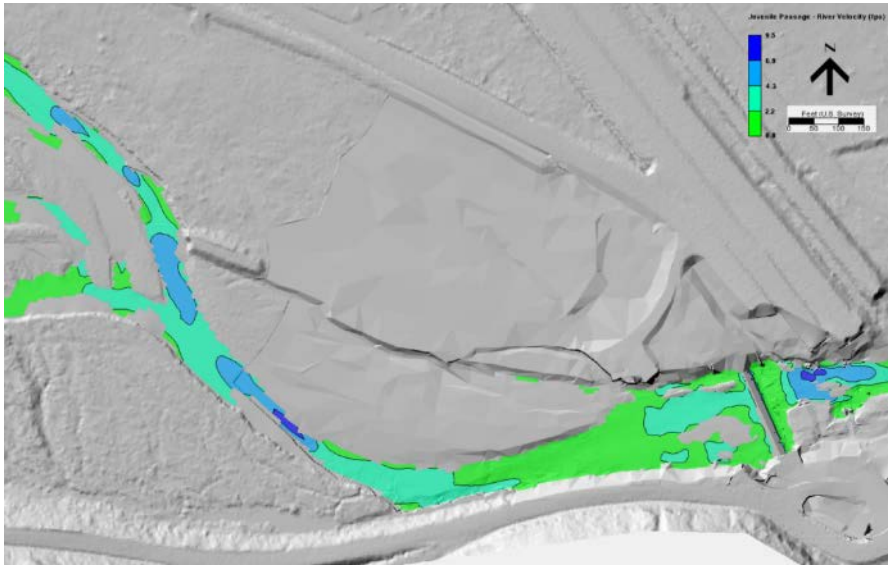
FISH PASSAGE CONSIDERATIONS

Juvenile Passage – 338 cfs

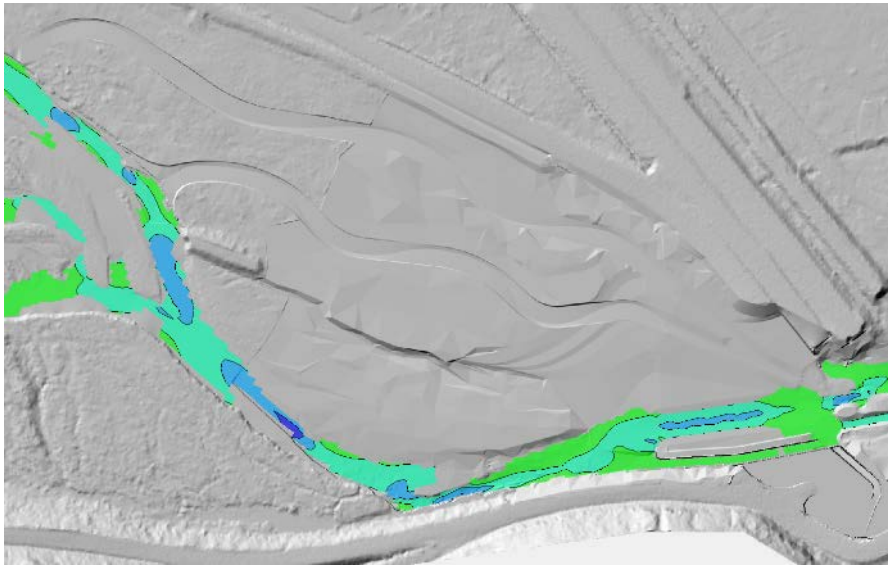
- River velocity at depth 0.4 ft or greater



