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Before we Begin

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- **Please also download Conservation Calculator Version 1.2. Location: Conservation Calculator**

Science, Service, Stewardship

Puget Sound Conservation Calculator Workshop

Stephanie Ehinger, NOAA
Jennifer Quan, NOAA
Elizabeth Babcock, NOAA
Lee Corum, USFWS
Lisa Abernathy, NOAA
Mary Bhuthimethee, NOAA
Nissah Rudh NOAA contractor
Jason Lim NOAA contractor

March 5, 2021

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Workshop Logistics

- Everybody is muted.
- Please Post Questions in the Chat Box.
- We will try to respond to question not answered during the workshop afterwards.
- Breakout Rooms: We will walk through the workshop example in the main session. At the same time, we will offer two breakout rooms for level Medium (work on your own & Q&A) and High (all calculator questions not restricted to example.)
- Feedback via chat box.

Agenda

9:05 Introductions: The joint NOAA & USFWS team

9:10 Meeting Logistics – Mary Bhuthimethee and John Shaw

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Why Are We Here?

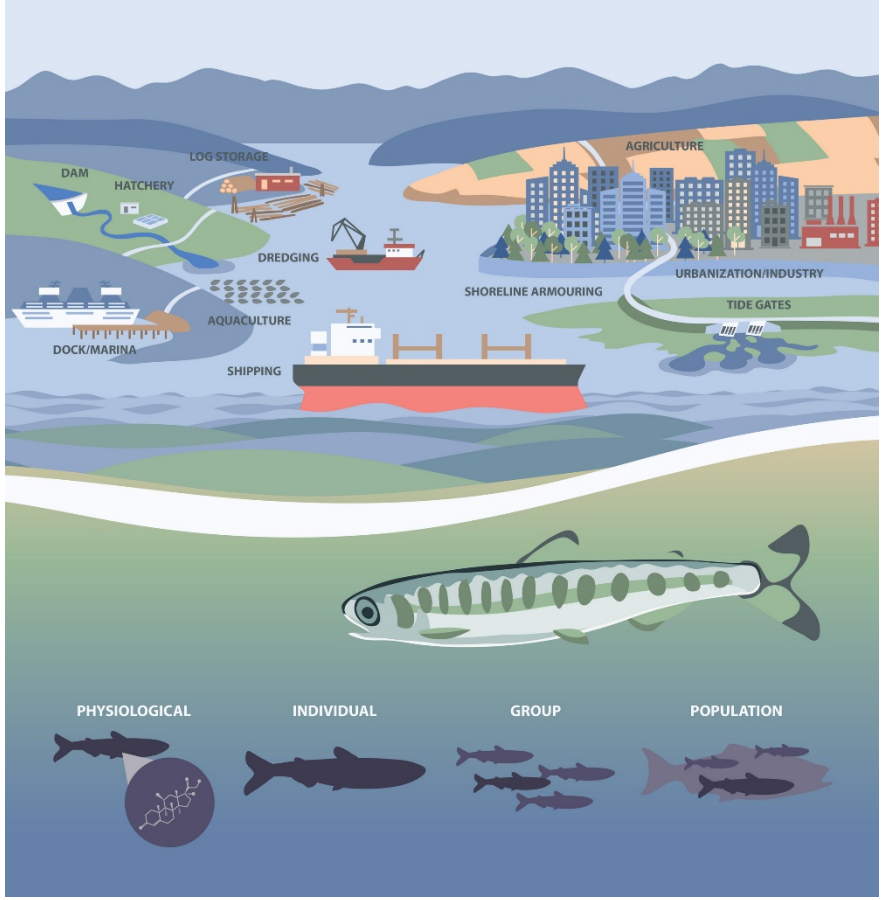
"There is a lot at stake. If we continue doing the things the way we've always done them, we'll just continue to see a slow decline. Or we can think about where we're going and change course."

Erik Neatherlin

Executive Coordinator of the Governor's Salmon Recovery Office

"One of the largest factors inhibiting salmon recovery is habitat loss. A growing human population has led to development along the shoreline, and the addition of bulkheads, or sea walls, that encroach on beaches where salmon generally find insects and other food.

NYTimes January 20 2021



Changing estuaries and impacts on juvenile salmon: A systematic review

Global Change Biology, Volume: 26, Issue: 4, Pages: 1986-2001,
First published: 05 February 2020, DOI: (10.1111/gcb.14997)

Agenda (9:35)

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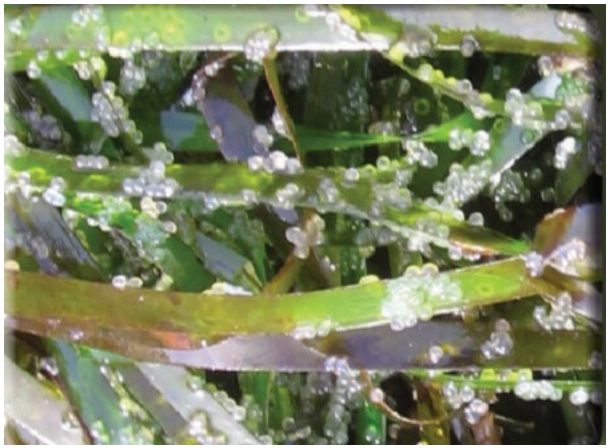
Credit Factors

Landscape-scale credit factors are applied to entire debit/credit:

