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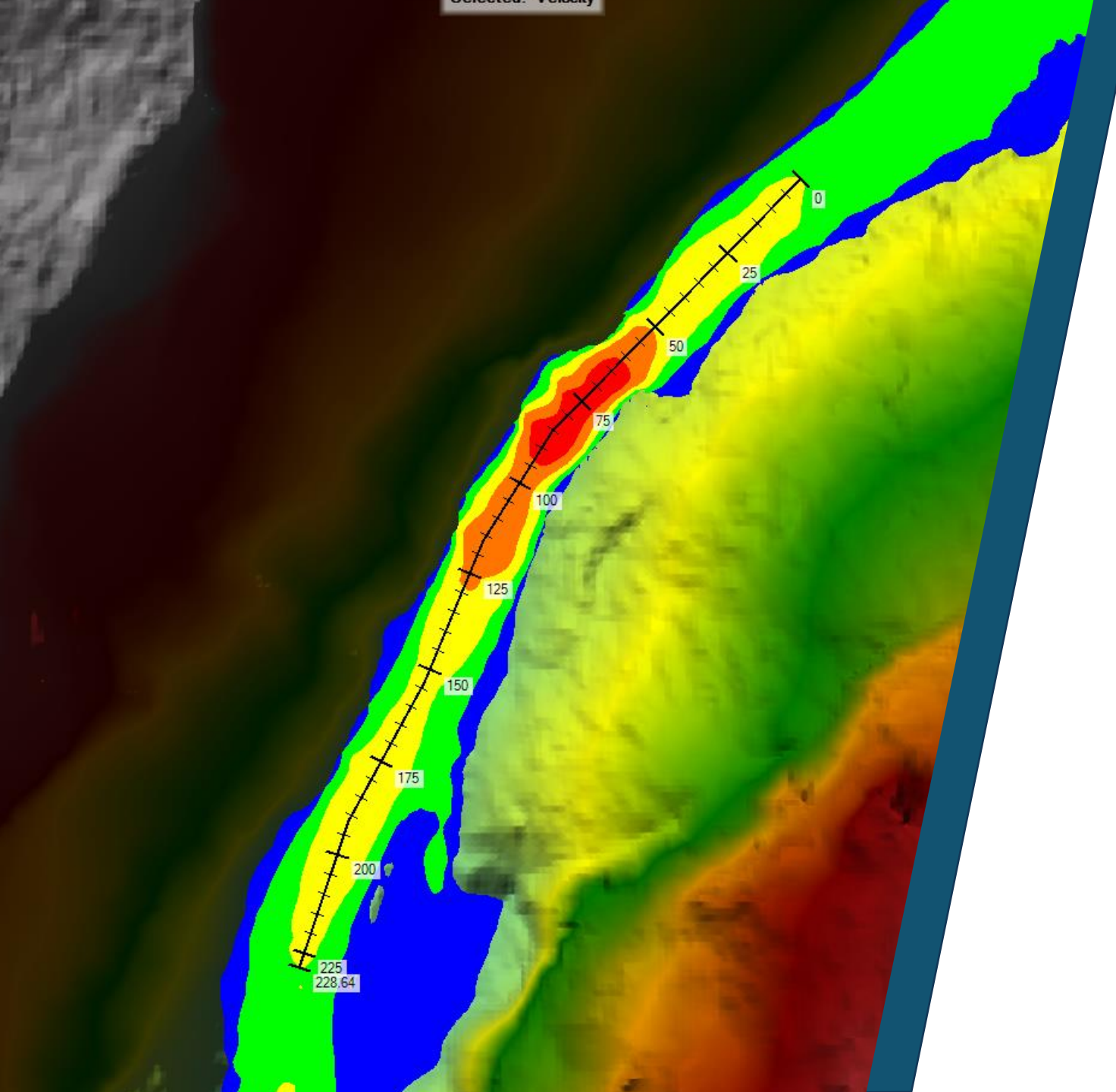
# Eklutna Fish & Wildlife Program Alternatives Analysis - Meeting 4

July 12, 2023

# Agenda

- 9:00 – 9:15 Introduction
- 9:15 – 9:45 Velocity Barrier Discussion
- 9:45 – 10:30 Preferred Alternative Results
- 10:30 – 11:30 Positive/Negative Impacts
- Wetlands and Wildlife Habitat
  - Public Water Supply
- 11:30 – 11:45 Lunch
- 11:45 – 12:45 Positive/Negative Impacts
- Recreational Use and Facilities
- 12:45 – 1:00 Key Takeaways and Next Steps
- 1:00 Adjourn





**Eklutna Canyon  
Velocities under  
Proposed Alternative  
Flow Regimes (80-  
350 cfs)**



# Full Canyon Model

## Purpose:

Develop general understanding about how flow regimes proposed during the Eklutna River Alternatives Analysis might affect in-canyon velocity and opportunities for fish passage

- Identify Hydraulic “Pinch Points”
- Add Model Refinement to these locations

## Model Input

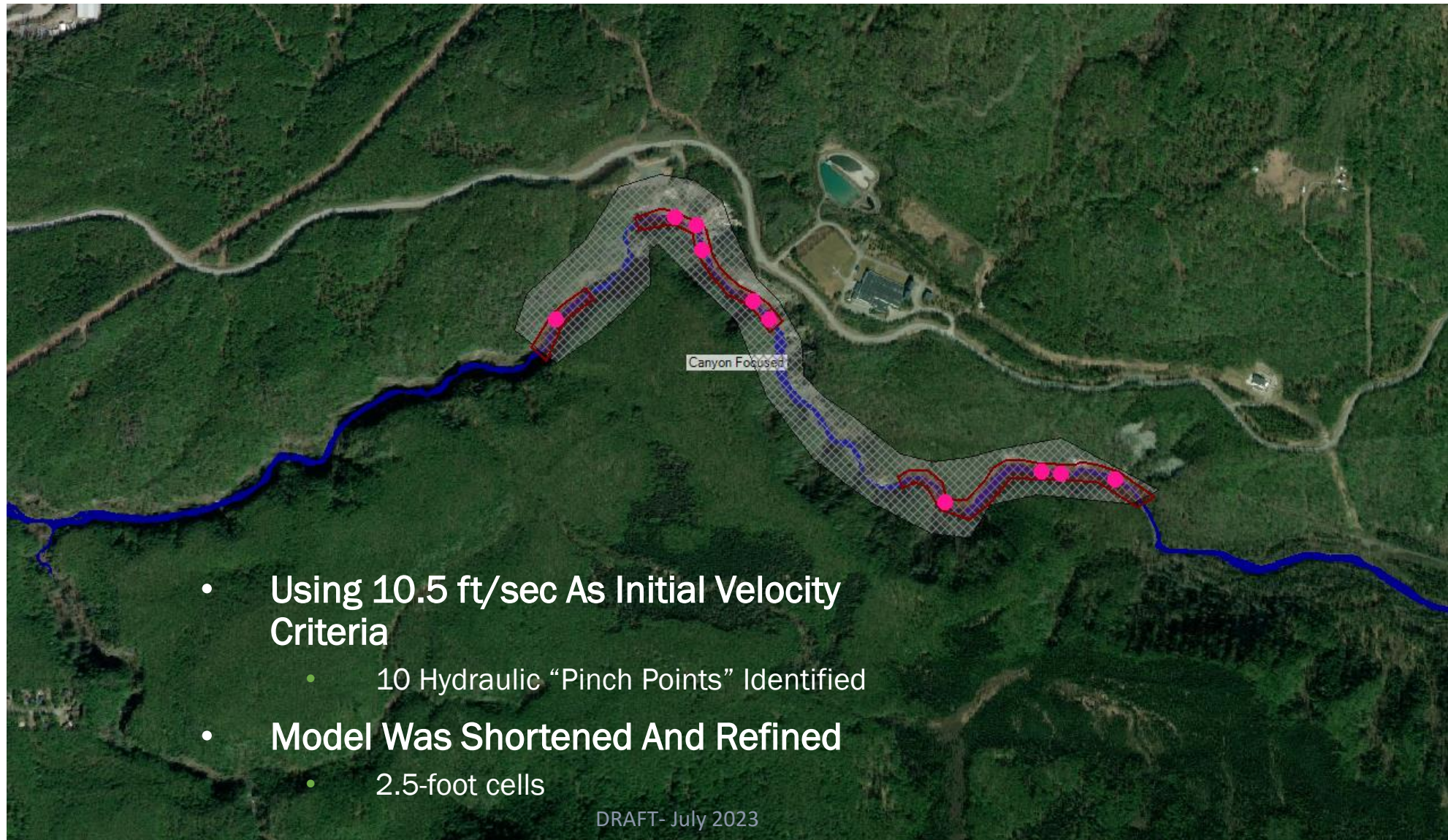
- 2022 LiDAR
- Assumed Manning’s Roughness of 0.049
- Default Mixing Coefficient (Turbulence)
- 10 Foot Cells



Full Canyon 2D Model Boundary



# Full Canyon Model Results



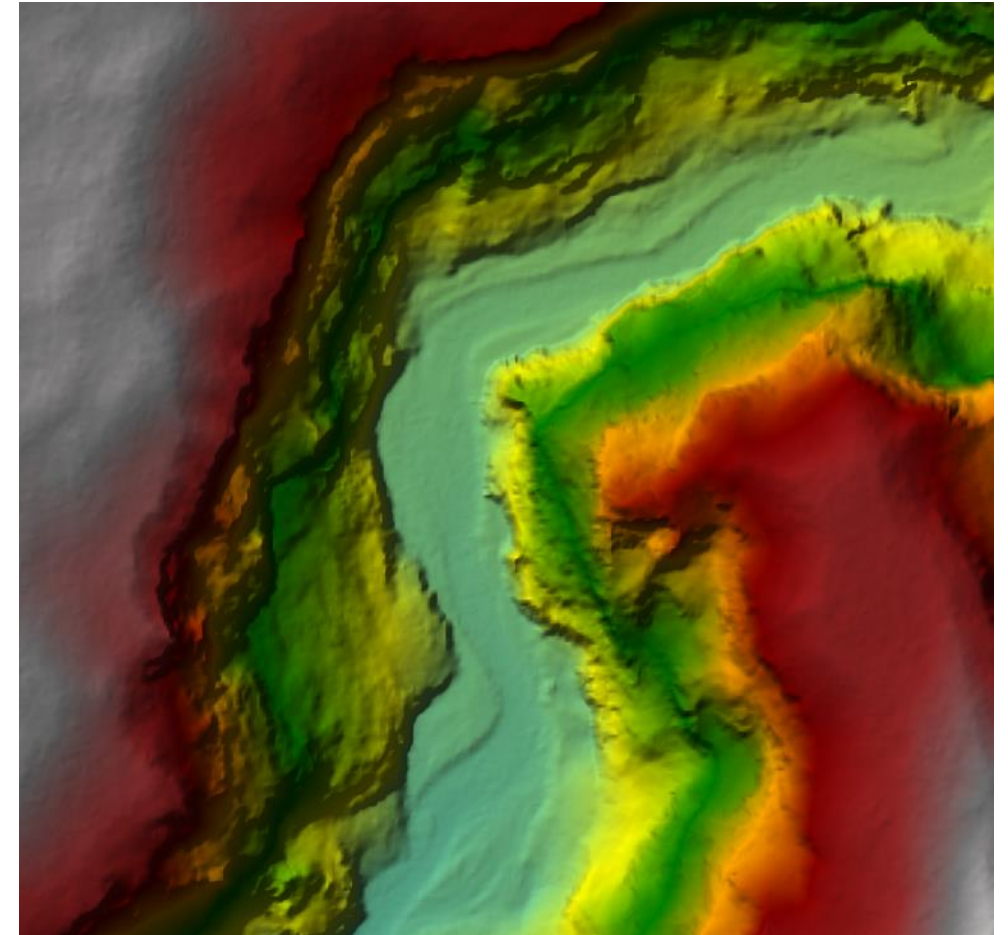
- Using 10.5 ft/sec As Initial Velocity Criteria
  - 10 Hydraulic “Pinch Points” Identified
- Model Was Shortened And Refined
  - 2.5-foot cells

DRAFT- July 2023



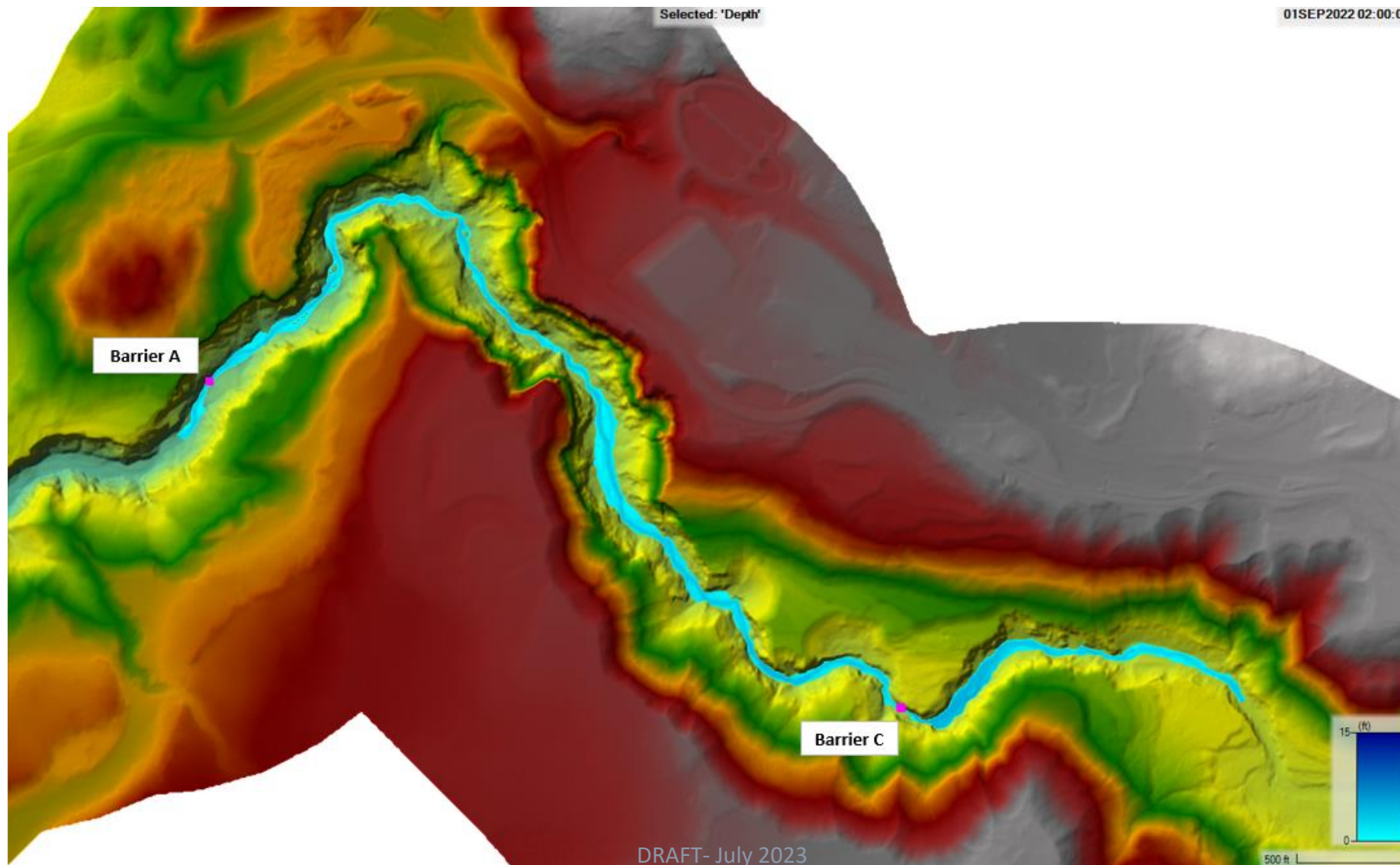
# 2D Model Caveats

- **LiDAR not verified in the Canyon**
  - Channel bathymetry may not be completely represented.
- **No calibration data available**
- **Previous Analysis (1D) was focused on determining at what flow depths become adequate to enable passage**
  - Different Analysis for Different Application
- **Purpose of the Analysis Defines Model Applicability**
- **Results are intended to be Qualitative Not Quantitative**