Existing Conditions



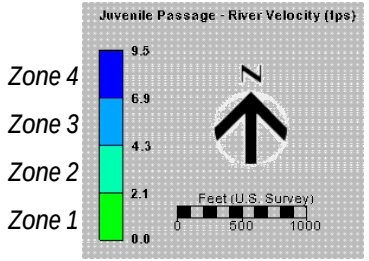
Proposed Conditions



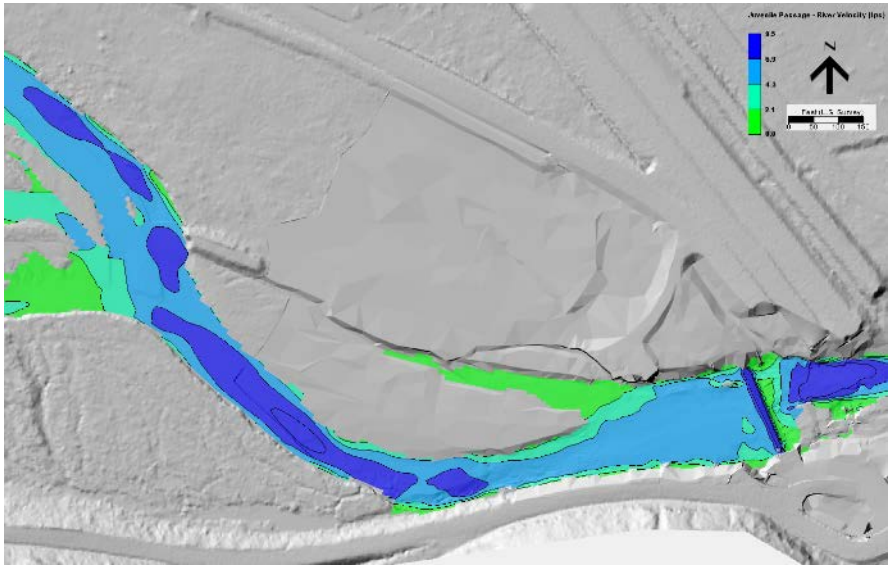
FISH PASSAGE CONSIDERATIONS

Juvenile Passage – 2,000 cfs

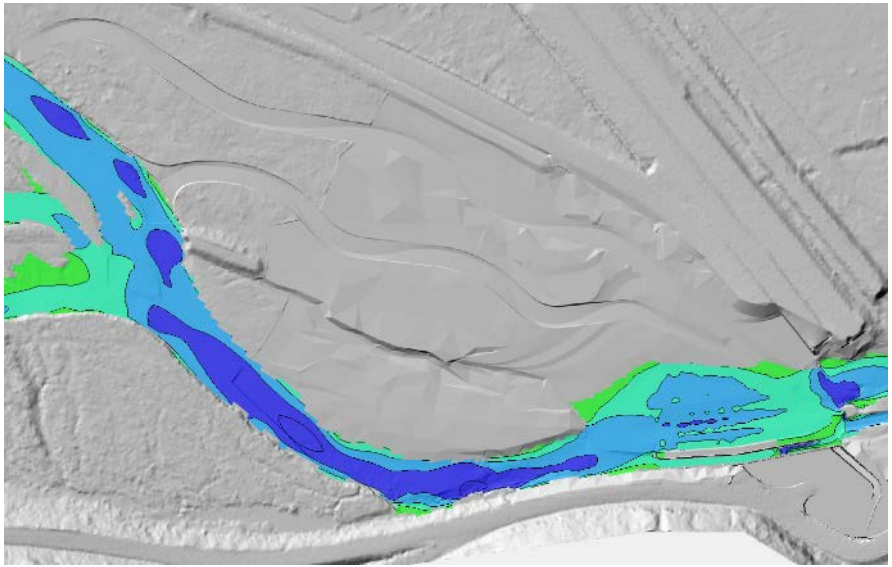
- River velocity at depth 0.4 ft or greater



Existing Conditions



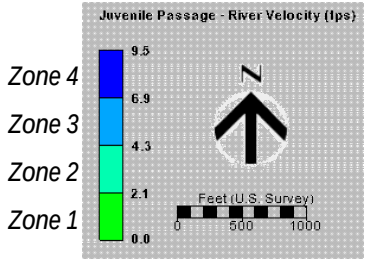
Proposed Conditions



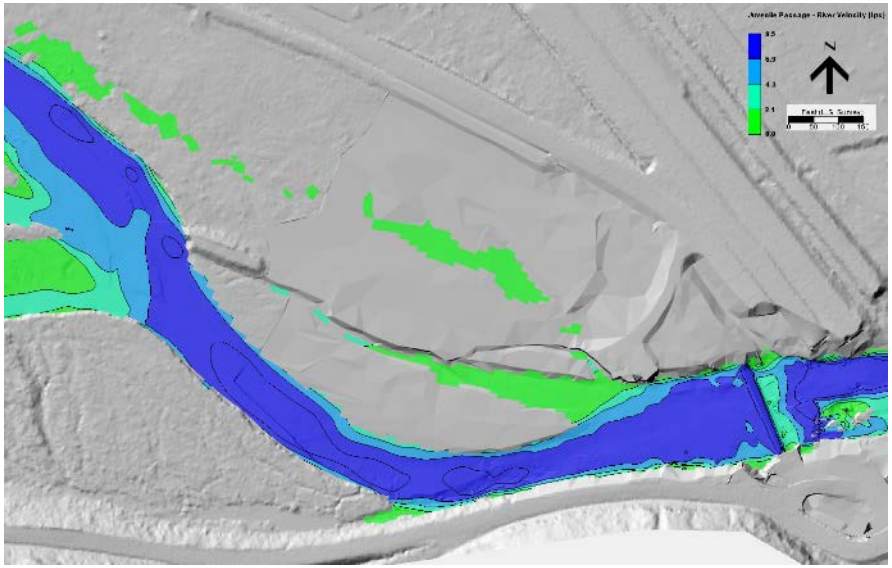
FISH PASSAGE CONSIDERATIONS

Juvenile Passage – 4,500 cfs

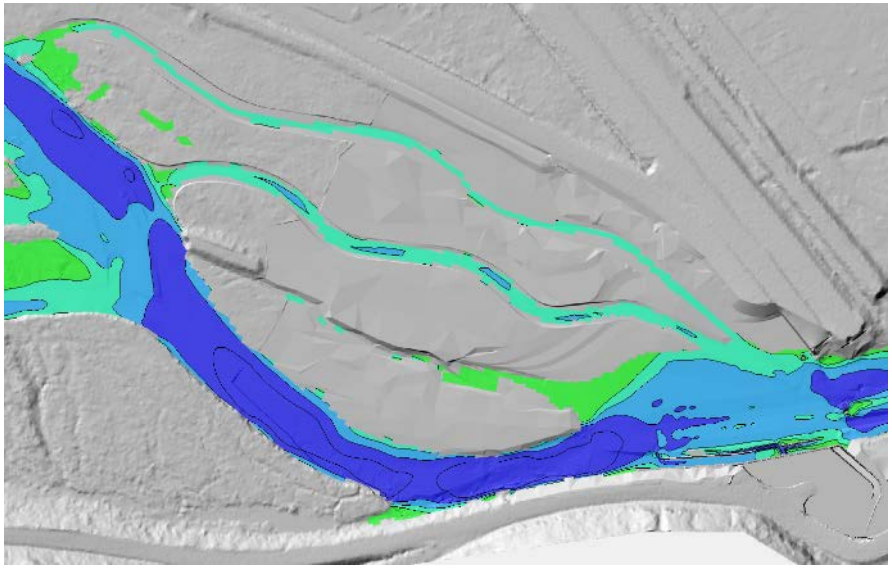
- River velocity at depth 0.4 ft or greater