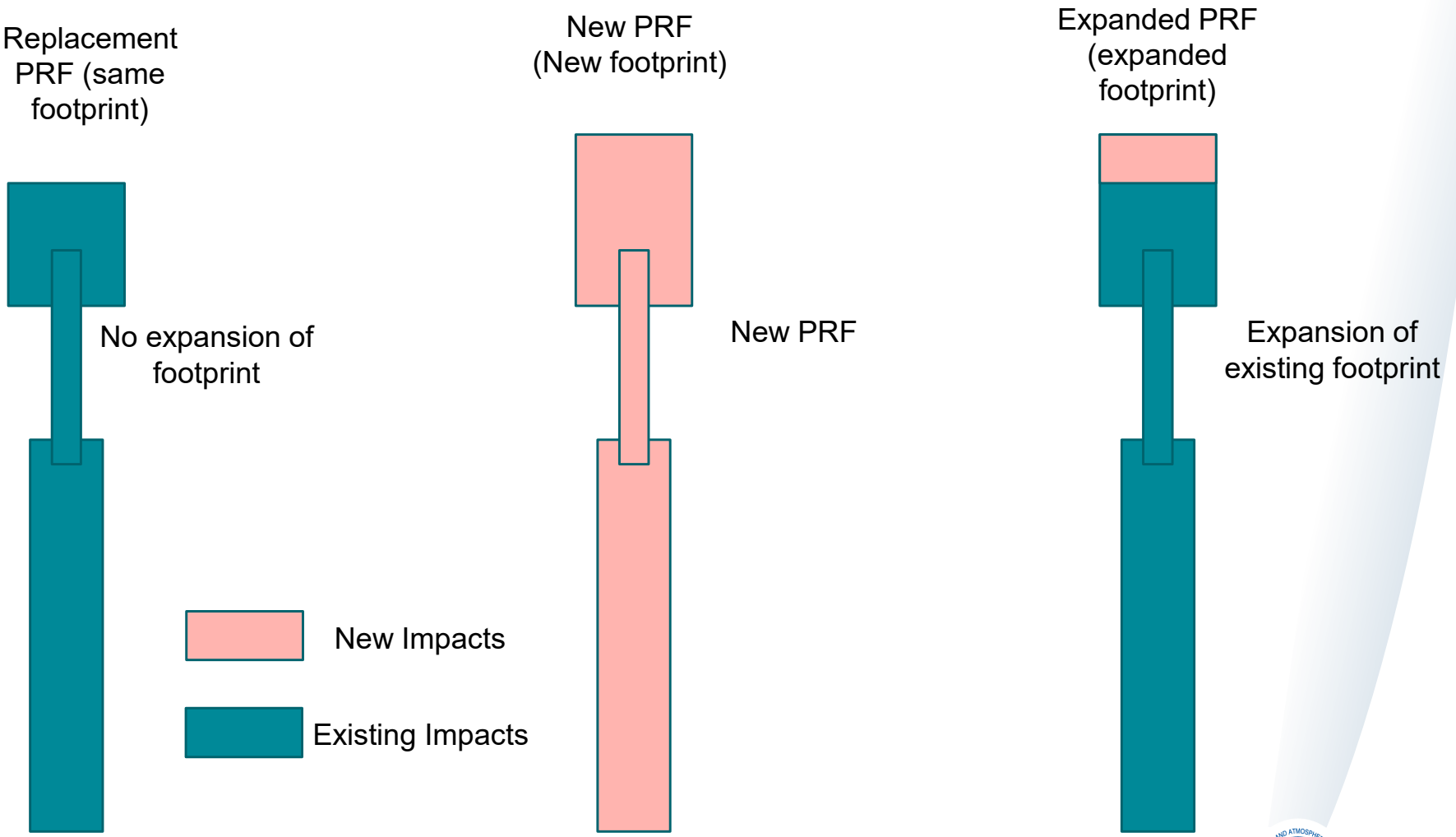
- Affected area is within 5 miles of natal Chinook estuary, or within 1 mile of a Hood Canal summer-run chum estuary.
- Affected Area is within pocket estuary.
- Affected Areas is at bluff backed beach.

Credit factors applied ala cart limited to structural elements that impact them:

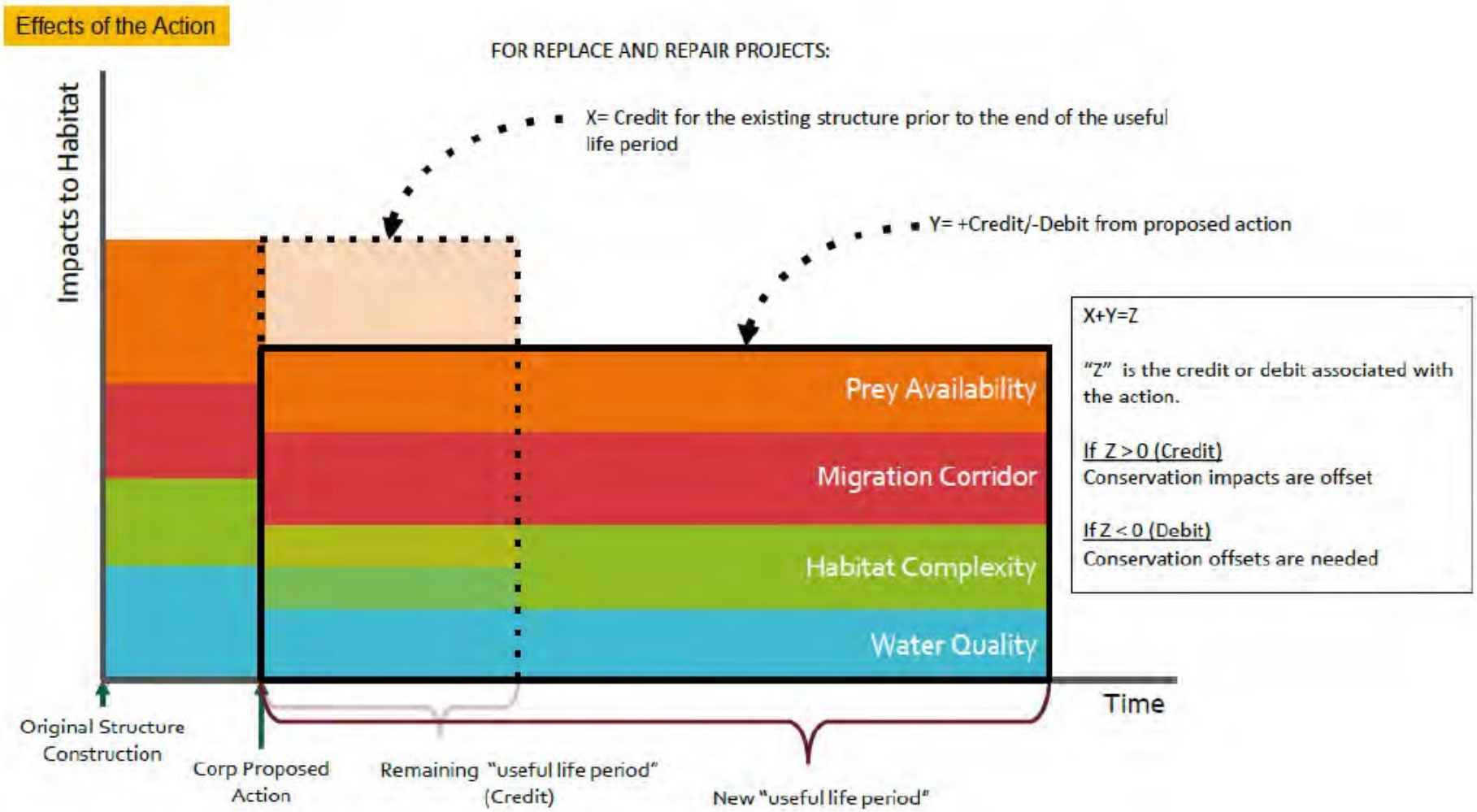
- Sand lance or surf smelt spawning
- Herring spawning