*LiDAR Data of Canyon*

# Focused Canyon Model

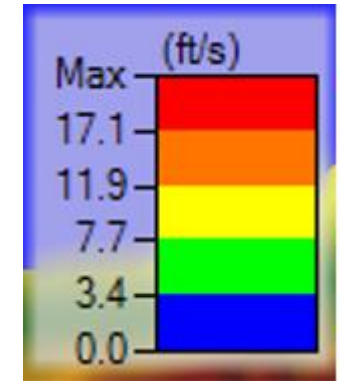
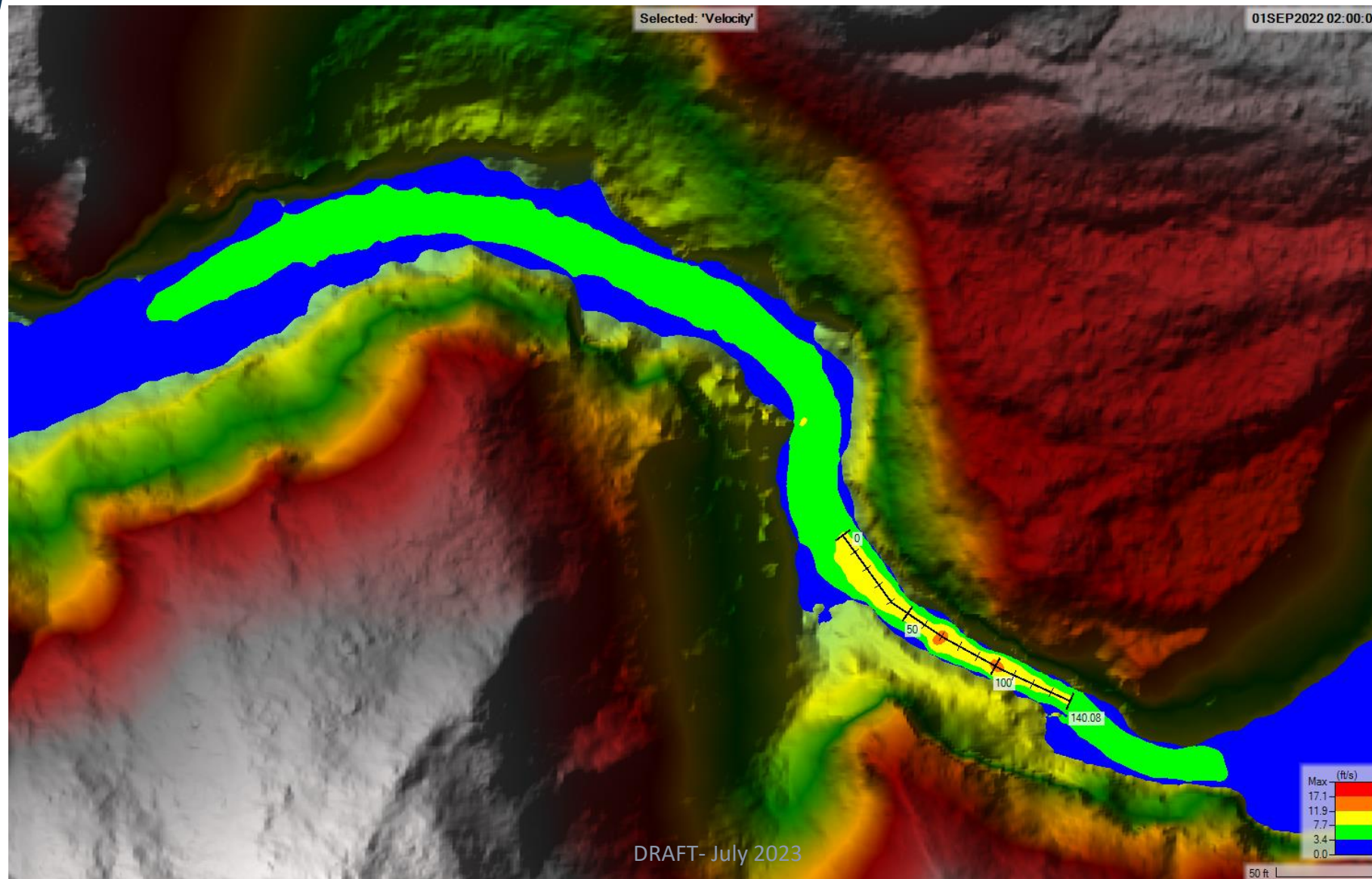




# Swim Speed Velocity Categories for Target Fish Species

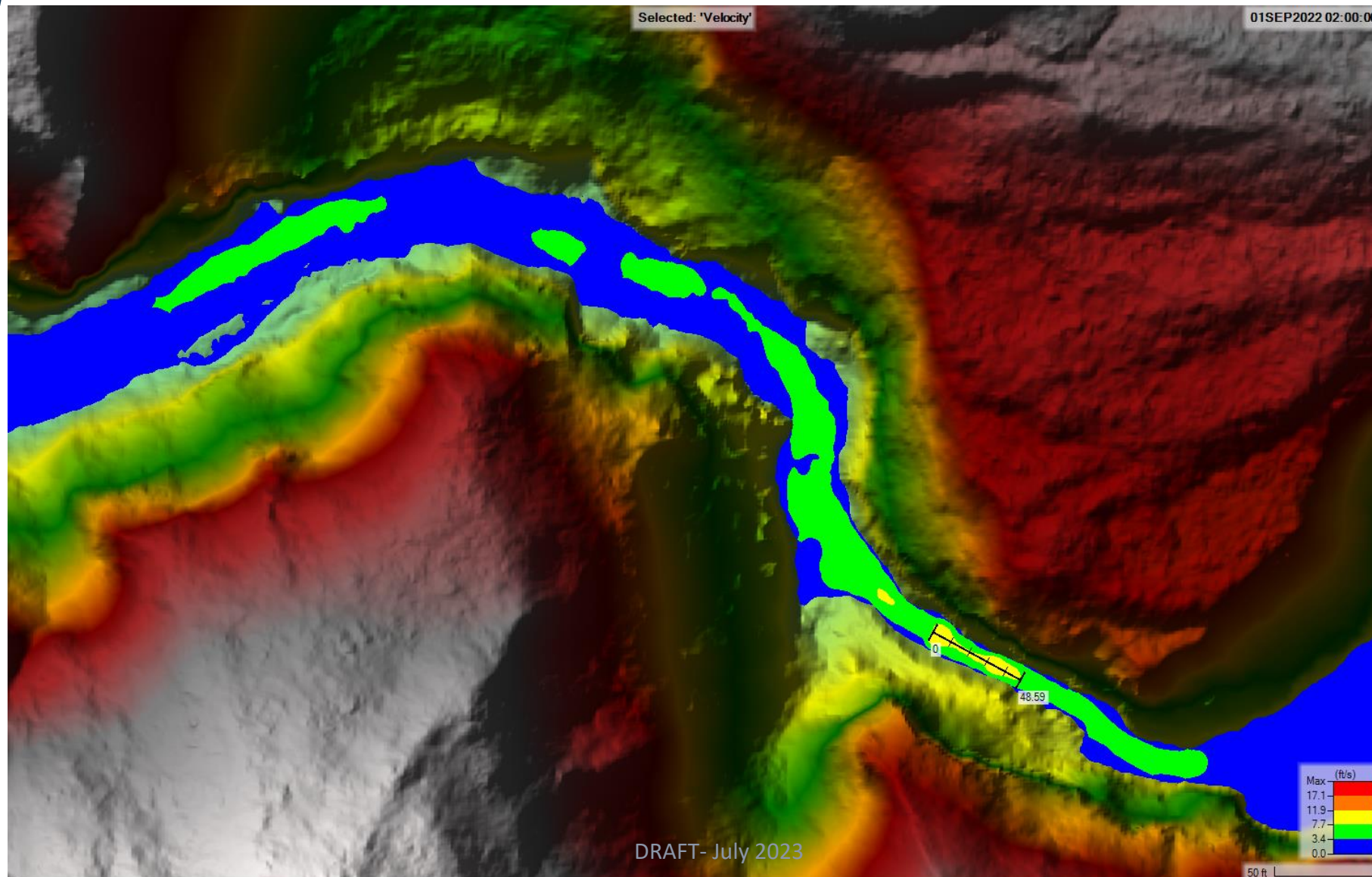
Species	Flow Velocity Category	Water Velocity (ft/s)	Maximum Swim Distance (ft)
Chinook	1-2	27.3-17.1	3.3-11.1
	2-3	17.1-11.9	11.1-28.3
	3-4	11.9-7.7	28.3-89.4
	4-5	7.7-3.4	89.4-733.5
Coho	1-2	19.7-13.1	1.9-7.3
	2-3	13.1-9.8	7.3-19.0
	3-4	9.8-6.6	19.0-68.9
	4-5	6.6-3.4	68.9-593.3
Sockeye	1-2	17.9-11.9	1.8-6.7
	2-3	11.9-8.9	6.7-17.3
	3-4	8.9-6.0	17.3-62.6
	4-5	6.0-3.1	62.6-539.2

# Barrier C – 350 CFS (Chinook)



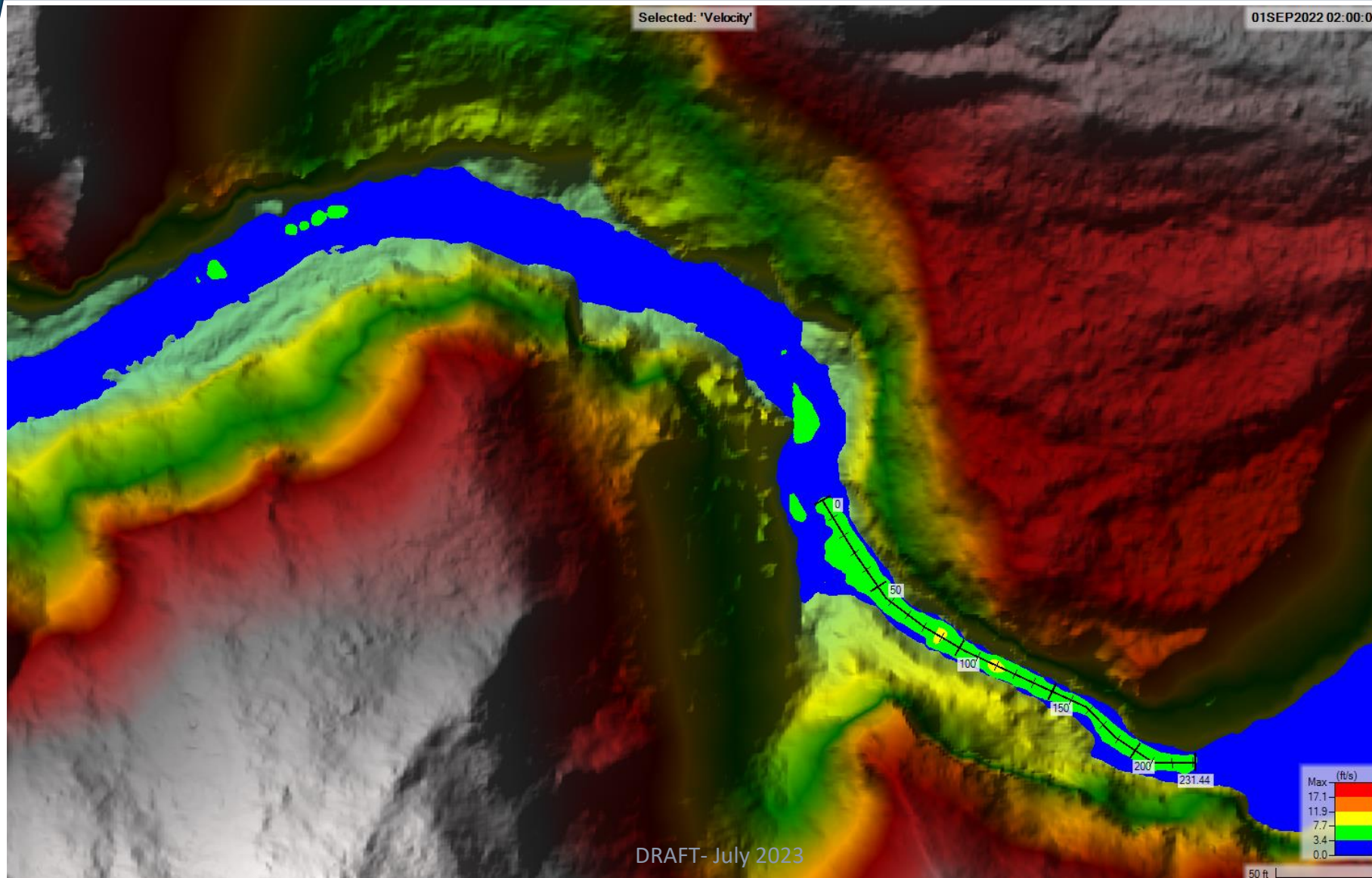


# Barrier C – 160 CFS (Chinook)

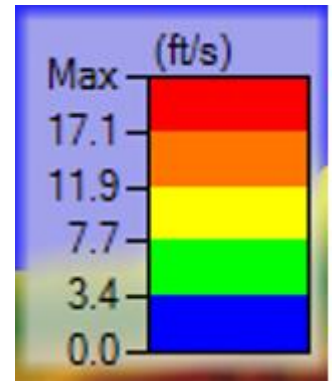
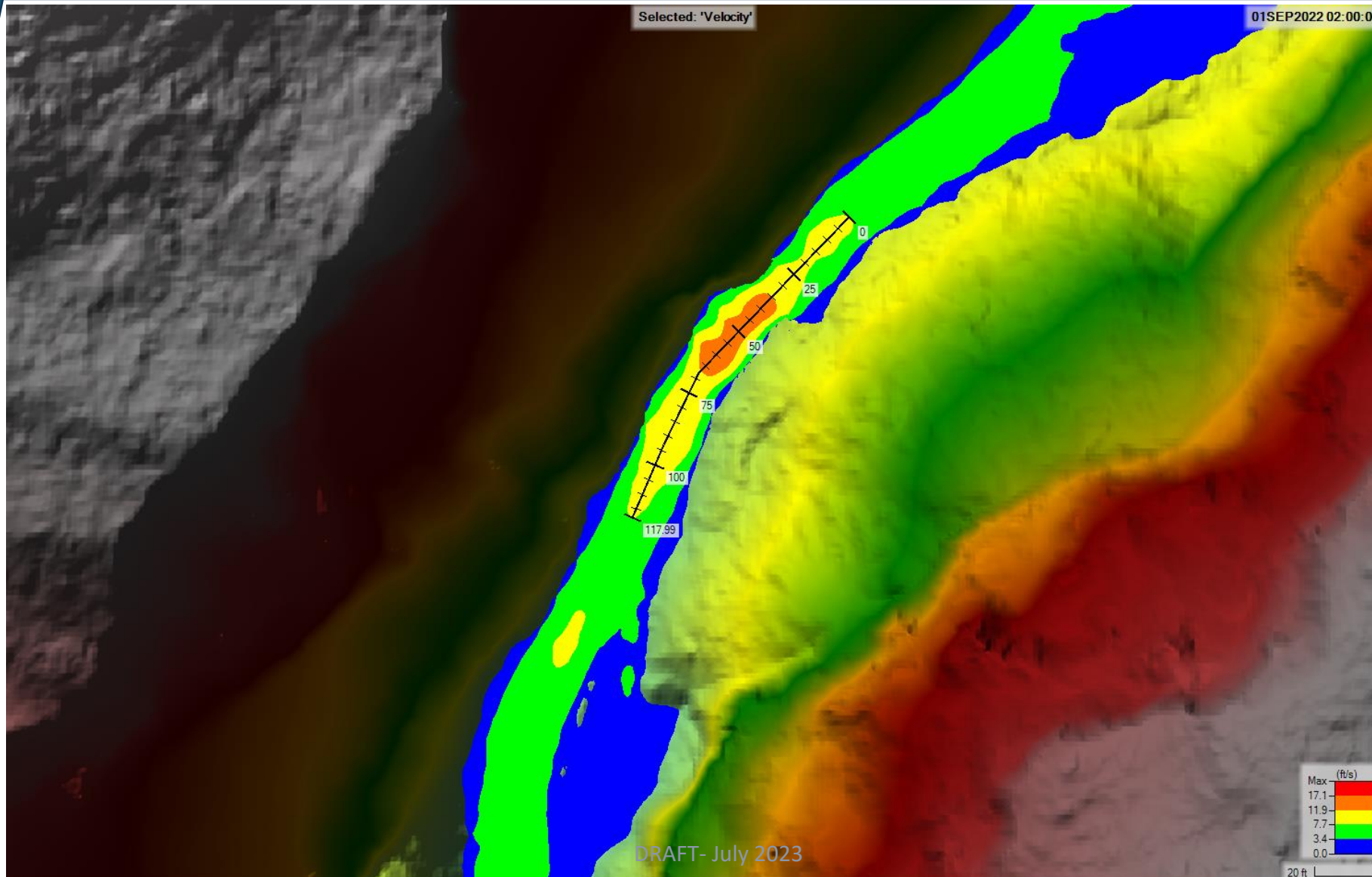