Existing Conditions



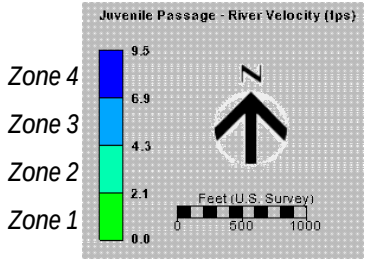
Proposed Conditions



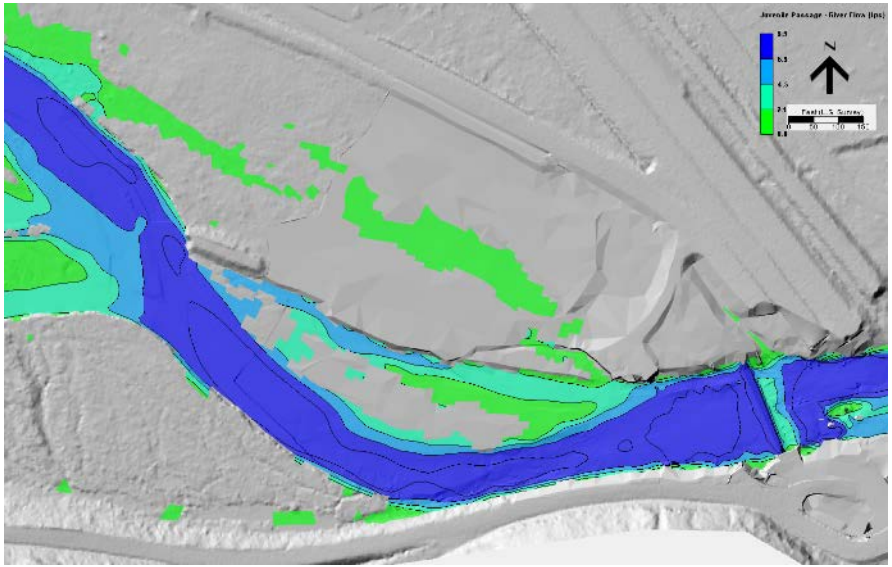
FISH PASSAGE CONSIDERATIONS

Juvenile Passage – 6,520 cfs

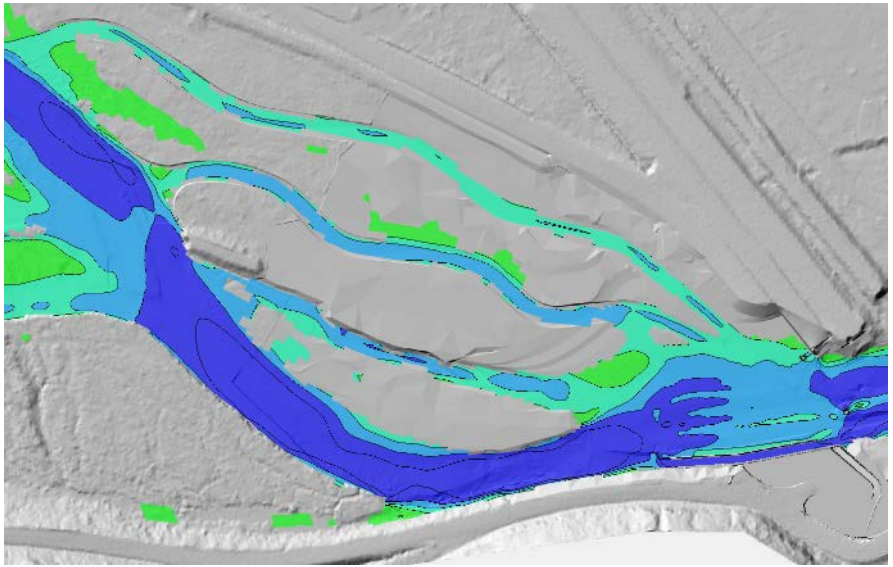
- River velocity at depth 0.4 ft or greater



Existing Conditions

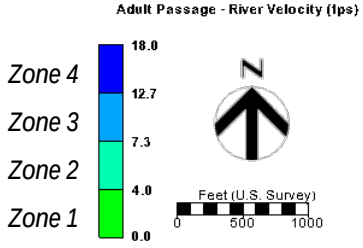


Proposed Conditions



FISH PASSAGE CONSIDERATIONS

Adult Passage



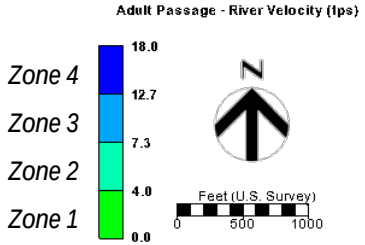
- Flow velocity vs. fish swimming distance relationships