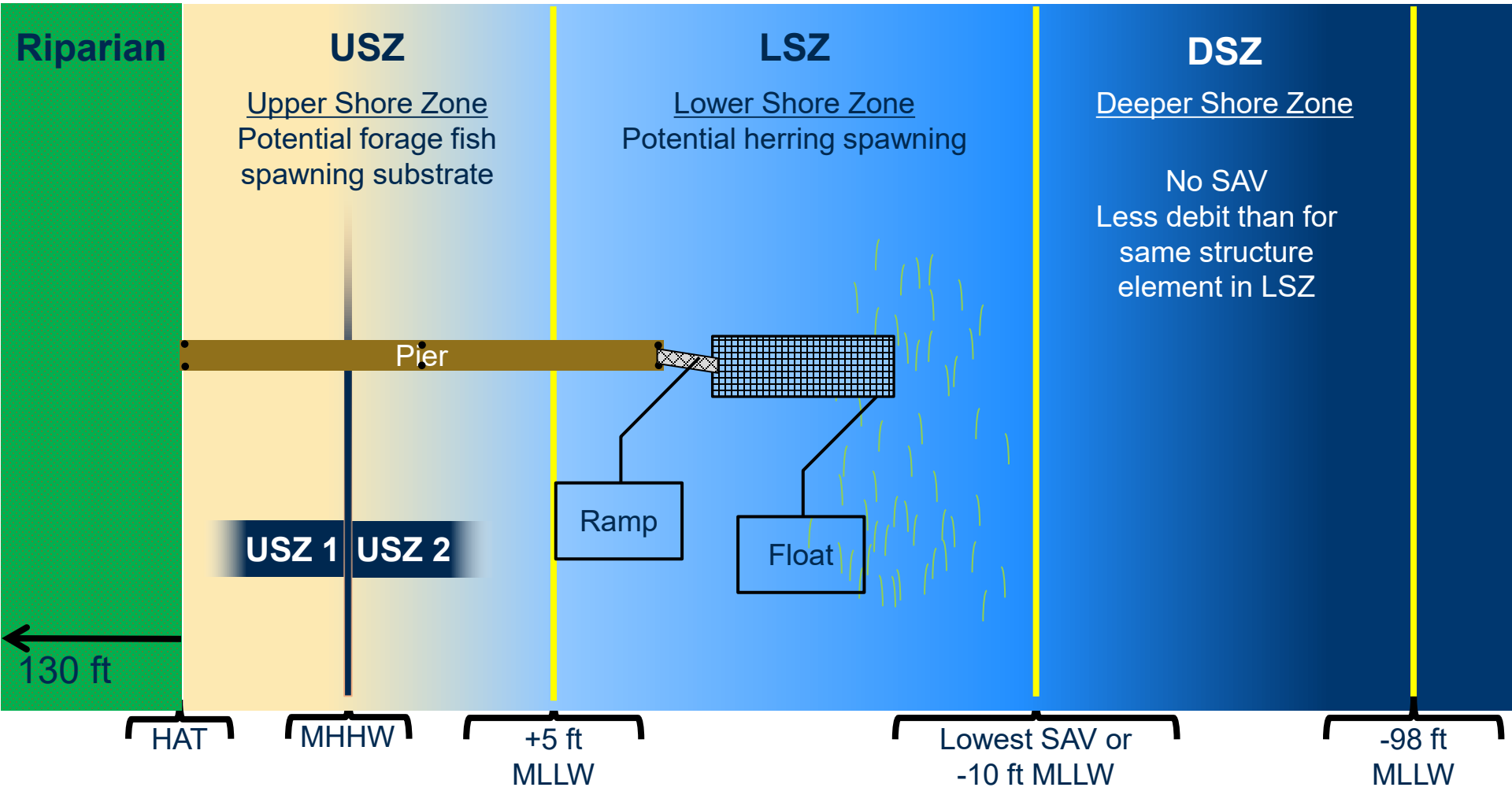
Replacement vs. New Impact



Credit for Removal Elements with Replacement Projects



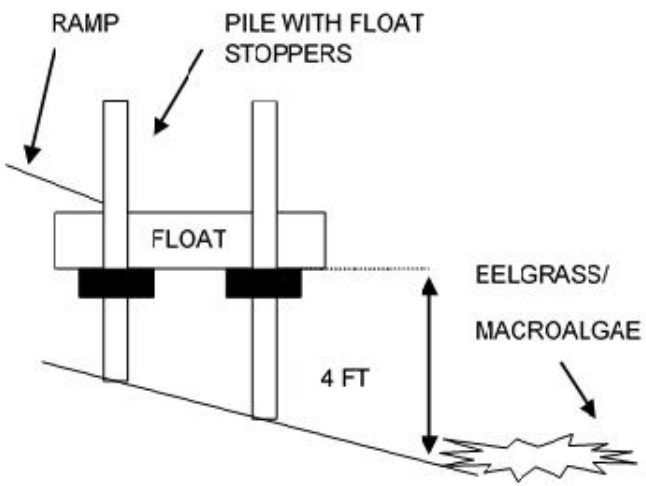
Nearshore Zones



Slide by Lee Corum, USFWS

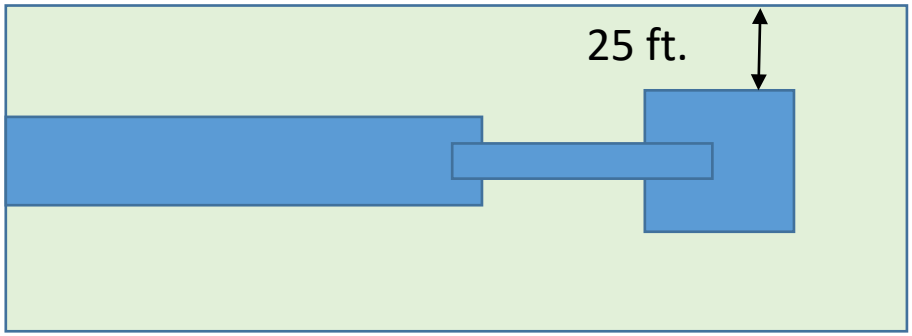
BMPs – as in RGP 6

- If there is no alternative to constructing piers and ramps over forage fish documented or potential sand lance or surf smelt spawning habitat, the structures should span at least 40 feet in the Upper Shore Zone over the habitat to minimize the number of piles in the habitat.
- Submit a SAV delineation for the project area within 25 feet of proposed structures. If SAV is found within that area then you must delineate the entire property to demonstrate avoidance and minimization.
- If SAV is present within 25-feet of the proposed float, the bottom side of the float must be elevated at least 4 feet above the substrate at low tide to reduce prop scour impacts on SAV.