# Barrier C – 80 CFS (Chinook)

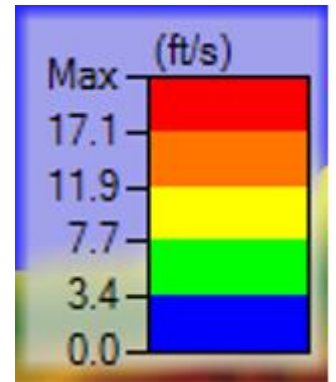
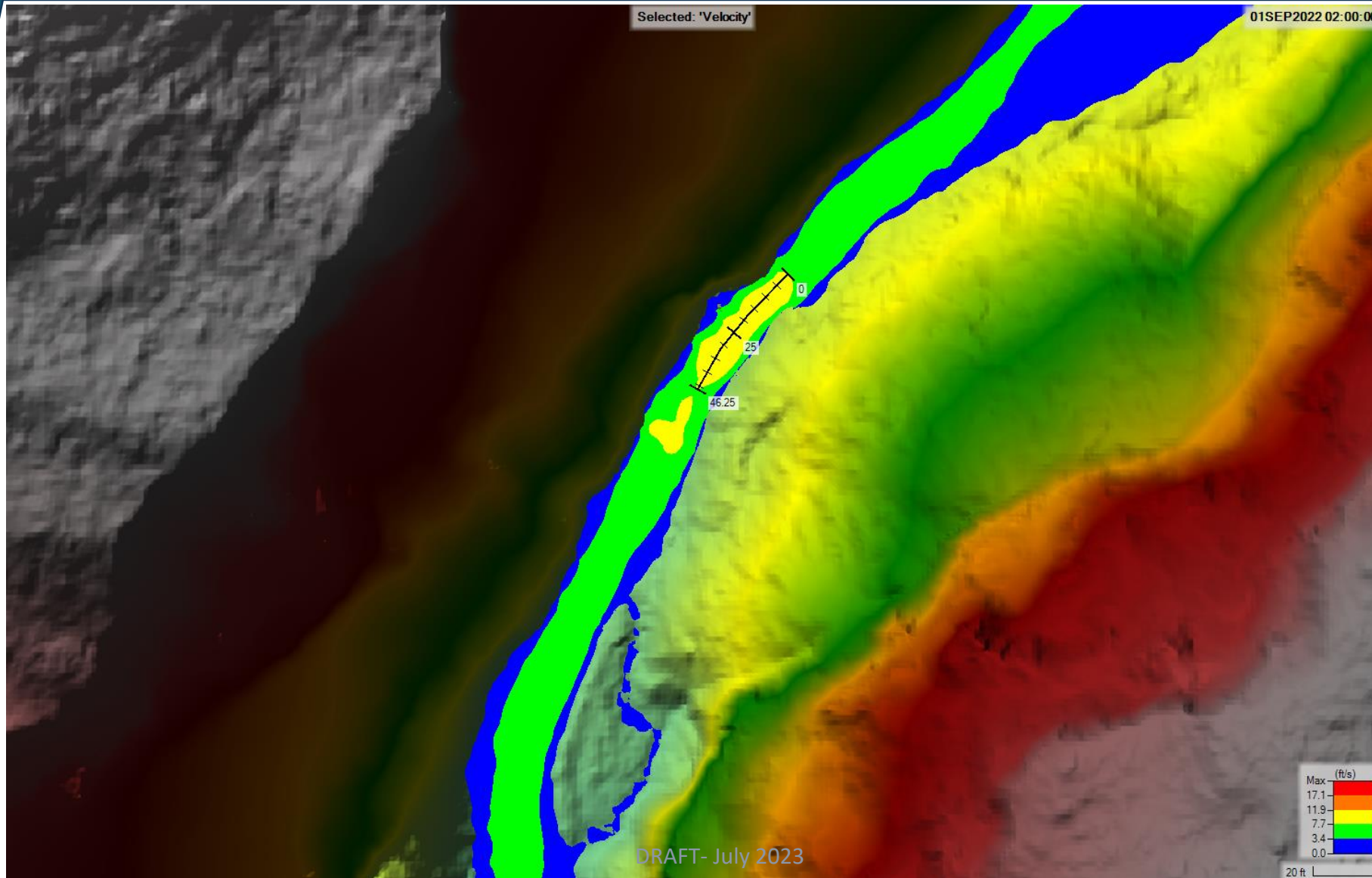


# Barrier A – 350 CFS (Chinook)



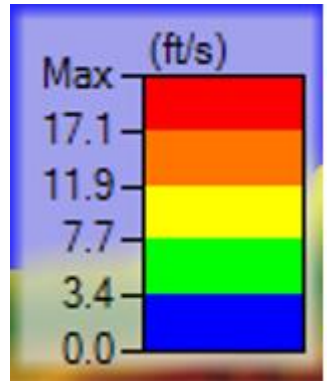
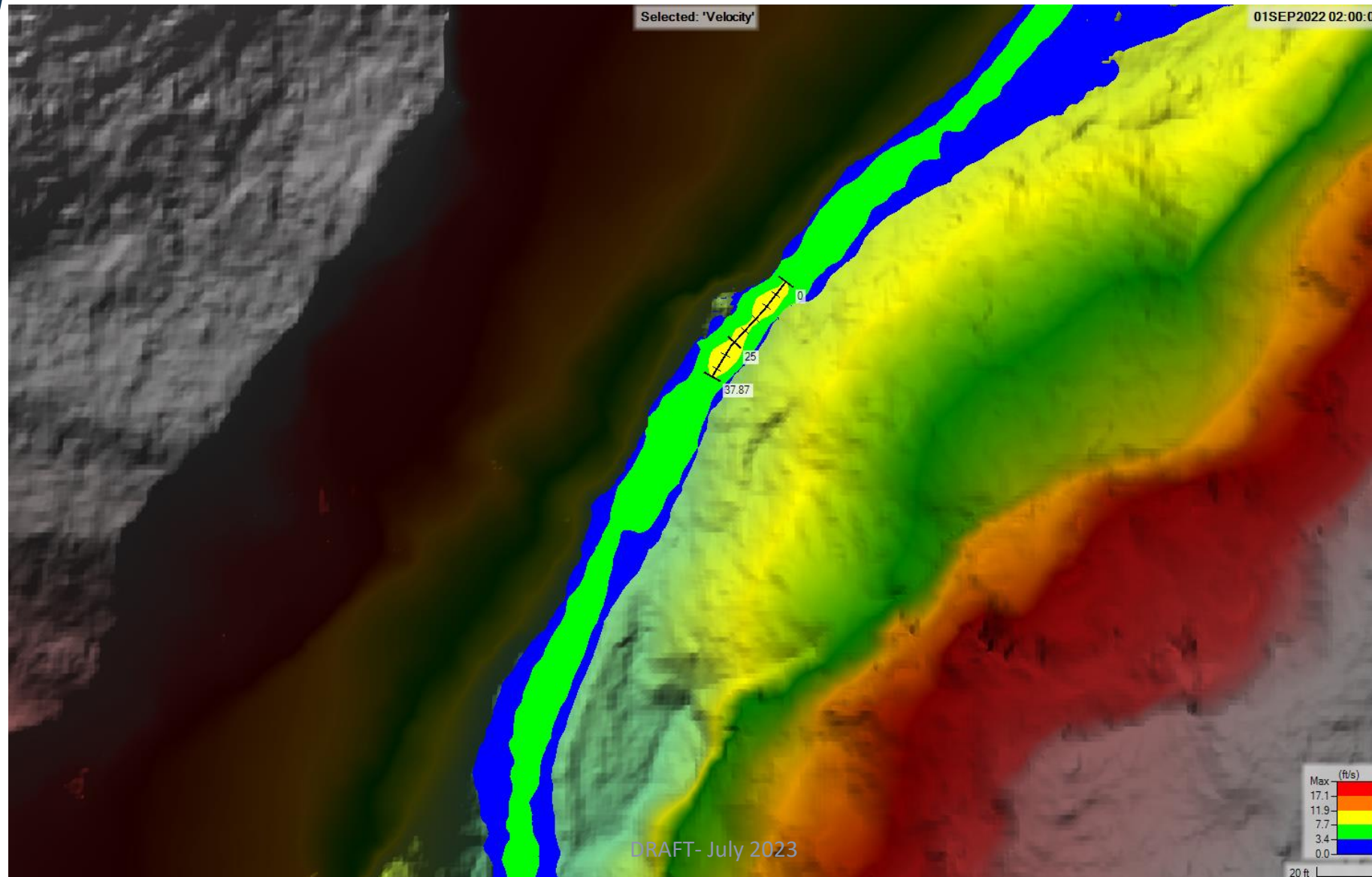


# Barrier A – 160 CFS (Chinook)





# Barrier A – 80 CFS (Chinook)



# Summary

- Canyon reach of Eklutna River narrows in a few key locations.
- 2D model of canyon reach shows that these locations exhibit higher velocities over extended distances.
- Some locations exceed the velocity criterion and swim distance for some species of salmon.
- However, salmon could use natural resting pools behind boulders or at the edges of the channel to successfully navigate the canyon reach at higher flows.
- Reduced (or fluctuating) flows during migration timing may increase efficiency of passage.



# Preferred Alternatives



# Stakeholder Preferred Alternatives

- Received 13 preferred alternatives from the following entities:
  - Native Village of Eklutna \*Provided 1 preferred alternative
  - Alaska Department of Fish and Game (ADFG) \*Provided 2 preferred alternatives
  - Chugach State Park (ADNR) \*Provided 1 preferred alternative
  - National Marine Fisheries Service (NMFS) \*Provided 2 preferred alternatives
  - U.S. Fish & Wildlife Service (USFWS) \*Provided 1 preferred alternative (w/ 3 backups)
  - Trout Unlimited \*Did not provide a preferred alternative
  - The Conservation Fund \*Provided 2 preferred alternatives
  - Hydro Project Owners \*Provided 1 preferred alternative

Note:

ADNR Dam Safety has no comments on flow regime but will have input on any modifications to the dam and appurtenant structures.



# Stakeholder Preferred Alternatives

## Native Village of Eklutna

- Replacement Dam / US Passage / DS Passage Spill 3 Months / Infrastructure Improvements

## USFWS

- Plan A – Replacement Dam / US Passage / DS Passage FSC Recirc / Infrastructure Improvements
- Plan B – Existing Dam / FWG / US Passage / DS Passage FSC Recirc / Infrastructure Improvements
- Plan C – Existing Dam / FWG / No Passage / Infrastructure Improvements (Interim)
- Plan D – AWWU Portal / FWG / No Passage / Infrastructure Improvements (Interim)

## The Conservation Fund

- Plan A – Replacement Dam / US Passage / DS Passage Spill 3 Months / Infrastructure Improvements
- Plan B – Existing Dam / FWG / US Passage / DS Passage Spill 3 Months / Infrastructure Improvements

## NMFS

- Plan A – Replacement Dam / US Passage / DS Passage FSC / Infrastructure Improvements
- Plan B – AWWU Portal / FWG / No Passage / Infrastructure Improvements

## ADFG

- AWWU Portal / No Passage / Infrastructure Improvements

## Hydro Project Owners

- AWWU Portal / No Passage / Infrastructure Improvements

## ADNR – State Parks

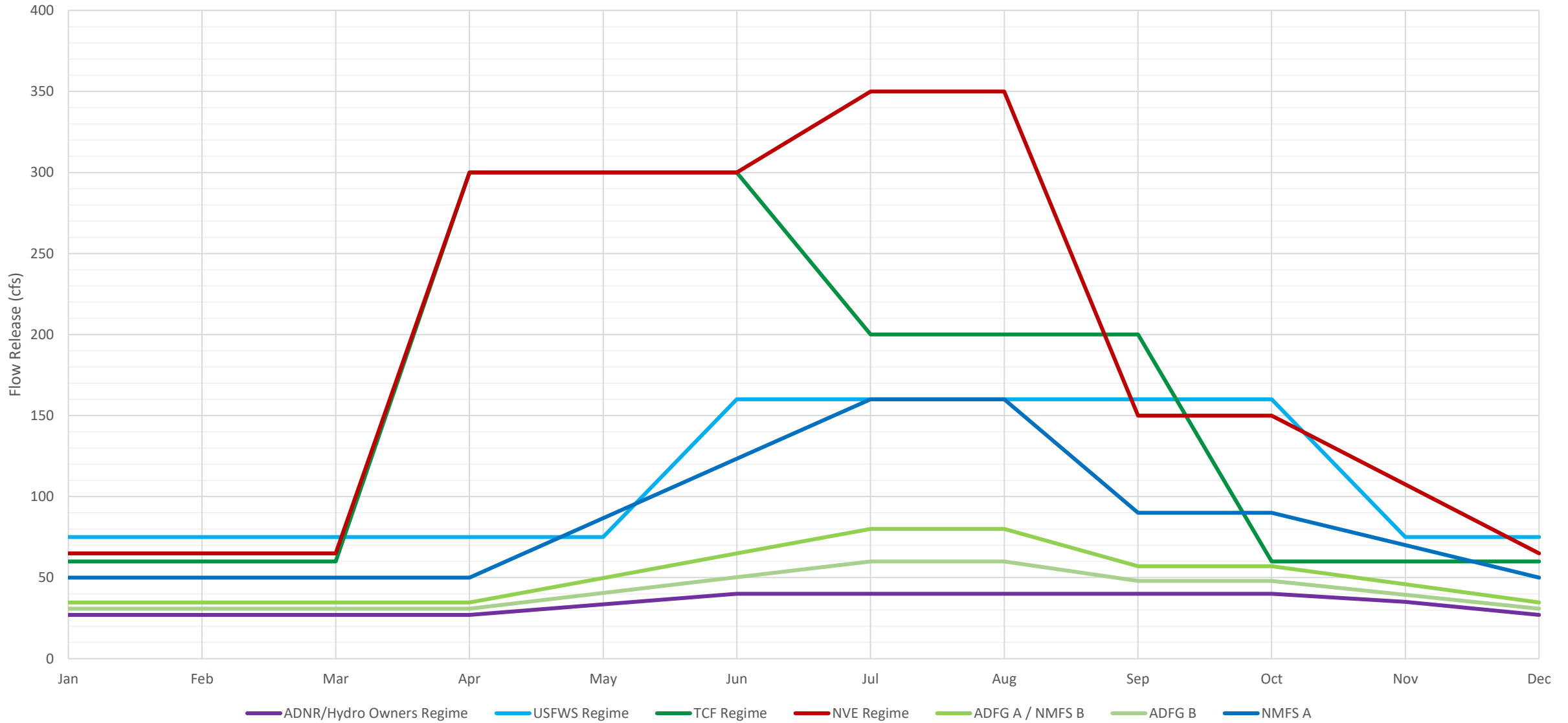
- AWWU Portal / No Passage / Infrastructure Improvements