Fish Length	Time	Passage Zone	Water Velocity (fps)	Swim Distance (ft)	Correlated Swim Speed (fps)
710mm (28 in)	5 seconds	Zone 4	18.0	30.5	24.1
	20 seconds	Zone 3	12.7	86.2	17.0
	3 minutes	Zone 2	7.3	450.9	9.8
	30 minutes	Zone 1	4.0	2,418.5	5.4

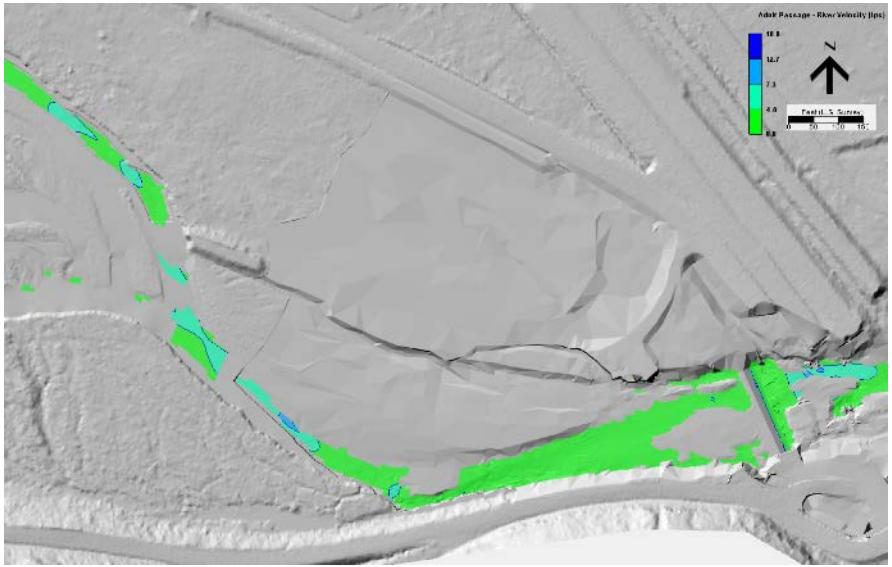
FISH PASSAGE CONSIDERATIONS

Adult Passage – 338 cfs

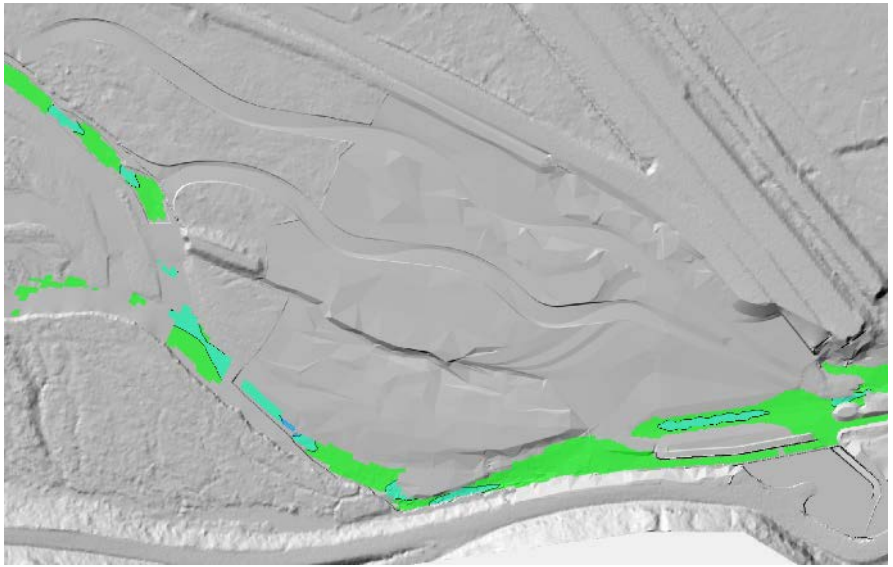
- River velocity at depth 0.9 ft or greater