Submerged Aquatic Vegetation

Table 1: Delineation of LSZ Submerged Aquatic Vegetation Scenarios		
VEGETATION SCENARIO	***Native Eelgrass and/or Kelp occurs within 25 feet of project area***	***Other SAV occurs within 25 feet of project area (no native eelgrass or kelp present)***
Scenario 0	N/A	≤ 10%
Scenario 1	1-25% Combined SAV	11-25%
Scenario 2	26-69% Combined SAV	26-75%
Scenario 3	≥ 70% Combined SAV	> 75%
*SAV defined as rooted vascular plants and attached macroalgae. Drift algae and *Ulva spp*. Are not included when determining cover percentage except where *Ulva spp*. occurs in documented herring spawning areas. **EXAMPLE**: Site has 25% Native eelgrass and 45% other SAV (total 70 % cover) <u>within 25 feet of project area.</u> Select Scenario 3 from Column 1 because native eelgrass is present.		



SAV for Conservation Calculator: Average within 25 feet of project area

Ongoing Improvement and Development: We Appreciate Your Input!

- Email NOAA:
- What is missing in the calculator for your project,
- What tab you would like to see next,
- What typo or error did you find. We have an ongoing lists of next steps and improvement ideas for the calculator and user guide.

Stephanie Nissa Lisa

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Q&A
Fragen?
¿Preguntas?

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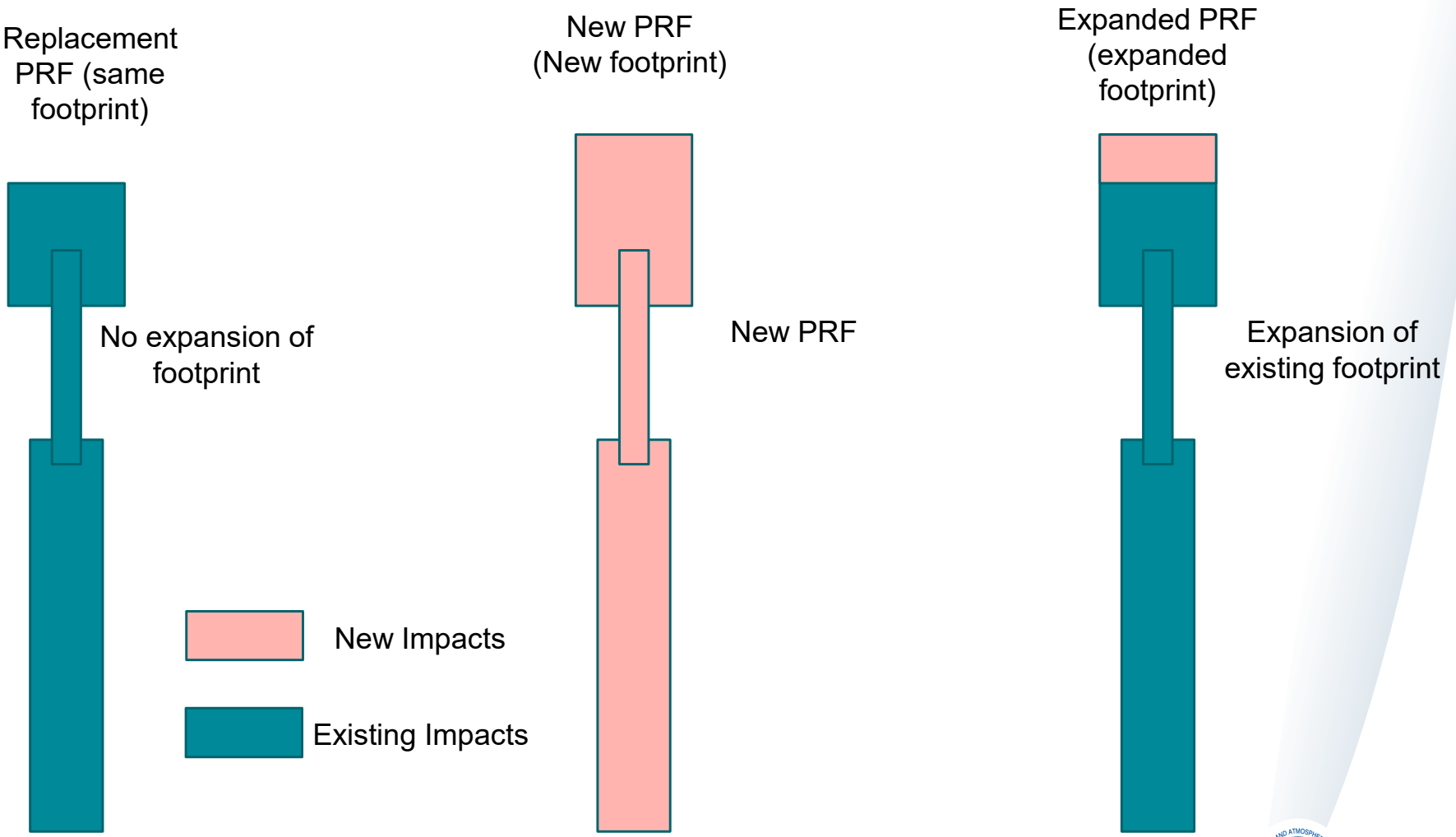
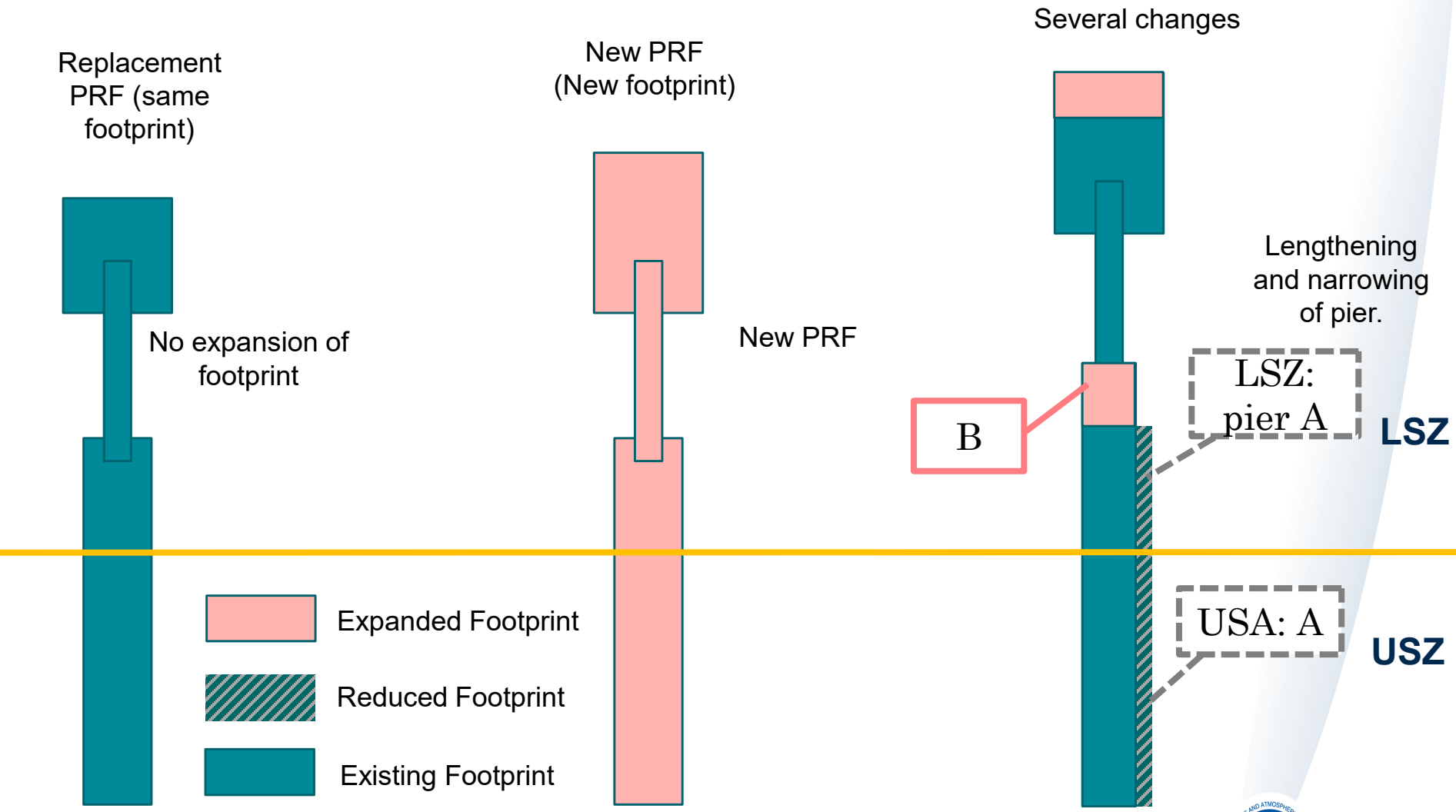
Review: Replacement vs. New Impact