# Preferred Flow Regimes

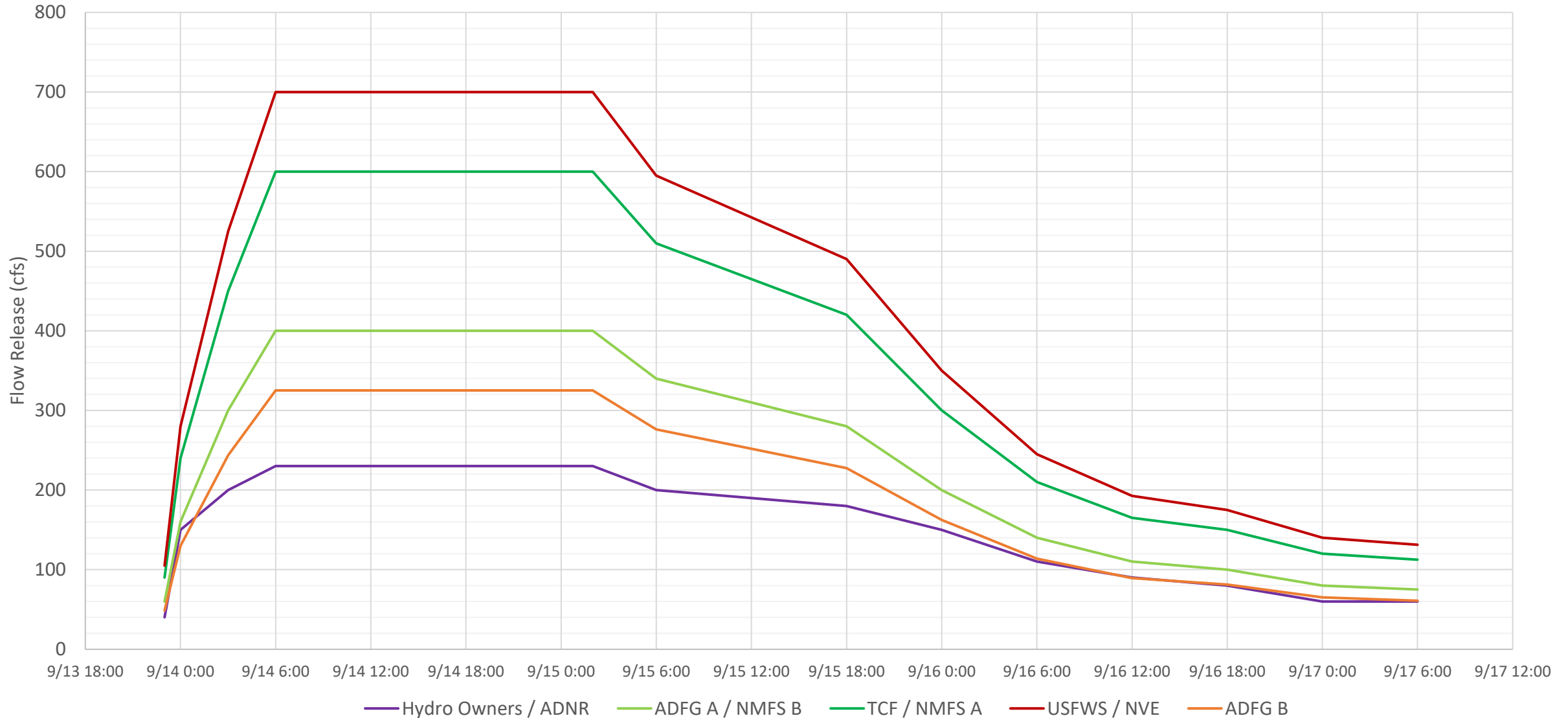


# Preferred Flow Regimes



# Preferred Maintenance Flows

# Preferred Maintenance Flows







# Alternative Costs

# Updates from June Meeting

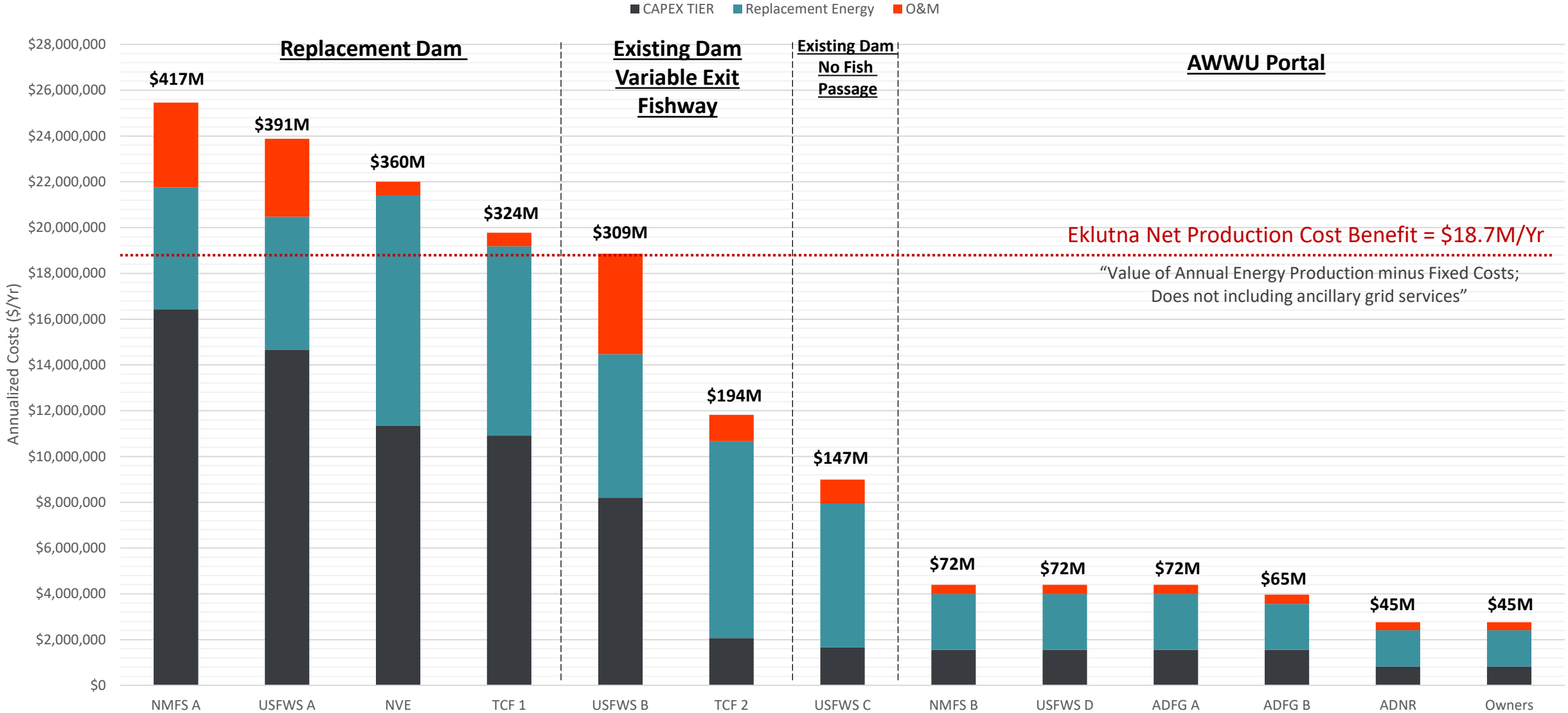
## Natural Gas Price Increase:

- On June 28, 2023 Enstar presented to RCA a range of expected gas prices expected in 2026
  - Low - \$12.20/MCF
  - High - \$13.90/MCF
- Using an average price of \$13.05/MCF, this equates to a replacement energy pricing of **\$84.65/MWh**

## CAPEX TIER

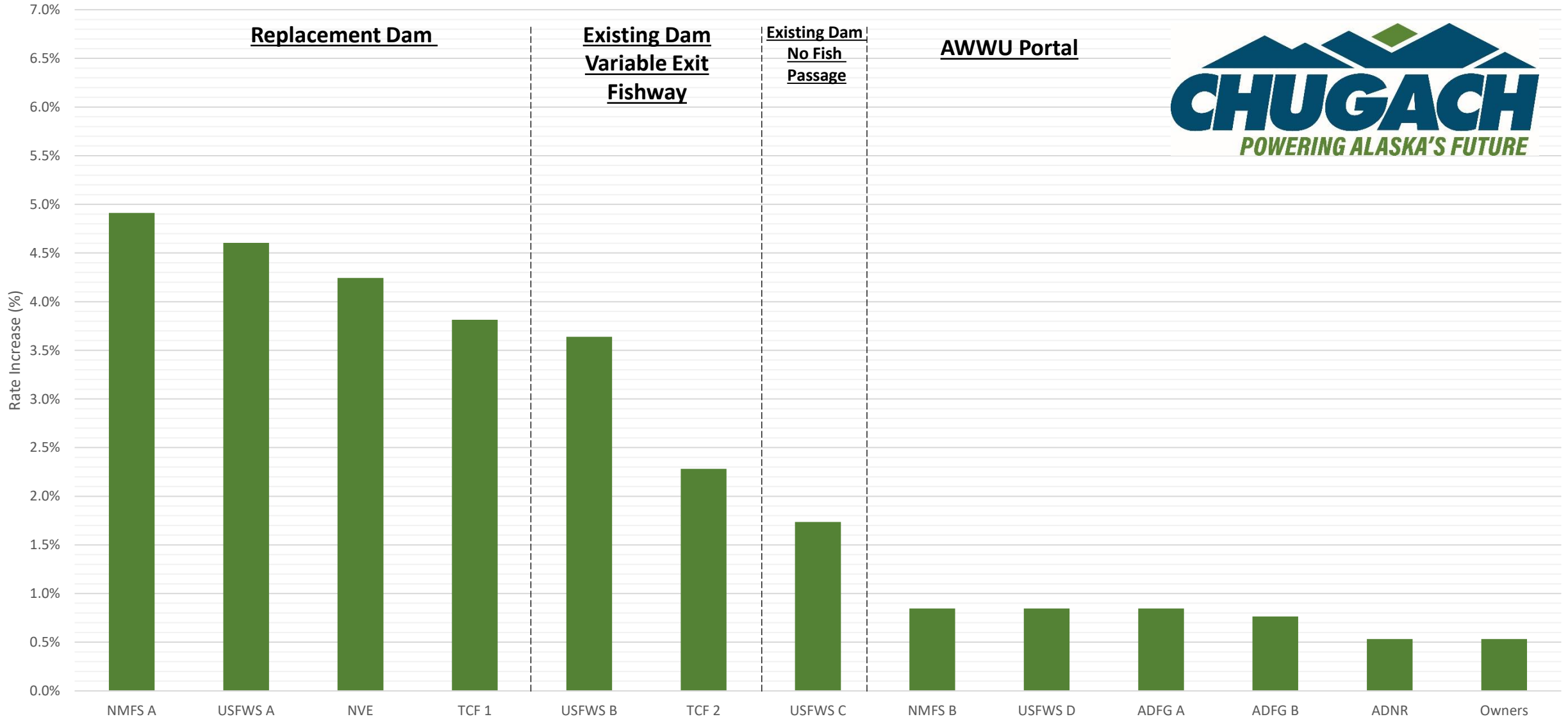
- Times Interest Earned Ratio – 1.75x (CEA)
  - Used in the June Results
- Times Interest Earned Ratio – **1.60x (MEA)**
  - **Updated in July Results**
- Multiplier on interest associated with Capex over life of project
- Part of ratepayer basis for utilities (not MOA)