Existing Conditions



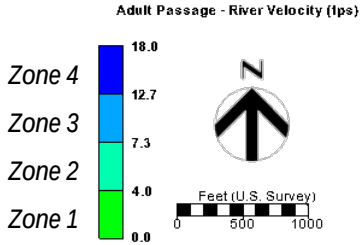
Proposed Conditions



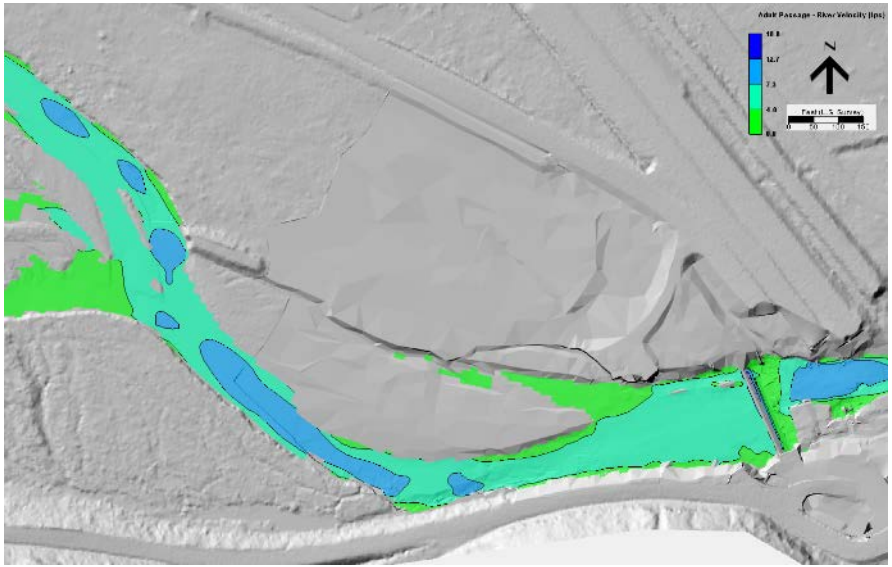
FISH PASSAGE CONSIDERATIONS

Adult Passage – 2,000 cfs

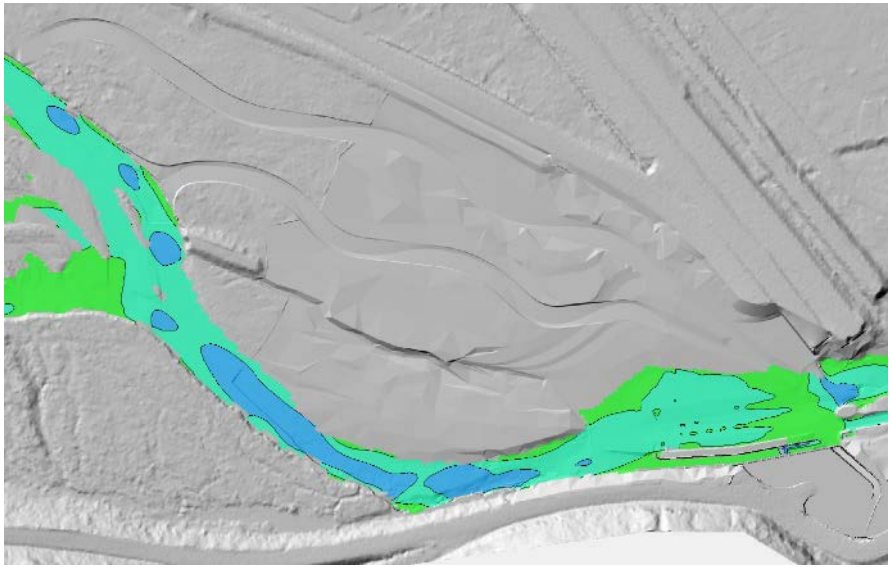
- River velocity at depth 0.9 ft or greater



Existing Conditions



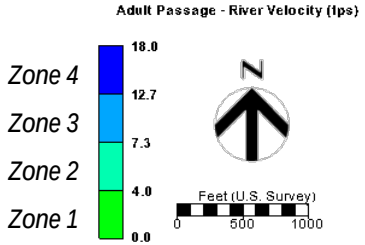
Proposed Conditions



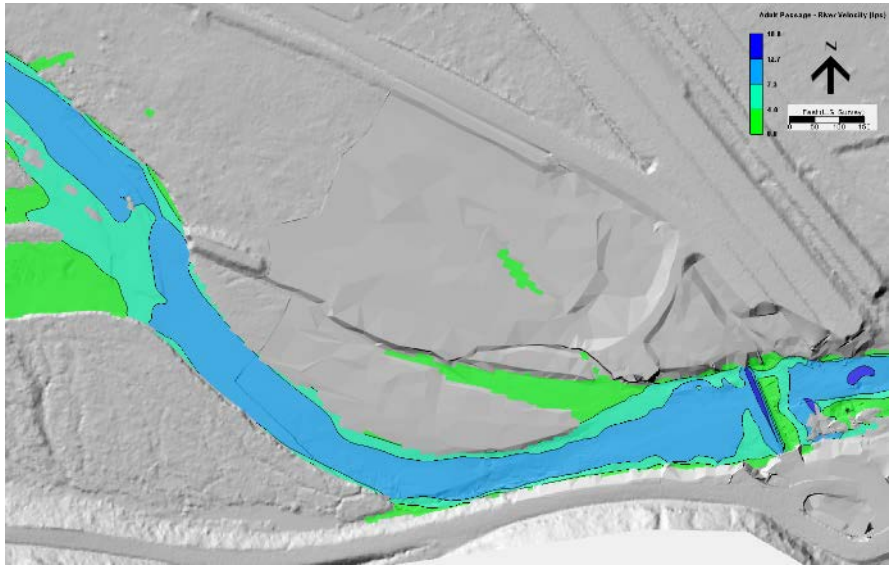
FISH PASSAGE CONSIDERATIONS

Adult Passage – 4,500 cfs

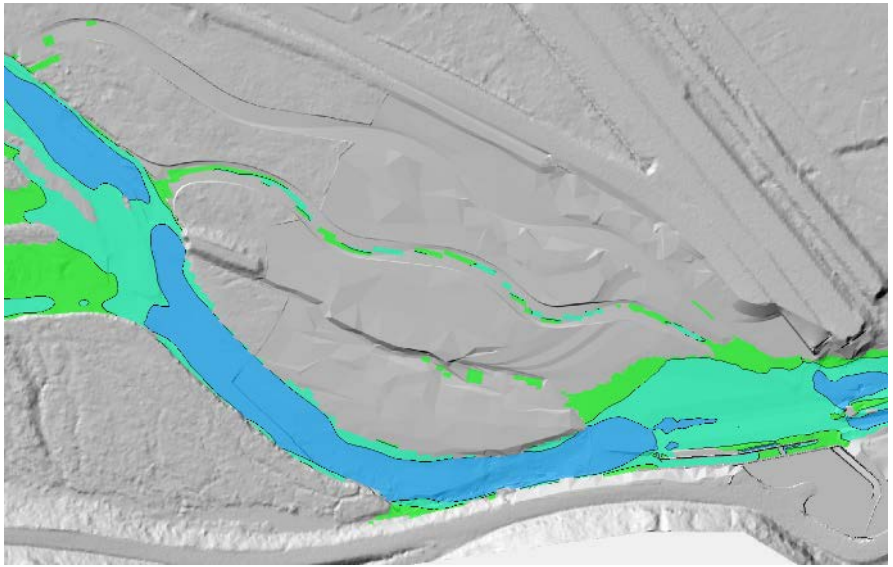
- River velocity at depth 0.9 ft or greater