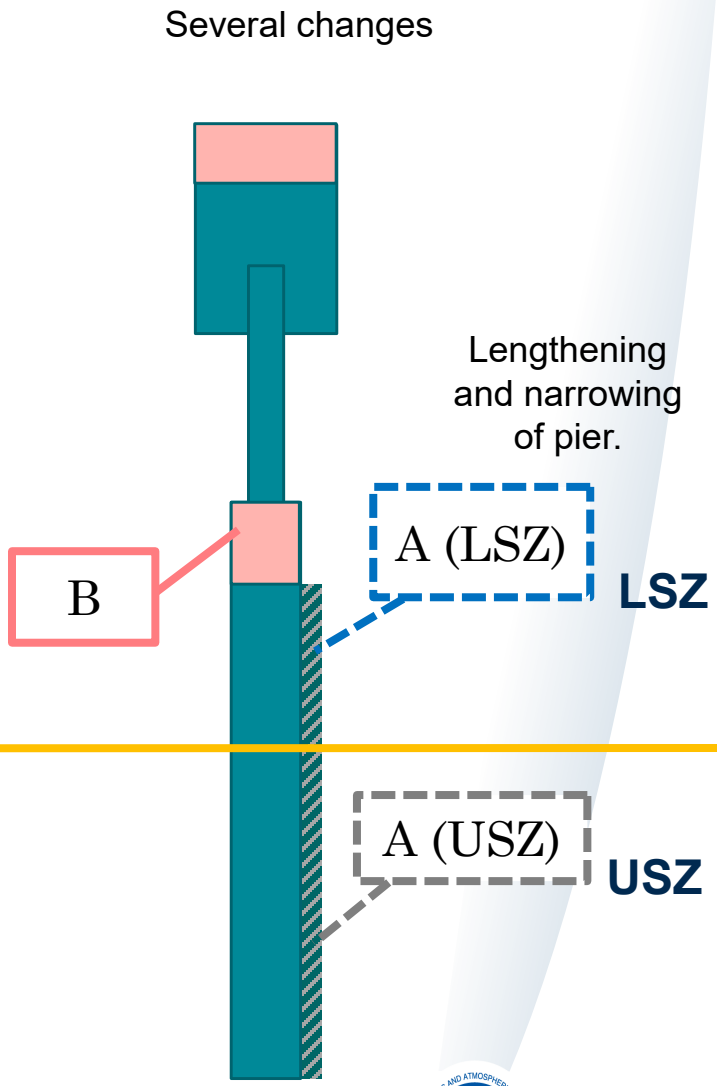
Expanded and Reduced Footprints



NOAA FISHERIES

Determining Area of New Impacts

- Within same shore zone and
- Within same structure type
- At single/connected structures
- A reduced footprint may be deducted from the expanded footprint to determine the NEW area.
- New Pier & Ramp area = B - A (LSZ)
- Summary: Area entered as NEW may be smaller than the expanded footprint.



Expanded Footprint

Reduced Footprint

Existing Footprint

Float Buffers

- Buffers apply to floats (and boat ramps).
- Why? Capture impacts adjacent to floats from effects including reduced primary production related to shading, water quality, and impacts on migration.
- Ono (2016): juveniles tended to stay on the bright side of the shadow edge, two to five meters away from the dock.
- What? The float buffer impact is less than the float impact.
- We added a buffer to the most impacting structure, floats, only.
- How? 10 foot around three sides of float.
- Float buffer is automatically determined by calculator.