# Annualized Costs / Present Value

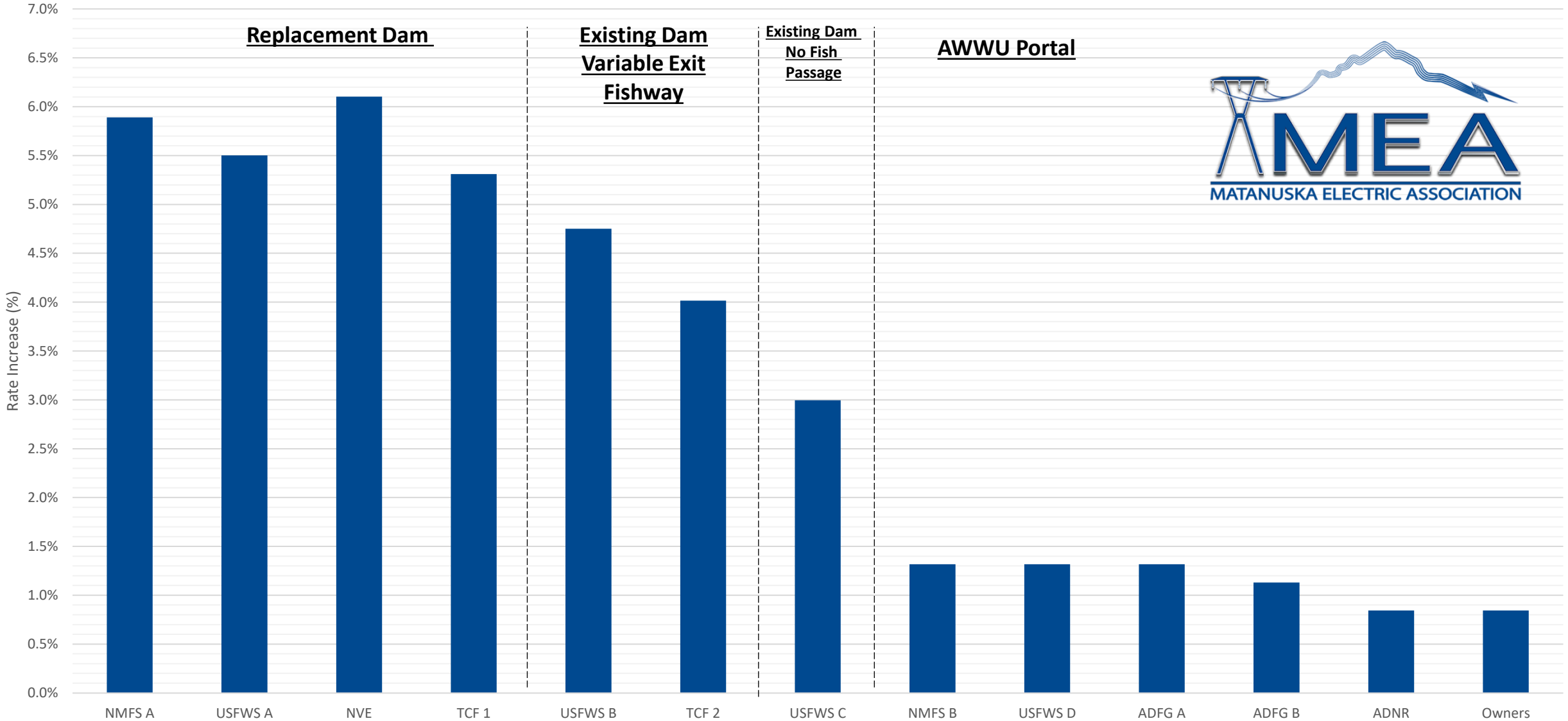




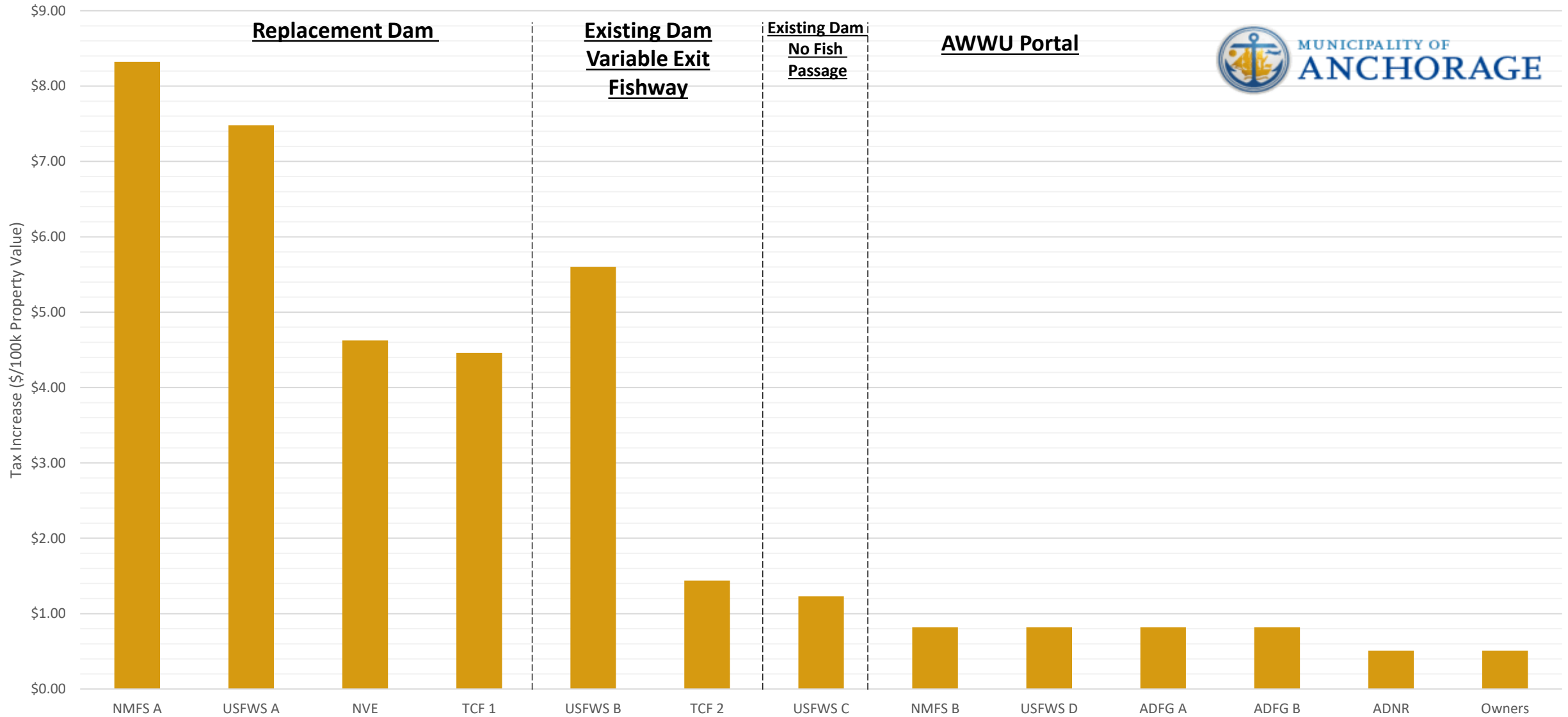
# Chugach Electric Ratepayer Impacts



# Matanuska Electric Ratepayer Impacts



# MOA Property Tax Impacts





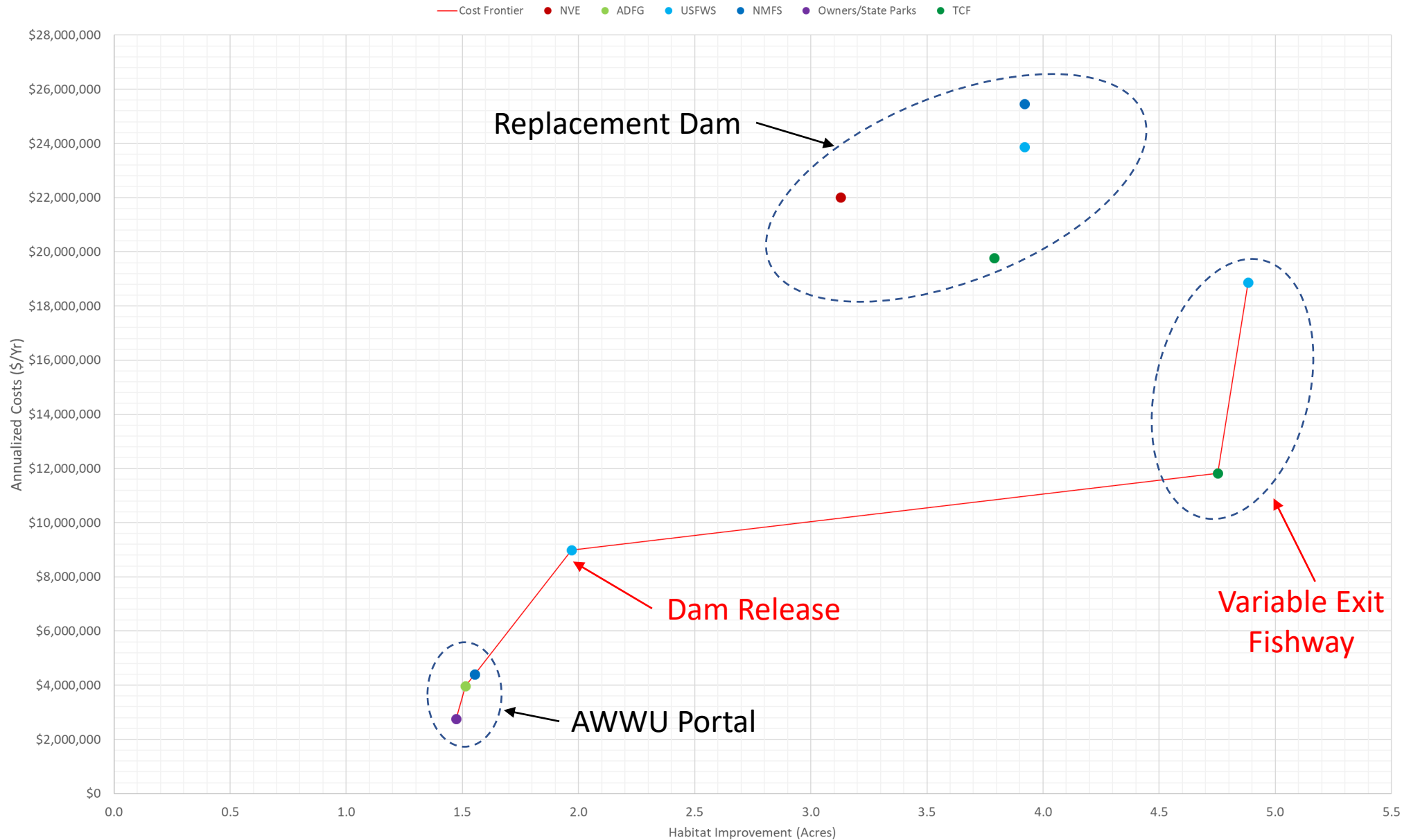


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# Cost Effectiveness Results



# Cost Effectiveness – Chinook Spawning Habitat





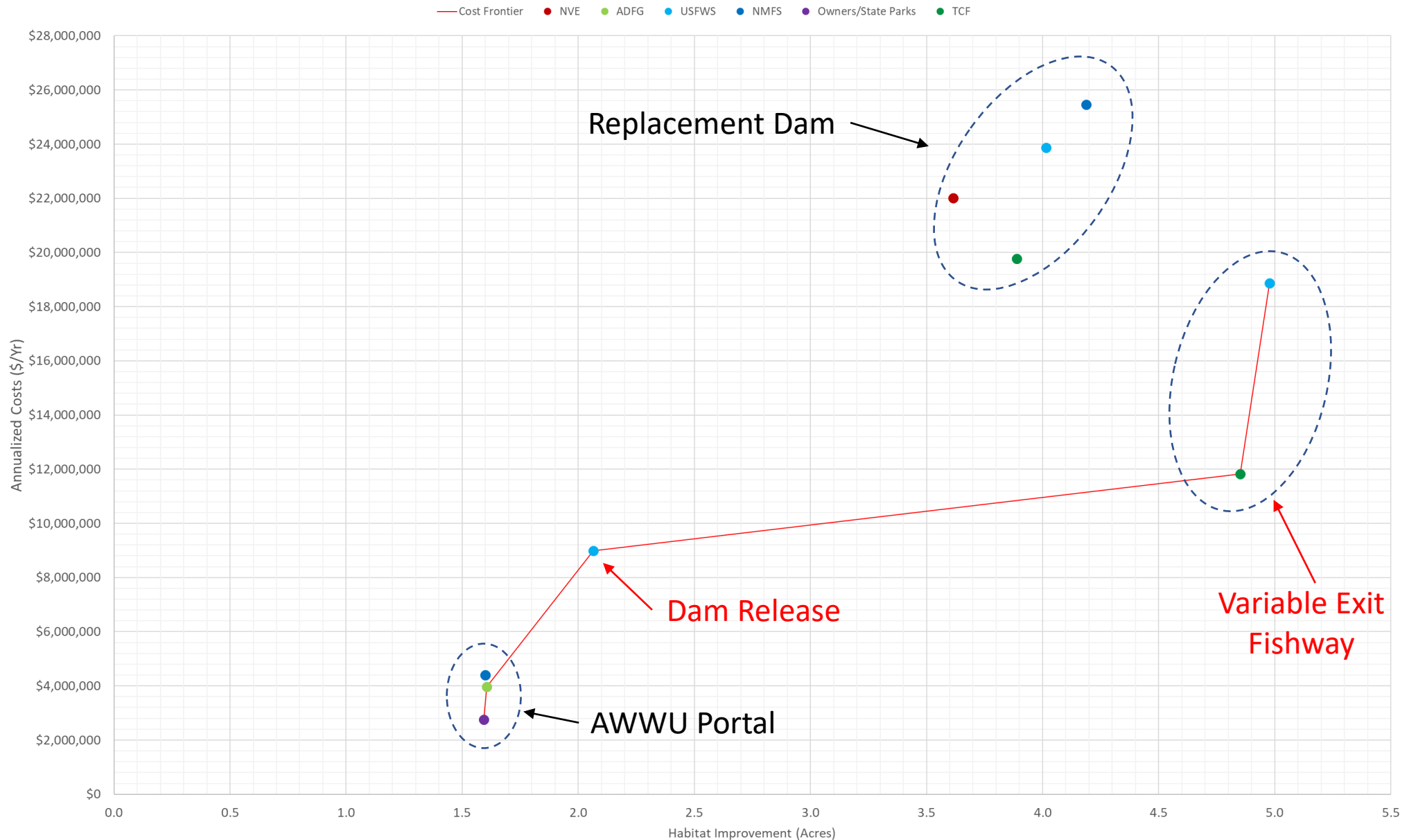
# Cost Effectiveness – Chinook Spawning Habitat

## Cost Effective Alternatives for Habitat Gains

- AWWU Portal – Flow Level 1
  - Owner/ADNR Alternative
  - Annual Costs - \$2.8M
  - Habitat Gains – 1.5 Acres
  - **\$1.9M/Acre**
- AWWU Portal – Flow Level 2
  - ADFG Alternative
  - Annual Costs - \$4.0M
  - Habitat Gains – 1.5 Acres
  - **\$2.6M/Acre**
- AWWU Portal – Flow Level 3
  - ADFG/NMFS Alternative
  - Annual Costs - \$4.4M
  - Habitat Gains – 1.6 Acres
  - **\$2.8M/Acre**
- Dam Release – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$9.0M
  - Habitat Gains – 2.0 Acres
  - **\$4.6M/Acre**
- Variable Exit Fishway – TCF Regime
  - TCF Alternative
  - Annual Costs - \$11.8M
  - Habitat Gains – 4.8 Acres
  - **\$2.5M/Acre**
- Variable Exit Fishway – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$18.9M
  - Habitat Gains – 4.9 Acres
  - **\$3.8M/Acre**



# Cost Effectiveness – Coho Spawning Habitat





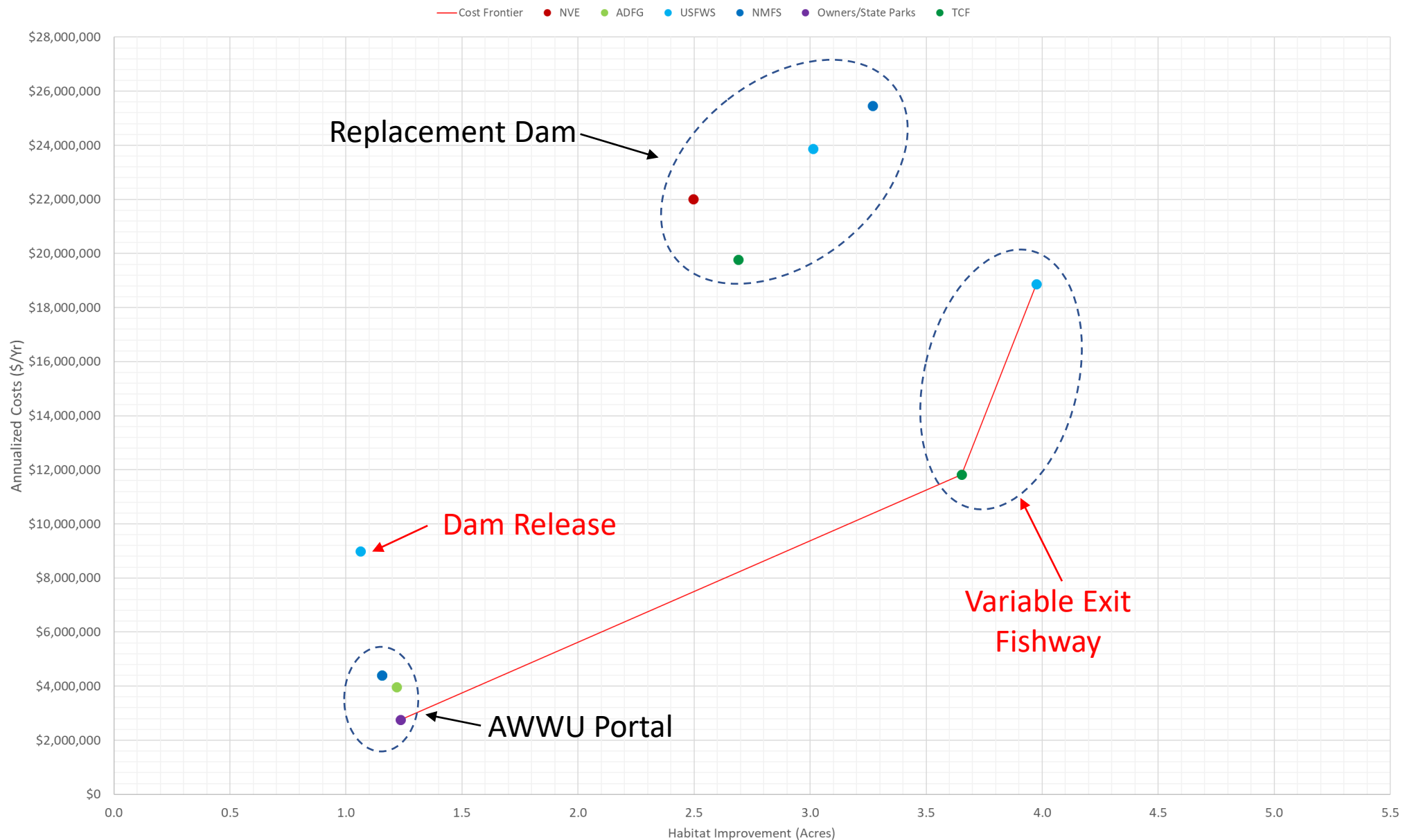
# Cost Effectiveness – Coho Spawning Habitat

## Cost Effective Alternatives for Habitat Gains

- AWWU Portal – Flow Level 1
  - Owner/ADNR Alternative
  - Annual Costs - \$2.8M
  - Habitat Gains – 1.6 Acres
  - **\$1.7M/Acre**
- AWWU Portal – Flow Level 2
  - ADFG Alternative
  - Annual Costs - \$4.0M
  - Habitat Gains – 1.6 Acres
  - **\$2.5M/Acre**
- Dam Release – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$9.0M
  - Habitat Gains – 2.1 Acres
  - **\$4.4M/Acre**
- Variable Exit Fishway – TCF Regime
  - TCF Alternative
  - Annual Costs - \$11.8M
  - Habitat Gains – 4.9 Acres
  - **\$2.4M/Acre**
- Variable Exit Fishway – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$18.9M
  - Habitat Gains – 5.0 Acres
  - **\$3.8M/Acre**