Existing Conditions



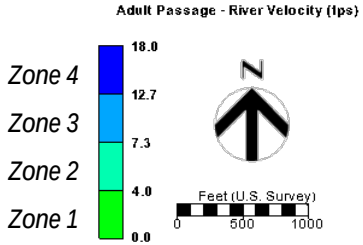
Proposed Conditions



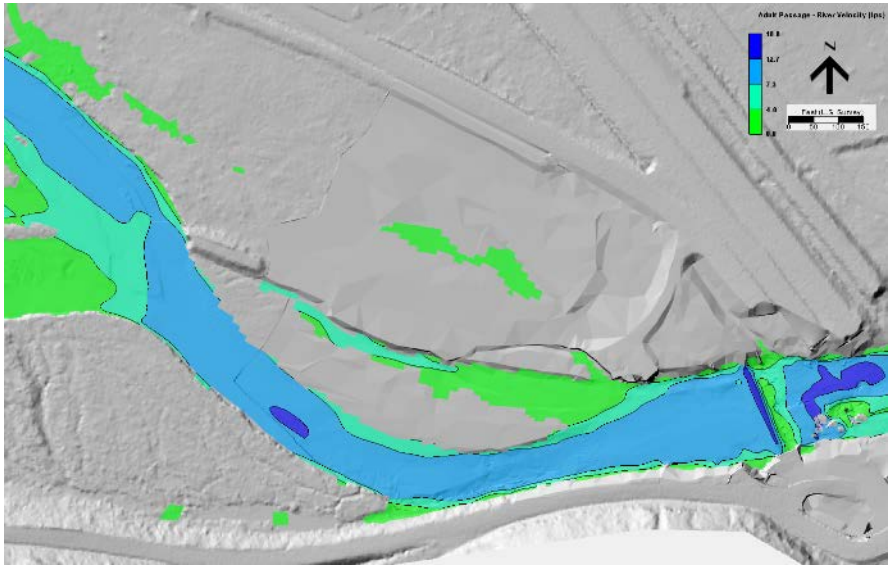
FISH PASSAGE CONSIDERATIONS

Adult Passage – 6,520 cfs

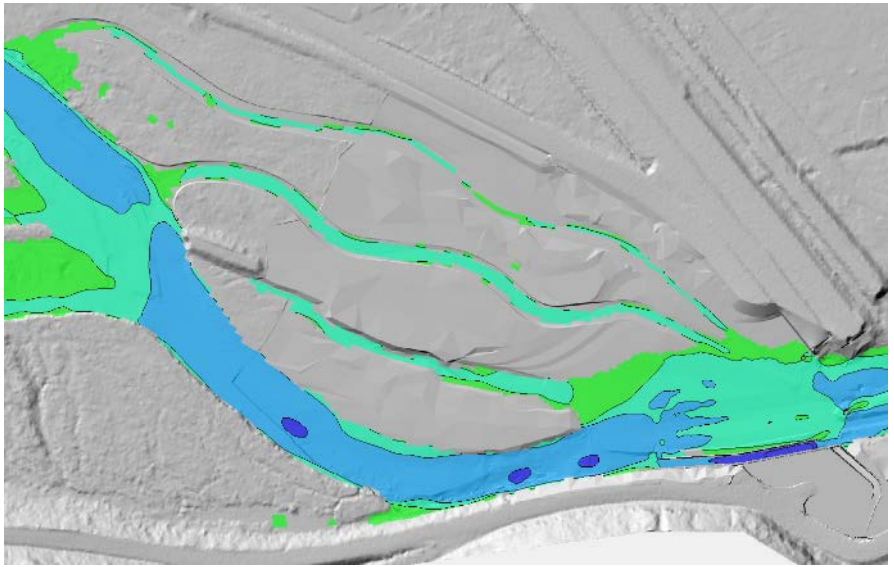
- River velocity at depth 0.9 ft or greater



Existing Conditions



Proposed Conditions



04 PERMITTING STATUS

FIELD WORK AND DOCUMENTS COMPLETED TO DATE

Element	Completion Date	Report / Figures Final?
Wetland and Waters Delineation	Summer/Fall 2019	Yes
Cultural Resources	Summer/Fall 2019	Yes
Biological Assessment/EFH Assessment	February 2020	Yes
JARPA + figures	February 2020	Yes; Updated JARPA Sheets and quantities 9/2/2020
In-water Work Plan	January 2020	Yes (Contractor to provide final plan prior to in-water work)
Baseline Conditions and Functional Lift	January 2020	Yes
Water Quality Monitoring Plan	February 2020	Yes
Restoration Plan (Figures in JARPA set) - Plan reviewed and developed in coordination with Yakima County	February 2020	Updated at 90% design and submittal to WDFW, Ecology, USACE (planting specifications)
WDFW APPs narratives and tables	September 2020	Yes