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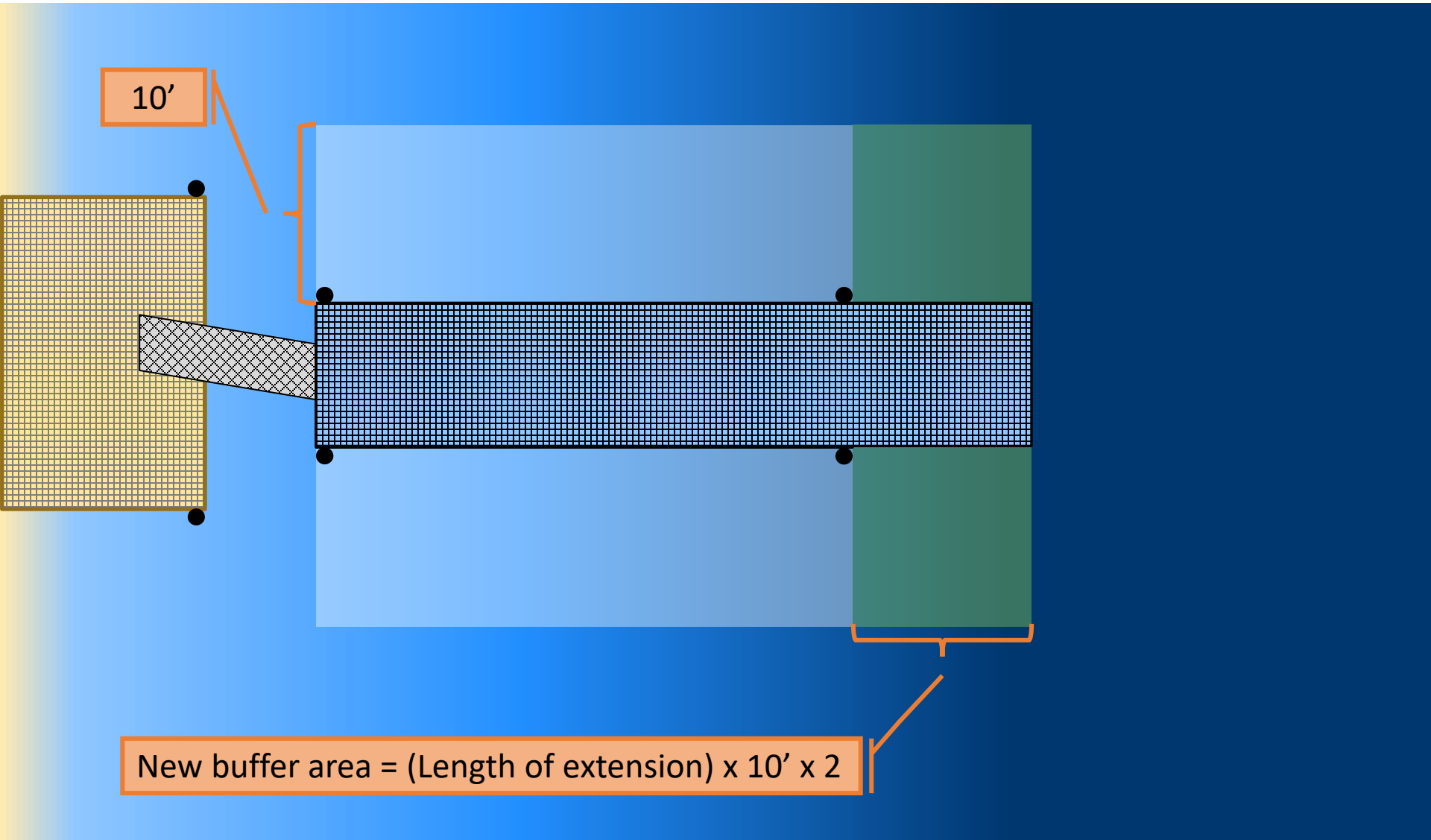
Buffering a Float Extension



Recap Covered Topics

- Organization of Conservation Calculator
- Riparian Zone and Overwater Structures
- New vs. Replacement
- Credit for removal of existing structures with replacements
- How to enter grated vs solid structure: float, pier & ramp
- Creosote pile entry – Tonnage calculator
- Shore Zone delineation
- Credit Factors
- BMPs
- Submerged Aquatic Vegetation
- Rubble vs. boat ramp
- Adaptive Management - we appreciate your input and have a running list for improvements to the user guide.

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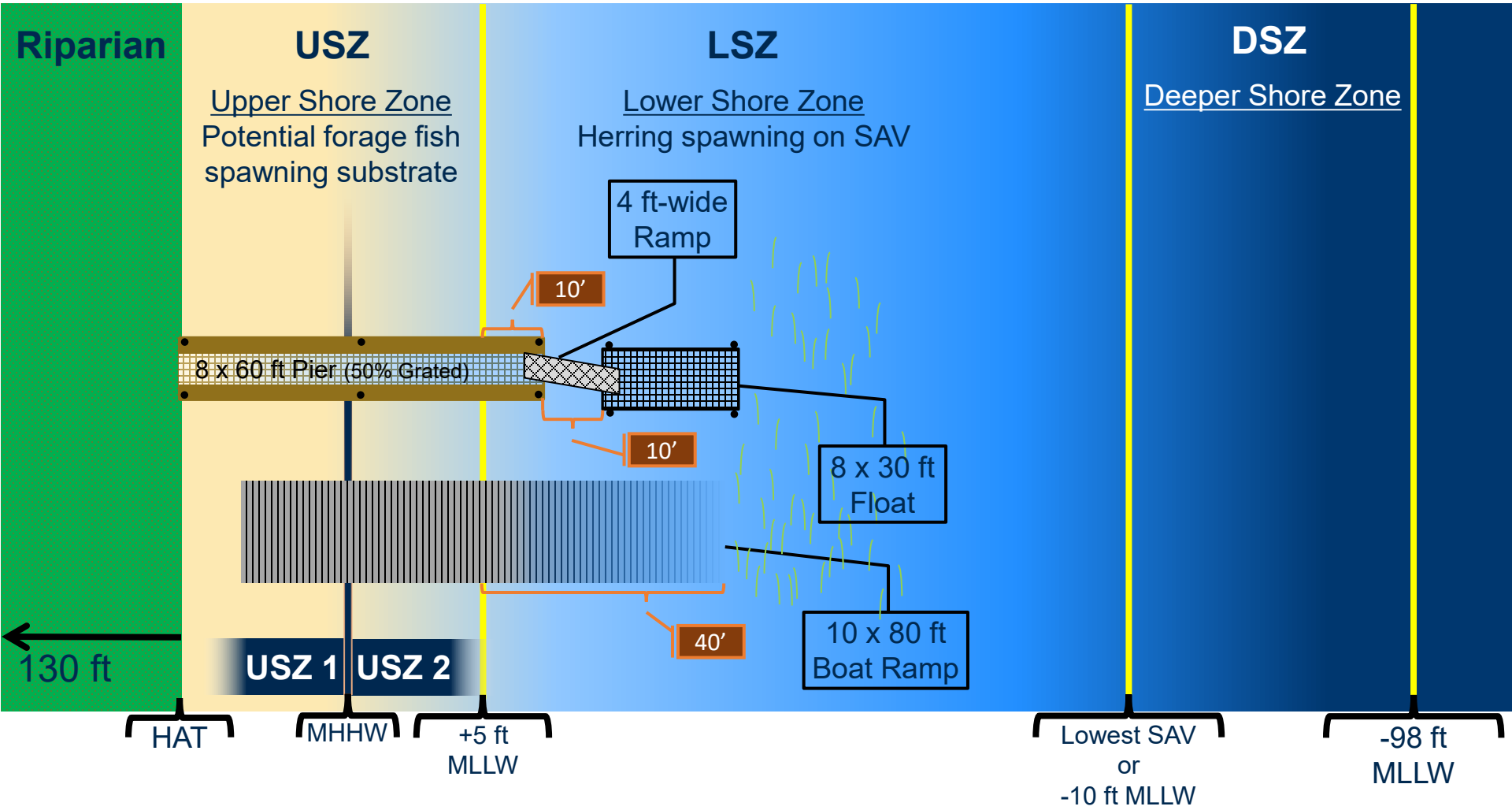
Workshop Example OWS replacement