# Cost Effectiveness – Sockeye Spawning Habitat



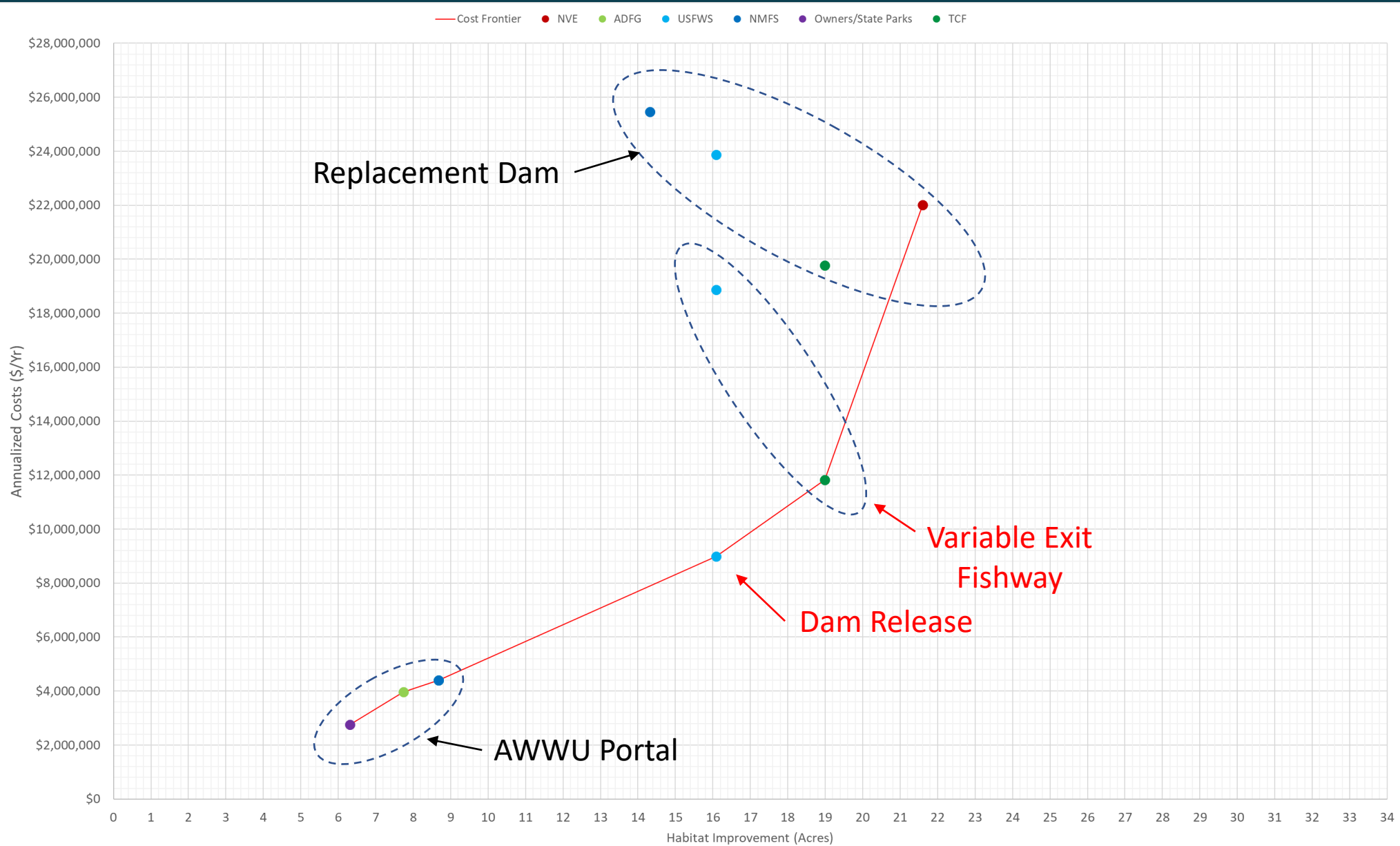
# Cost Effectiveness – Sockeye Spawning Habitat

## Cost Effective Alternatives for Habitat Gains

- AWWU Portal – Flow Level 1
  - Owner/ADNR Alternative
  - Annual Costs - \$2.8M
  - Habitat Gains – 1.2 Acres
  - **\$2.2M/Acre**
- Variable Exit Fishway – TCF Regime
  - TCF Alternative
  - Annual Costs - \$11.8M
  - Habitat Gains – 3.7 Acres
  - **\$3.2M/Acre**
- Variable Exit Fishway – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$18.9M
  - Habitat Gains – 4.0 Acres
  - **\$4.7M/Acre**



# Cost Effectiveness – Chinook Rearing Habitat



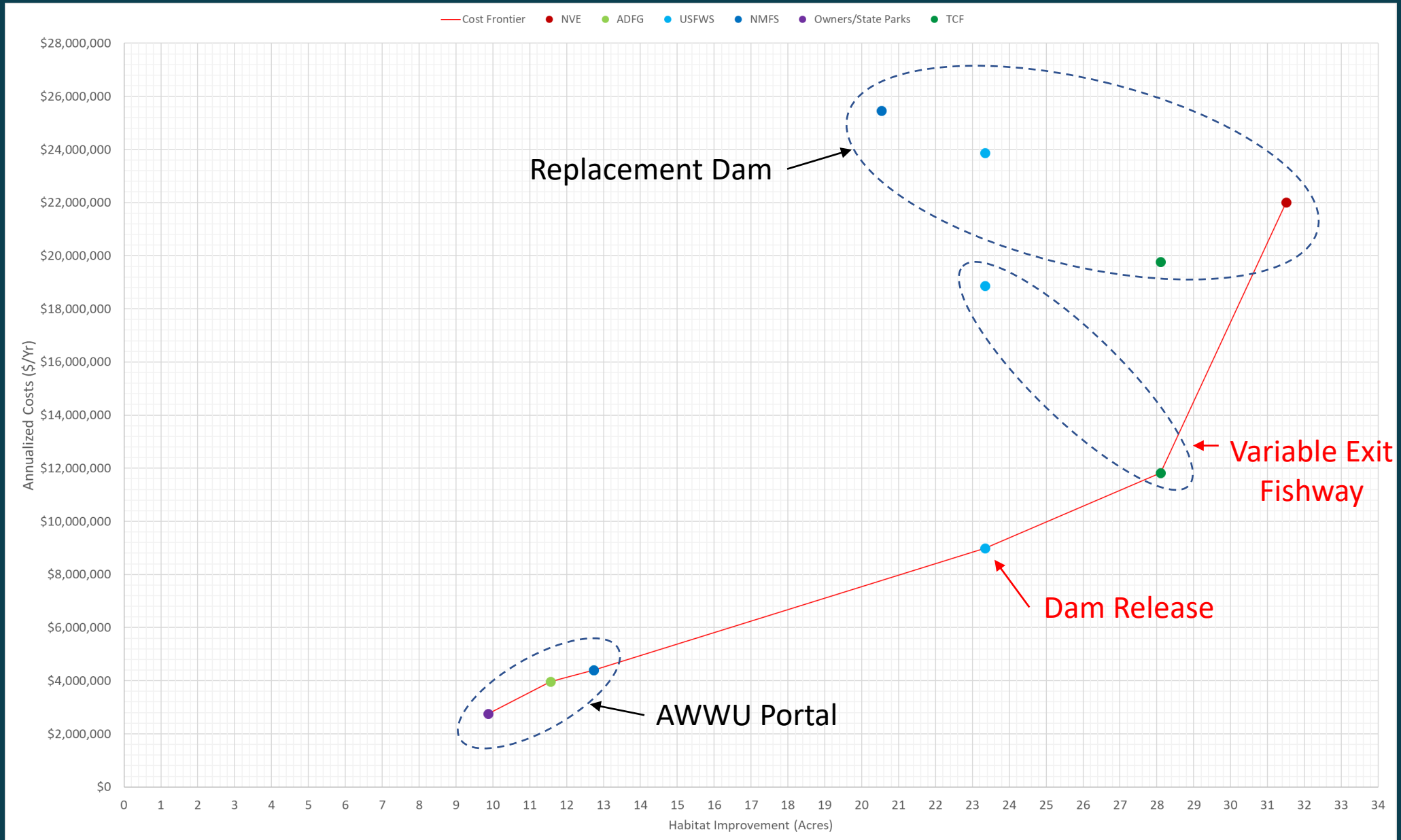


# Cost Effectiveness – Chinook Rearing Habitat

## Cost Effective Alternatives for Habitat Gains

- AWWU Portal – Flow Level 1
  - Owner/ADNR Alternative
  - Annual Costs - \$2.8M
  - Habitat Gains – 6.3 Acres
  - **\$437k/Acre**
- AWWU Portal – Flow Level 2
  - ADFG Alternative
  - Annual Costs - \$4.0M
  - Habitat Gains – 7.7 Acres
  - **\$511k/Acre**
- AWWU Portal – Flow Level 3
  - ADFG/NMFS Alternative
  - Annual Costs - \$4.4M
  - Habitat Gains – 8.7 Acres
  - **\$505k/Acre**
- Dam Release – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$9.0M
  - Habitat Gains – 16.1 Acres
  - **\$559k/Acre**
- Variable Exit Fishway – TCF Regime
  - TCF Alternative
  - Annual Costs - \$11.8M
  - Habitat Gains – 19.0 Acres
  - **\$622k/Acre**
- Replacement Dam – NVE Regime
  - NVE Alternative
  - Annual Costs - \$22.0M
  - Habitat Gains – 21.6 Acres
  - **\$1.0M/Acre**

# Cost Effectiveness – Coho Rearing Habitat



# Cost Effectiveness – Coho Rearing Habitat

## Cost Effective Alternatives for Habitat Gains

- AWWU Portal – Flow Level 1
  - Owner/ADNR Alternative
  - Annual Costs - \$2.8M
  - Habitat Gains – 9.9 Acres
  - **\$279k/Acre**
- AWWU Portal – Flow Level 2
  - ADFG Alternative
  - Annual Costs - \$4.0M
  - Habitat Gains – 11.6 Acres
  - **\$342k/Acre**
- AWWU Portal – Flow Level 3
  - ADFG/NMFS Alternative
  - Annual Costs - \$4.4M
  - Habitat Gains – 12.7 Acres
  - **\$345k/Acre**
- Dam Release – USFWS Alt 1 Regime
  - USFWS Alternative
  - Annual Costs - \$9.0M
  - Habitat Gains – 23.3 Acres
  - **\$385k/Acre**
- Variable Exit Fishway – TCF Regime
  - TCF Alternative
  - Annual Costs - \$11.8M
  - Habitat Gains – 28.1 Acres
  - **\$421k/Acre**
- Replacement Dam – NVE Regime
  - NVE Alternative
  - Annual Costs - \$22.0M
  - Habitat Gains – 31.5 Acres
  - **\$698k/Acre**



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# Wetlands & Wildlife



# Wetlands and Wildlife Study Area, 2022





# Project Effects on Wetlands

Dewatering the upper and middle reaches of the Eklutna River has narrowed the permanently flooded channel and resulted in changes to adjacent seasonally flooded riparian wetlands.

Fill and erosion along the AWWU access road has resulted in some wetland loss, with many areas now transitioning to disturbed uplands.

*Not a Hydro Project Effect:* Brackish Sedge Marsh, the highest-ranking wetland functional class, has established on > 25 acres of disturbed surfaces associated with prior gravel extraction near the estuary.





# Project Effects on Wildlife Habitats



Mapping of historical conditions indicates that prior to water diversion for the current project in 1955, Seasonally Flooded Low and Tall Alder-Willow Shrub Scrub was more extensive in Eklutna River riparian areas (151 acres in 1950 vs 47 acres in 2022).

These areas are now transitioning to upland deciduous-spruce forest habitats. Change is likely due to reduction in historical peak flows that would have maintained early successional riparian shrub.



# Project Effects on Wildlife Habitats

Fluctuations in Eklutna Lake levels have substantially increased extent of the lake littoral zone at the mouth of the lake; it was far smaller in 1950 (~ 13 acres in 1950 vs 114 acres in 2022).





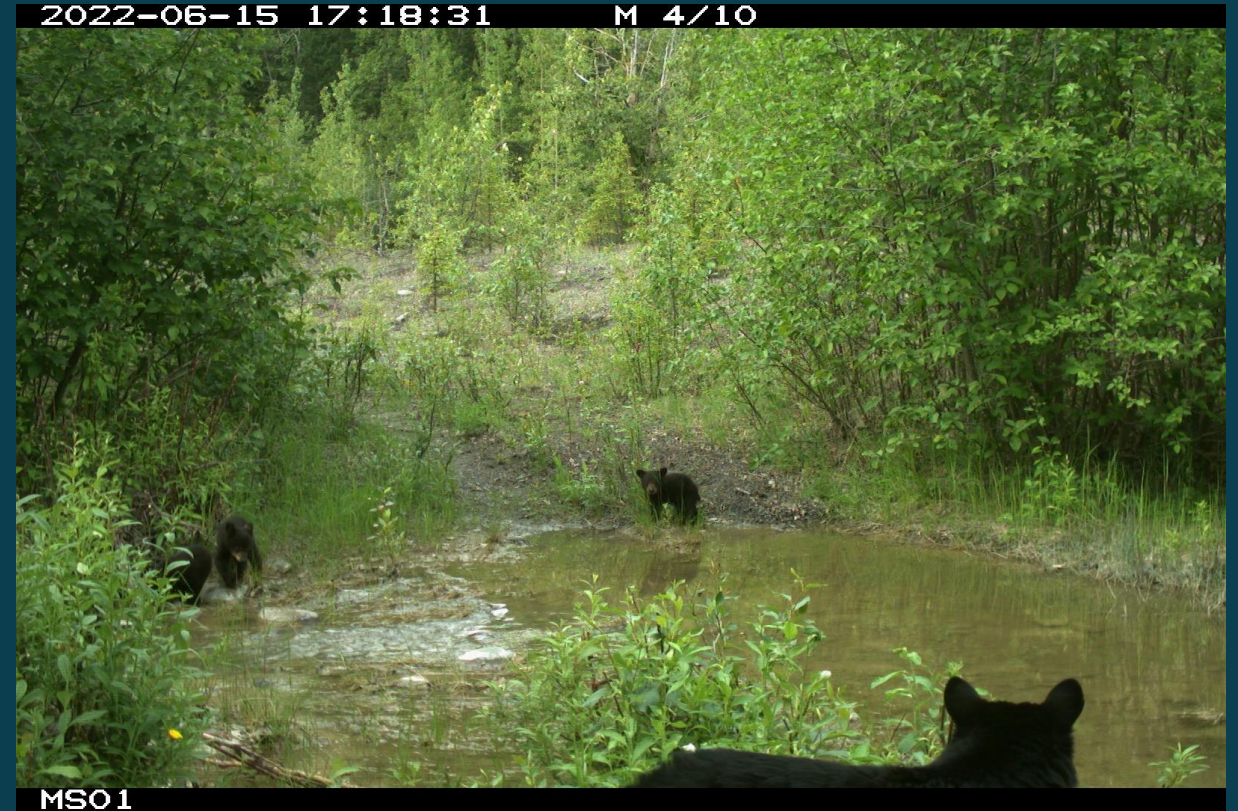
# Wildlife Survey Results



- 1 bald eagle nest occupied in 2022. Suitable nesting sites limited to coastal areas. No other nesting raptor species confirmed. Common ravens nesting in upper river.
- Very low numbers of shorebirds and moderate numbers of waterfowl and other waterbirds were recorded; almost all at the coast.
- 3 active beaver colonies found in 2022, only 1 active colony in lower river beaver complex. High-flow releases in 2021 breached 2 dams and completely removed a third.