FEDERAL, STATE, LOCAL PERMIT SUBMITTAL STATUS

Regulations and Documents	Submittal Date	Submitted To	Permit/Authorization Status
CWA 404/401; Aquatic Land Authorization: JARPA	2/28/2020	USACE, Ecology, DNR	• Ecology 401: Individual WQC Issued 9/10/2020 • USACE 404 DA: NWP Verification issuance pending ESA consultation • DNR Pending Issuance of all permits

ESA Section 7 and MSA: Biological Assessment/EFH Assessment	2/28/2020	USACE	Anticipated BiOp issuance:
			• USFWS: December 2020
			• NMFS: TBD, may combine with City Intake Project
			  • Engineer approval of DDR complete
			  • Expect minimal additional data requests

NHPA Section 106: Cultural and Historic Properties Report	2/28/2020	USACE	DAHP no adverse effect: • Cultural 4/10/2020; • Historic properties: 3/26/2020
County Shorelines Exemption	3/3/2020	Yakima County	Exemption issued 6/4/2020
SEPA: SEPA Checklist	3/10/2020	Yakima County	DNS Issued 6/4/2020
WDFW HPA Application	9/14/2020	WDFW	Pending; accepted for bio review 9/22/2020

FUTURE PERMIT SUBMITTAL TIMELINE

Permit / Consultation	Submittal Date	Submitted To
Phase I: County Building and Floodplain Development permits	November 2020	Yakima County
Phase I: CWA Section 402 (NOI - NPDES Construction Stormwater Permit)	December 2020	Ecology
WSDOT Utility Permit	TBD	WSDOT
Phase II City clearing/grading permits	January 2023	City of Yakima

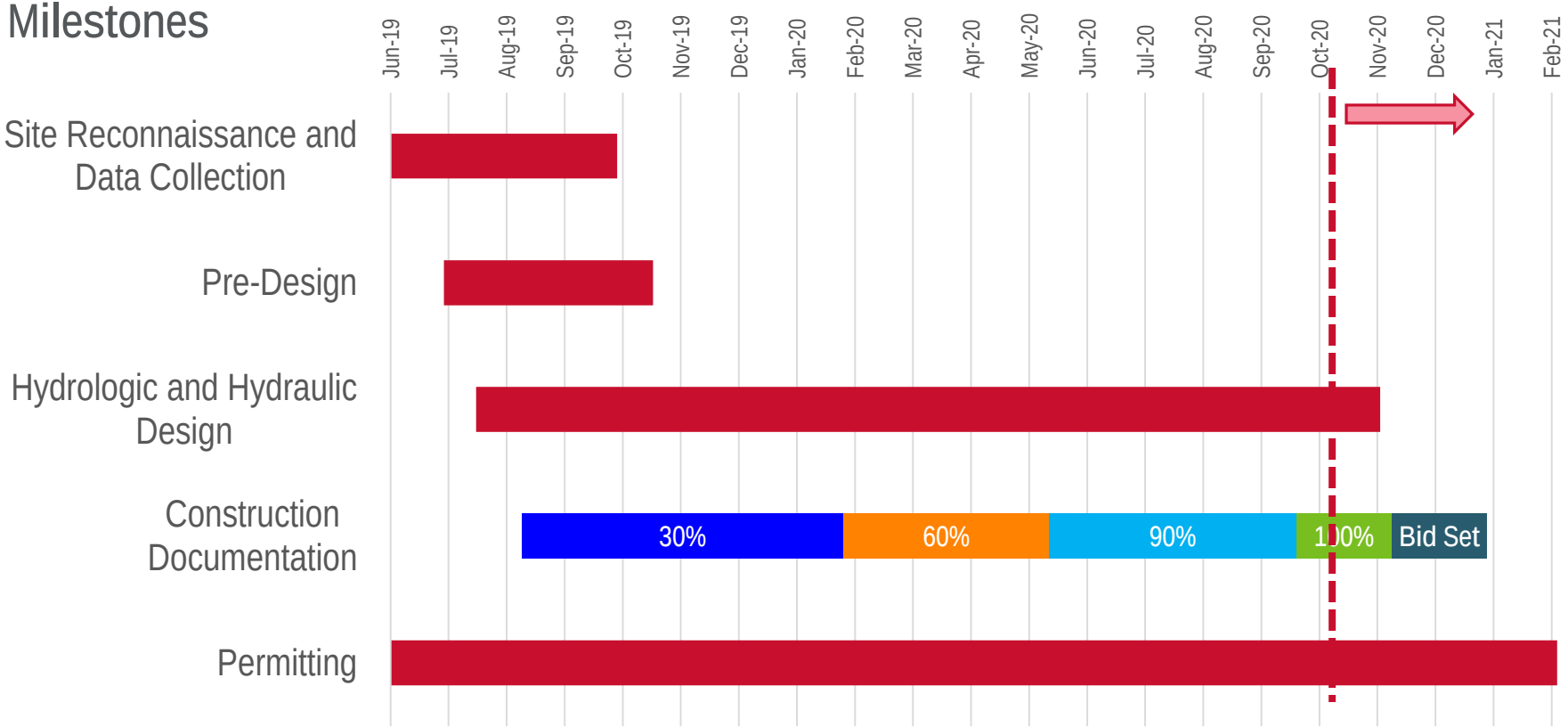
NEPA STATUS

- City has submitted all documents to USACE as federal lead agency
  - USACE will authorize project under 2017 Nationwide Permit Program
    - Potential changes to NWP Program may delay issuance if not issued by end of 2020
    - Potential changes do not appear to preclude NWP coverage for Project
- Reclamation and BPA NEPA compliance requirements
  - Reclamation – Adopt USACE NEPA?
  - BPA – Categorical Exclusion or adopt USACE NEPA?