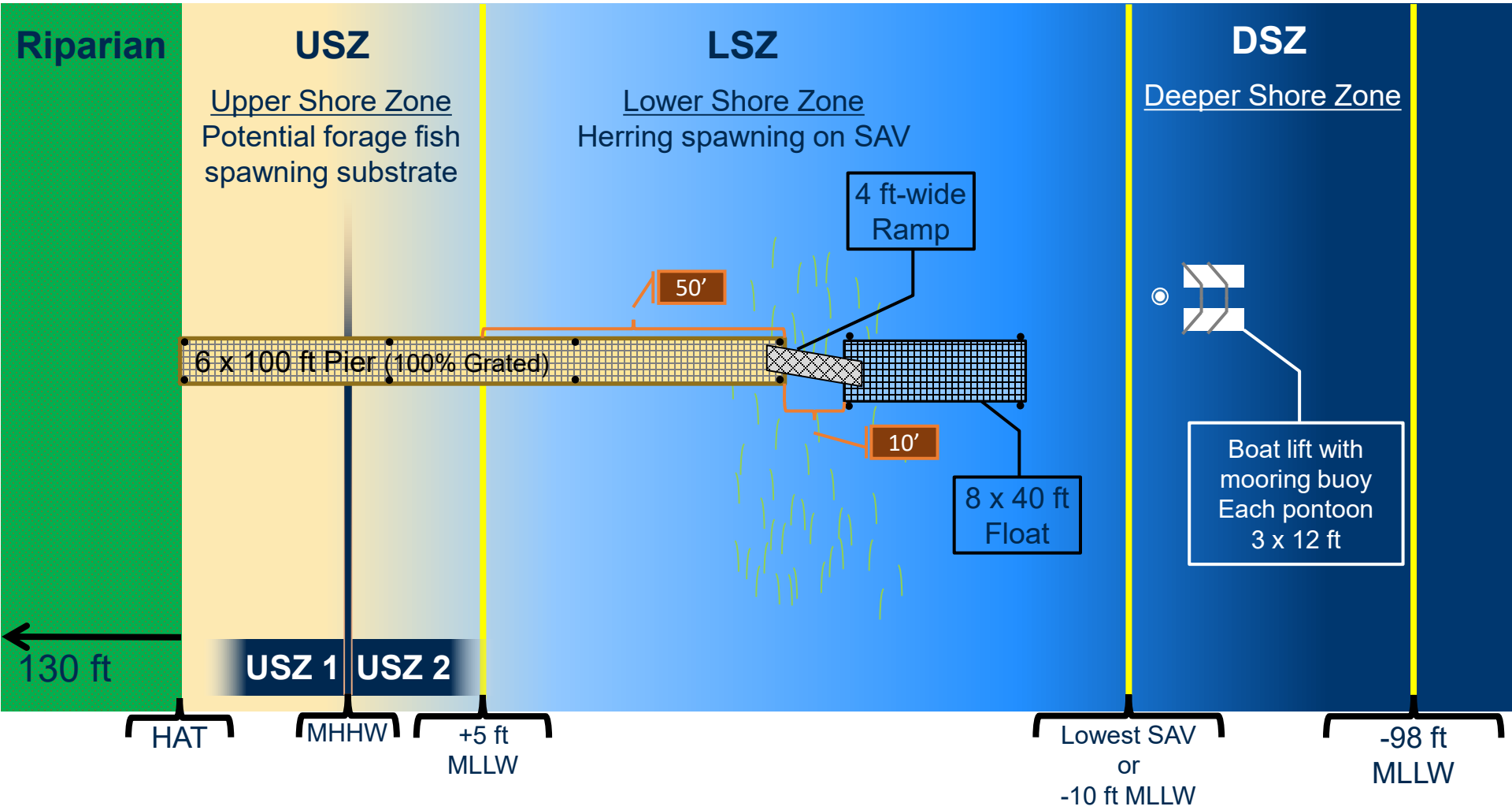
- Location: King County, Fauntleroy,
  - Latitude 47.52425; Longitude -122.39410
  - Check which credit factors will apply
- Remove:
  - Pier 50% grated: USZ 8*50, LSZ 8*10;
  - Overwater portion of ramp in LSZ: 4*10 ft
  - Float: 50% grated 8*30 ft, open space in grating >60%,
  - 10 creosote piles: 4 USZ, 6 LSZ
  - Boatramp: 10*80 ft: 10*40 USZ, 10*40 LSZ
- Install:
  - Pier fully grated: USZ 6*100, LSZ 6*50;
  - Overwater portion of ramp: 4*10 ft
  - Float: 50% grated 8*40 ft float, open space in grating >60%,
  - 10 12-inch diameter steel piles: 4 in USZ, 6 in LSZ;
  - If you are fast add: mooring buoy in DZ with floating boat lift with 2 floating pontoons 3*12 ft each.