# Wildlife Survey Results

- 22% moose browse removal rate is indicative of a population that should be in good nutritional status with healthy twinning rates.
- Habitat looks “over-mature” in many places, with tall, old willows and thickets of cottonwood and birch dying-back or browse now too high for moose to reach.
- Camera trap study revealed mammal species typical of southcentral Alaska, dominated strongly by moose, then black bears, brown bears, and coyotes. Small numbers of other species recorded.



Acreages of wetland functional classes/wildlife habitats **within the 0.5-ft depth inundation boundary** for the entire river under three channel maintenance flow scenarios

Wetland Functional Class/Wildlife Habitat	Area in Acres		
	220 cfs	450 cfs	600 cfs
Seasonally flooded low and tall alder-willow shrub scrub	14.7	19.0	20.7
Upper perennial river bar	10.3	11.6	11.9
Upper perennial river	9.8	10.7	11.0
Mixed deciduous-spruce forest	8.6	15.0	18.7
Brackish pond	6.4	7.6	8.3
Intertidal mudflat	5.3	5.7	6.2
Black cottonwood forest	4.9	8.1	9.9
Brackish sedge marsh	4.8	18.2	22.0
Tidal river	3.9	4.1	4.2
Flooded forest	2.9	6.3	8.2
Spruce forest	2.3	4.1	5.1
Freshwater pond (beaver modified)	1.7	1.9	2.0
Brackish deciduous shrub scrub	1.1	2.4	3.3
Upland low and tall alder-willow shrub	1.0	2.2	3.2
Rocky cliff and steep banks	0.9	1.1	1.2
Intermittent stream	0.7	0.7	0.7
Freshwater pond	0.5	1.6	1.9
Human modified barrens	0.4	0.9	1.4
Tidal river bar	0.3	0.6	0.8
Freshwater seeps or springs	0.1	0.1	0.1
Freshwater sedge marsh	0.0	0.0	0.1
<b>Totals</b>	<b>80.5</b>	<b>122.0</b>	<b>140.9</b>



# Is Wetland & Habitat Change Possible?



Channel maintenance flows expected to remove the small, linear strip of riparian shrub along the narrowed stream channel in the upper and middle river.

Overbank flooding and sediment deposits could, over time, promote greater cover of streamside cottonwoods in mixed forests.

Removing established mixed forest to allow early successional riparian shrub expansion would require very heavy and regular peak flow events.

Overall, only small local changes in wetlands and wildlife habitats are expected as mixed floodplain forests are likely to remain under all flow scenarios.



# ||| Likely Benefits of All Flow Release Scenarios

Increased flow and salmon abundance will directly or indirectly benefit several ecologically and/or culturally important wildlife species, including:

- **Bears**, especially brown bears (direct foraging)
- **Moose** (increased plant nutrients and forage)
- **Wolves** (direct foraging and potentially higher prey base)
- **River otters and mink** (direct foraging)
- **Beavers** (beaver dams would also create salmon rearing habitat)
- **Piscivorous birds** (bald eagle, osprey, kingfishers, mergansers)
- **Marine mammals** (beluga, harbor seals, sea otters)



# ||| Potential Drawbacks of All Flow Release Scenarios

- Increased salmon abundance may attract more bears to the area, leading to heightened predation risk for moose.
- Potential competition between black and brown bears for prime fishing habitats.
- It has been suggested that beaver dams could potentially hinder salmon migration, especially at low water levels. However, it should be noted that beavers and salmon successfully coexist throughout Alaska.





# ||| Potential Mitigation Options

Increasing connectivity of lower river pond complex to the Eklutna River and flattening gravel mining mounds could create more areas of reduced flow for migrating adult salmon and increase rearing habitat.

Associated benefits to wildlife would also occur.





# Public Water Supply

# Impacts to Public Water Supply

## AWWU Maintenance Road

- The AWWU Maintenance Road would be inaccessible along Pipeline Segment P-4 (along Eklutna River) under most flow release scenarios
- *Mitigation:*
  - 8 new vehicle bridges built over Eklutna River at current ford crossings

## AWWU Portal Valve

- Modification of infrastructure at Portal Valve Shaft would increase risks to water delivery
- *Mitigation:*
  - Instream flows limited to 80 cfs to restrict maximum velocities in AWWU Tunnel
  - Slow ramp rates mitigate pressure surges in AWWU Tunnel
  - Interlocks between Intake Valve/Portal Valve prevent mis-operation and damage to tunnel/pipeline

# Impacts to Public Water Supply

## Water Quality

- Fish passage into Eklutna Lake would likely increase nutrient loads and algae production, which may require additional filtration for the public water supply.
- *Mitigation:*
  - If fish passage into the lake is included as part of the Fish and Wildlife Program, then the monitoring program should include water quality monitoring in the lake.
  - If there is a significant enough increase in nutrient loads and algae production, then AWWU's water treatment infrastructure and regime should be updated accordingly.

## Water Allocation

- None of the alternatives would impact the water allocation in Eklutna Lake reserved for AWWU.



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# Recreational Use and Facilities

# Recreation Study – Goals, Methods & Key Areas

## WHAT

- Quantify the current types, frequencies, and locations of recreational use in the Project area

## HOW

- Chugach State Park Data: parking lot pay stations, cabin rentals, campground reservations/fees
- ADFG Data: harvest and fishing reports, hunting tags
- Online Survey: 283 responses
- Interactive Map: 77 comments
- Intercept Survey: 127 participants
- Recreational Business Operations: 5 survey responses
- Traffic Counts at Tailrace, Thunderbird Falls and Eklutna Lake Recreation Area

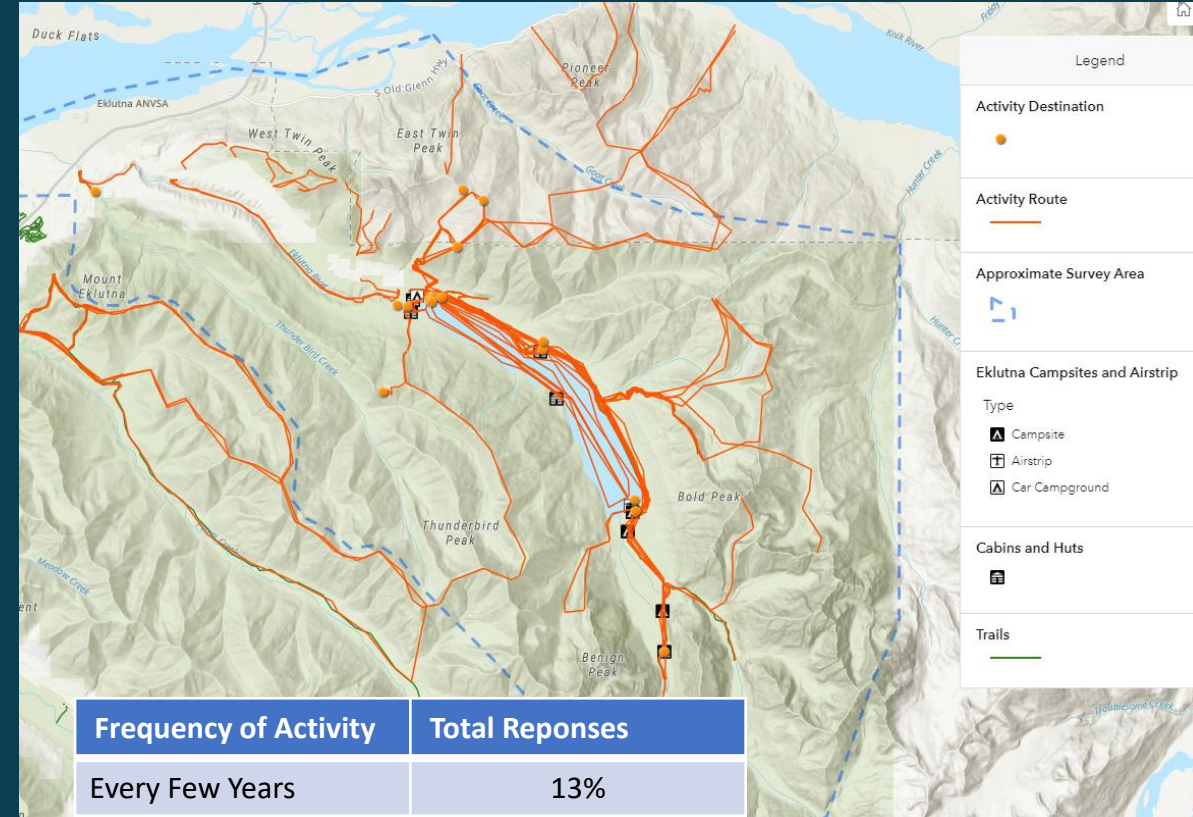
## WHERE

- Eklutna Tailrace Day-Use Fishing Access Site & adjacent Knik River
- Lower Eklutna River (Thunderbird Falls area west to Knik Arm)
- Chugach State Park Managed areas:
  - Thunderbird Falls Trail & trailhead parking lot
  - Campgrounds (Eklutna Lake Campground & Group side near AWWU Tunnel)
  - Public Use Cabins: Yuditnu Creek Cabin, Kokanee Cabin, Serenity Falls Hut
  - Eklutna Lake Day Use Area, boat launch, parking lots
  - Trails: Eklutna Lake Trail, Twin Peaks Trail, Bold Ridge Trail, East Fork, and social trails that access backcountry



# Recreation Study – Results

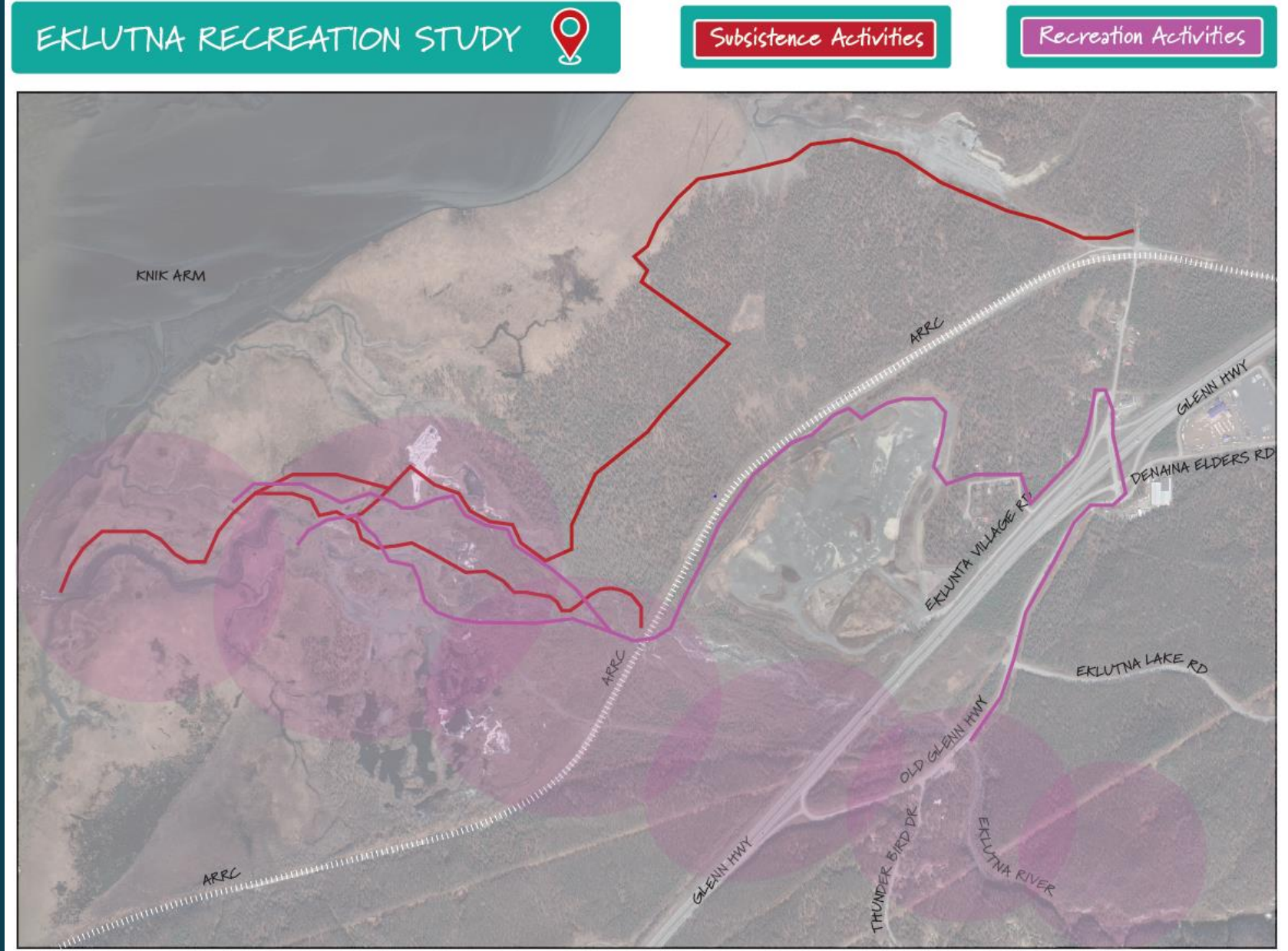
- **WHERE: Eklutna Lakeside Trail was most frequently reported destination**
  - Twin Peaks Trail, Public Use Cabins and Campgrounds were also highly reported destinations
    - 2019 MOA Trail Counts at **Eklutna Lakeside Trail**: AADT of **200 peds per day** (Summer: 407 peds/day Winter: 22 peds/day)
    - 2020 MOA Trail Counts at **Thunderbird Falls Trail**: AADT of **370 peds per day** (Summer: 888 peds/day Winter: 115 peds/day)
- **WHAT: Hiking, walking and/or running was most selected primary activity**
  - **Biking, scenic viewing and leisure** were next more popular activities at Eklutna Lake Rec Area + Thunderbird Falls
  - **Fishing** was the most selected primary activity at the Tailrace
- **WHEN: Summer season had the most reported activity**



Frequency of Activity	Total Responses
Every Few Years	13%
Once a Year	11%
<b>A Few Times Per Year</b>	<b>46%</b>
Monthly	10%
Other	20%

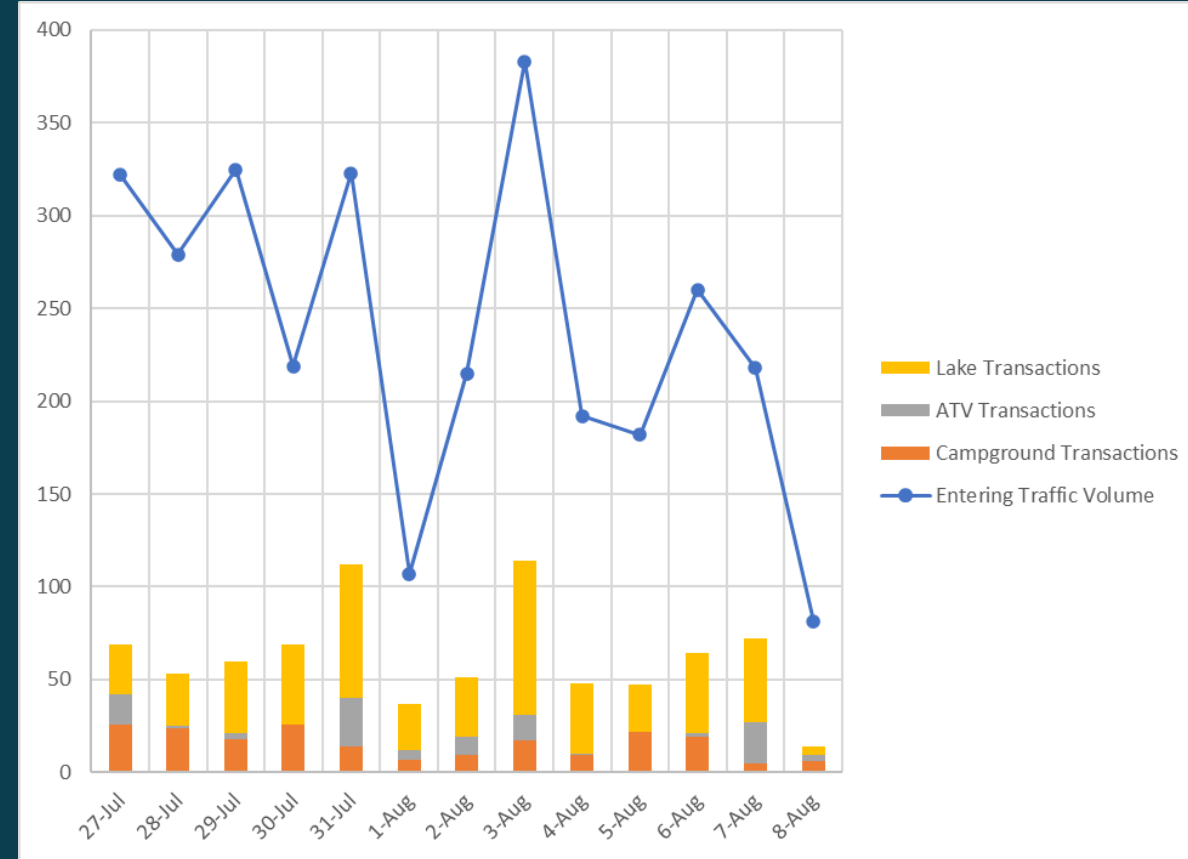
# Recreation Study – Results

- NVE Survey: hard copies with prepaid envelopes distributed via NVE at Village Council
- 1 response received