05 PROJECT SCHEDULE

PROJECT SCHEDULE

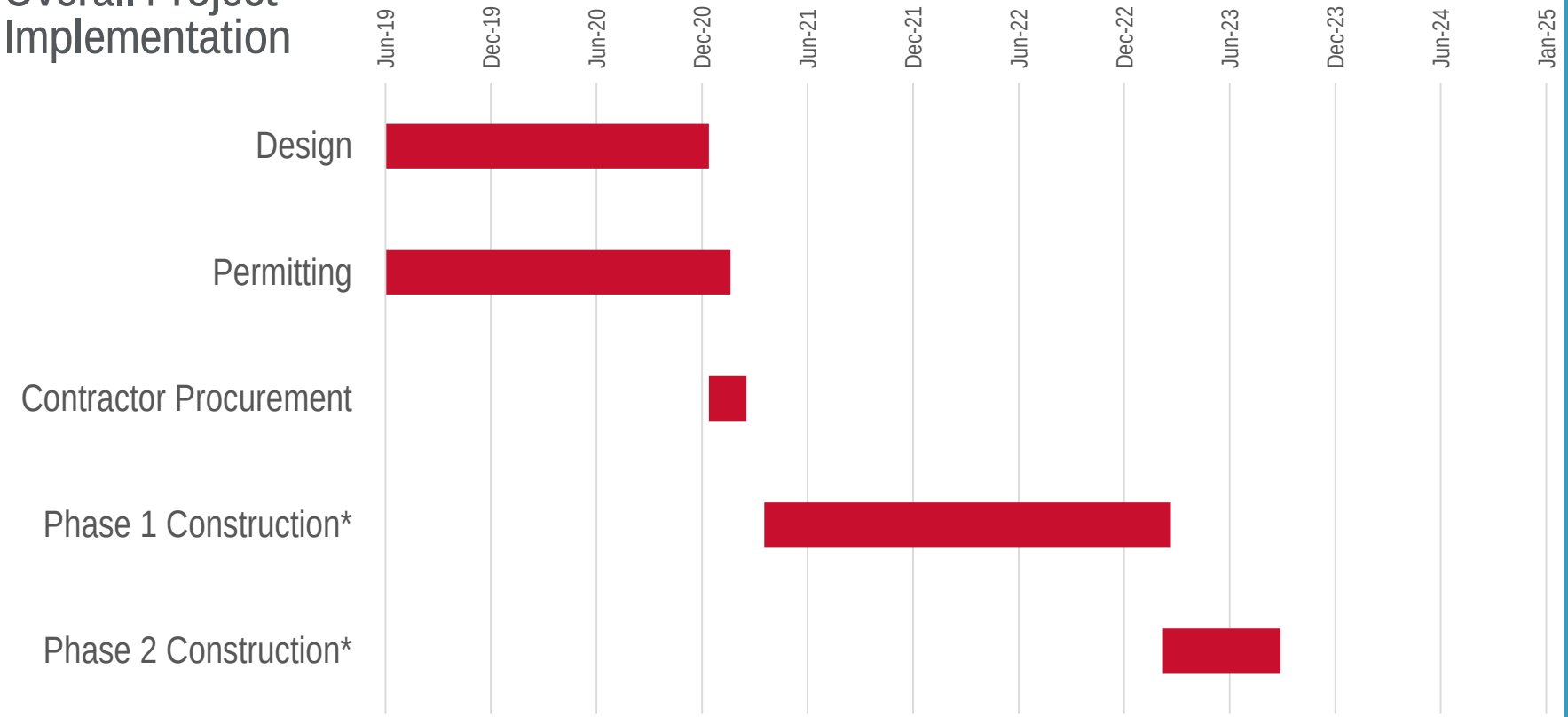
Primary Milestones



CONSTRUCTION SCHEDULE

*Current anticipated dates. Timeline may vary pursuant to permitting timelines.

Overall Project Implementation



06 PROJECT FUNDING

OPCC SUMMARY

Project Construction Costs	Phase 1	Phase 2
Care of Water	$ 1,658,150	$ 117,790
Demo	$ 1,014,717	$ 191,736
Sitework	$ 425,210	$ 121,050
Intake	$ 1,607,130	NA
Sluiceway	$ 1,170,979	NA
Roughened Channel	$ 2,343,178	NA
Rock Slope Protection	$ 316,463	NA
Pilot Channels	$ 202,816	NA
Piping	$ 369,575	$ 3,954,376
Turnouts	NA	$ 225,981
Electrical and I&C	$ 151,652	$ 18,305
Subtotal	$8,992,000	$4,482,000
Subtotal with contingency, taxes, general contractors OH and profit, etc.	$14,430,000	$7,200,000

Open Discussion