# Recreation Study – Results

- CSP Fee Station Transactions & Traffic Counts:
  - 26% of Total Traffic in Eklutna Lake Recreation Area paid at a fee station
  - Thunderbird Falls: 22.3% of total traffic paid at the fee station
  - **97,254** estimated vehicles visiting **CSP Eklutna Lake Rec Area + Thunderbird Falls** in FY 2022
  - **23,823** estimated vehicles visit **Tailrace** from June 8 through August 23, 2022



Comparison of CSP Eklutna Lake Recreation Area Fee Station Transactions and Traffic Counts, 7/27/22 – 8/8/22



# Recreation Study – Results

- Conservative assumptions were used for projections: Generalized carpool rate of 50% across study methods and assumed only 2 people per carpooling vehicle for total estimates:
  - **Minimum of 145,881 recreators** partook in activities within **CSP fee areas in FY 2022** and drove a personal or rental vehicle to get there.
  - **Minimum of 31,447 recreators** partook in activities at the **Tailrace between June 8 and August 23, 2022**
    - ADF&G estimates 13,485 angler days at Tailrace in 2018
- Businesses Operating in Project Area overwhelmingly provide services to Out-of-Town/Non-Residents visitors
  - Premier Alaska Tours partners with Lifetime Adventures, almost all Premier customers who go to Eklutna Lake use guiding services or equipment rentals from Lifetime Adventures (500 customers each summer)
- Accessibility + variety of activities are key reasons the Project Area is a significant recreation destination





# Replacement Dam Alternative



EXISTING TRAIL

RAINBOW CABIN



# Recreation Impacts – Rainbow Trout Cabin

- Rainbow Trout Cabin is the second most used cabin in Chugach State Park, second to the Yuditna Cabin
- 2020-2022:
  - \$26,000 - \$30,000 in revenue annually
  - Occupied 260-290 Days (73-80%) per year
    - 91%-95% of weekends and 60-68% of weekdays
  - 762-800 reported visitors

Chugach State Park

## **RAINBOW TROUT CABIN**



**Cabin Specifications**

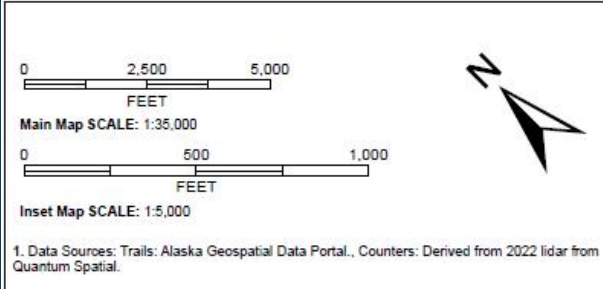
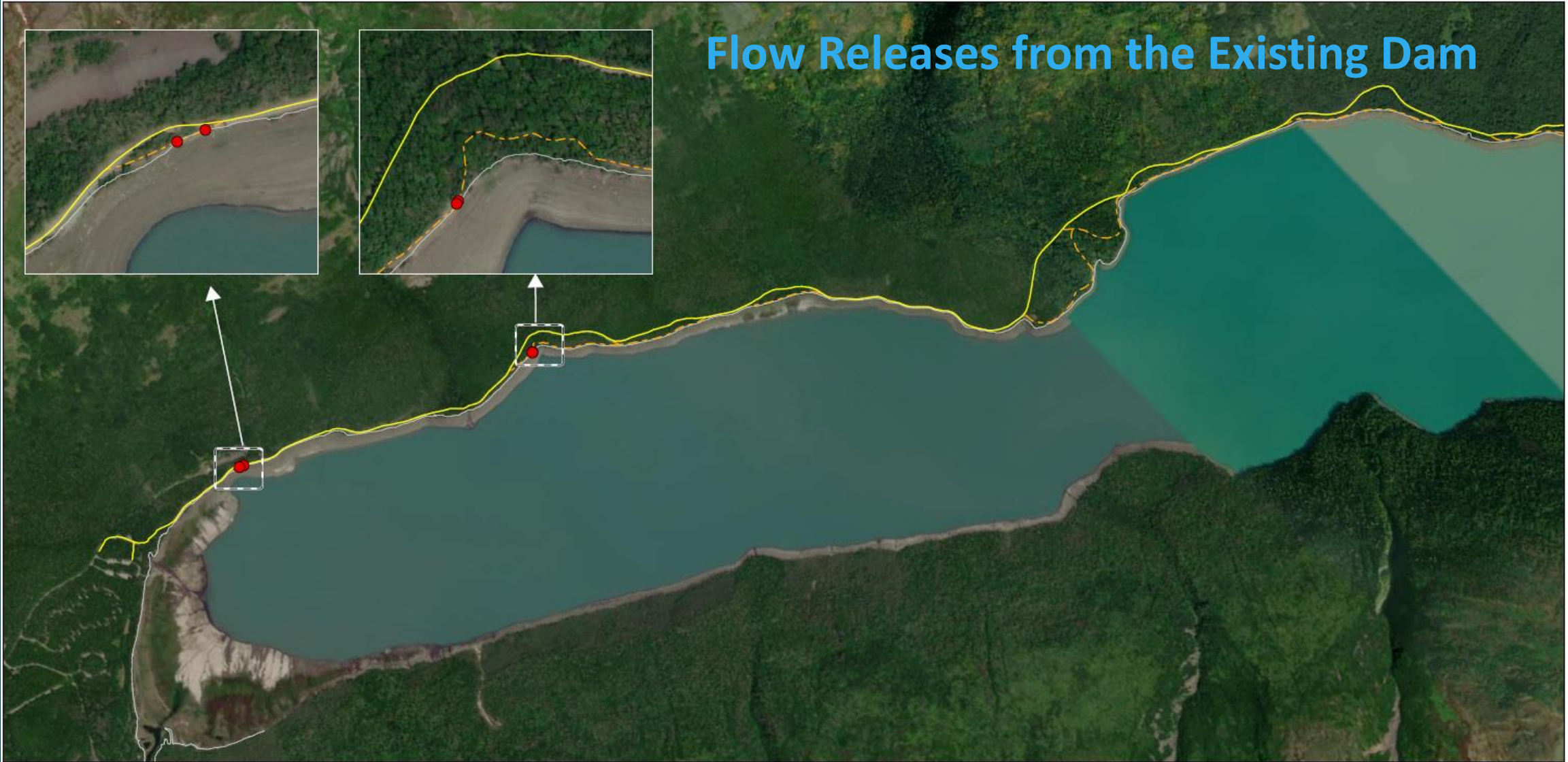
- ★ Minimum Occupancy: 1 Guest
- ★ Maximum Occupancy: 8 Guests
- ★ Site Access Method: Summer - Walk or bike in summer ; Winter - Walk, Ski, or Snowshoe\*
- ★ Stay Limit: 3 Nights
- ★ Check-in/out Time: 12:00pm
- ★ Pets Allowed: Yes\*\*
- ★ Fees: ([see fee page](#))
- ★ Cabin Dimensions: 16' x 20'
- ★ Heating Method: Wood (Bring your own wood)

Accessible in both summer and winter, sleeps maximum of 8 people.

If the replacement dam alternative is chosen, mitigation measures would be needed. It's possible that the cabin could simply be moved back, but this would need to be coordinated with State Parks.



# Flow Releases from the Existing Dam



**Legend**

- Trail Intersection
- Contour: 876 feet
- Eklutna Lakeside
- - - Eklutna Lower Lakeside

\* Trail Intersection Points are where the trail intersects with the 876' contour.

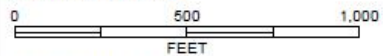
Eklutna Lakeside Trail  
Inundation 876 feet  
Sheet 1 of 2  
July 2023



# Flow Releases from the Existing Dam



Main Map SCALE: 1:35,000



Inset Map SCALE: 1:5,000



1. Data Sources: Trails: Alaska Geospatial Data Portal., Counters: Derived from 2022 lidar from Quantum Spatial.



## Legend

- Trail Intersection
- Contour: 876 feet
- Eklutna Lakeside
- - - Eklutna Lower Lakeside

\* Trail Intersection Points are where the trail intersects with the 876' contour.

Eklutna Lakeside Trail  
Inundation 876 feet

Sheet 2 of 2

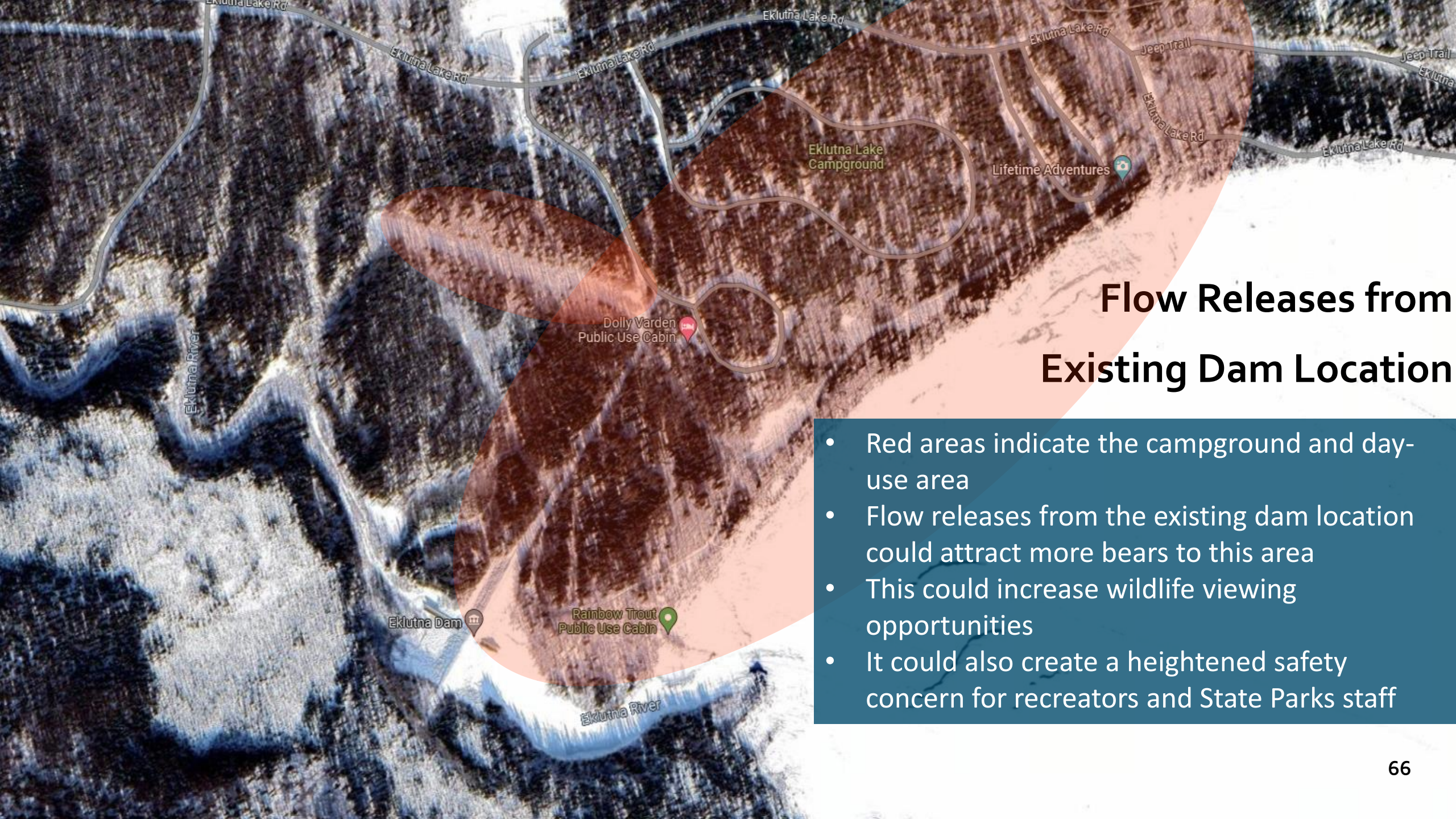
July 2023



# Recreation Impacts – Lakeside Trail

- Current reservoir operations causes some erosion of the non-motorized trail at higher lake levels
- Flow releases from the existing dam would require the reservoir to be held higher, which would cause:
  - Increased erosion of the non-motorized trail
  - Potential erosion at north end of Bold Airstrip Runway
- Potential Mitigation:
  - Lakeside trail improvements
  - Further assessment of potential impacts to Bold Airstrip and need to extend south





# Flow Releases from Existing Dam Location

- Red areas indicate the campground and day-use area
- Flow releases from the existing dam location could attract more bears to this area
- This could increase wildlife viewing opportunities
- It could also create a heightened safety concern for recreators and State Parks staff



# Recreation Impacts – Tailrace Fishery

- Under all scenarios, some amount of the water that has been discharged into the Eklutna Tailrace will now be released into the Eklutna River
- Fish returning to the Eklutna Tailrace will first pass by the Eklutna River
- Some amount of straying from Eklutna Tailrace to the Eklutna River is anticipated
- Potential Mitigation:
  - Conduct a fish straying assessment once instream flows to the Eklutna River have been established
  - Allow public access to the Eklutna River for recreational fishing





# Key Takeaways and Next Steps



## Key Takeaways

- Sustained higher flows may inhibit upstream migration through the canyon
- The replacement dam is the most expensive option with present value ranging from \$324M - \$417M (depending on flow regime and downstream fish passage option)
- Flow releases from the existing dam (with or w/out fish passage) require the power plant to be shutdown through the winter
- A new flow regime and increased salmon populations would directly or indirectly benefit various wildlife species
- Fish passage into the lake may impact the water quality of the public water supply and require increased filtration
- The AWWU portal valve concept would require various mitigation measures to protect the public water supply

## Key Takeaways (cont.)

- All alternatives will require the construction of new bridges along the AWWU access road
- The replacement dam would impact the existing Rainbow Trout Cabin
- Flow releases from the existing dam (with or w/out fish passage) would increase erosion of the lakeside trail
- Flow releases from the replacement dam or existing dam location would likely attract more bears near the campground and increase bear-human interactions
- All alternatives will likely result in some degree of straying impacts to the tailrace fishery



# Next Steps

- **August 2023** – Alternatives Analysis Meeting 5
  - Discuss cultural resources
  - Discuss an appropriate monitoring program and adaptive management approach
- **October 2023** – Distribute Draft Fish and Wildlife Program
  - 30 days for review and comment
  - Attempt to resolve differences
- **January 2024** – Public Meetings (Anchorage and Mat-Su Valley)
- **April 2024** – Submit Proposed Final Fish and Wildlife Program
  - 60 days for parties to review and comment
  - 30 days for project owners to respond
  - Allows 2 months for Governor to consider
- **October 2024** – Governor issues Final Fish and Wildlife Program