NOAA FISHERIES

OWS Example: Remove



OWS Example: Install



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NOAA FISHERIES

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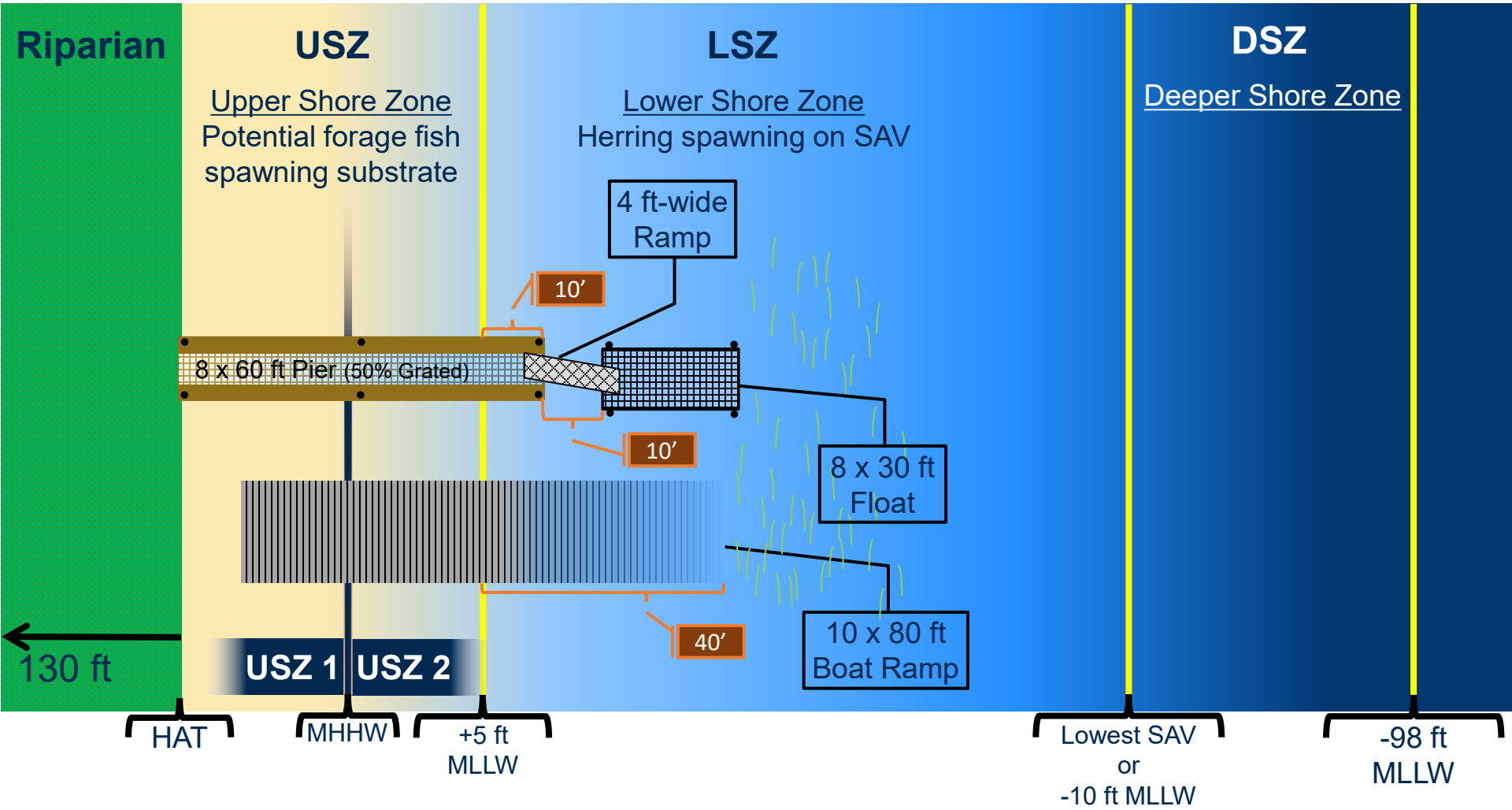

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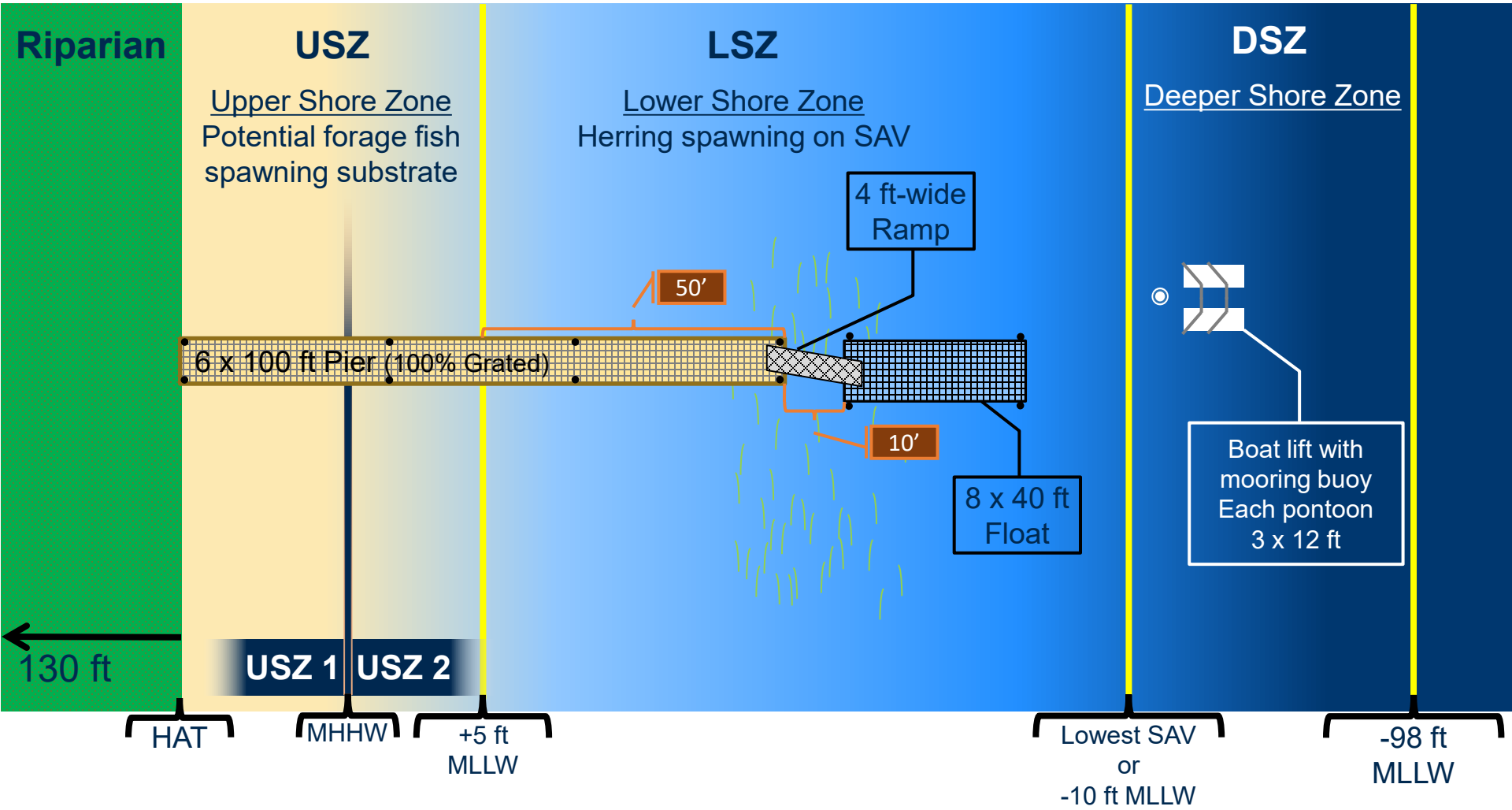
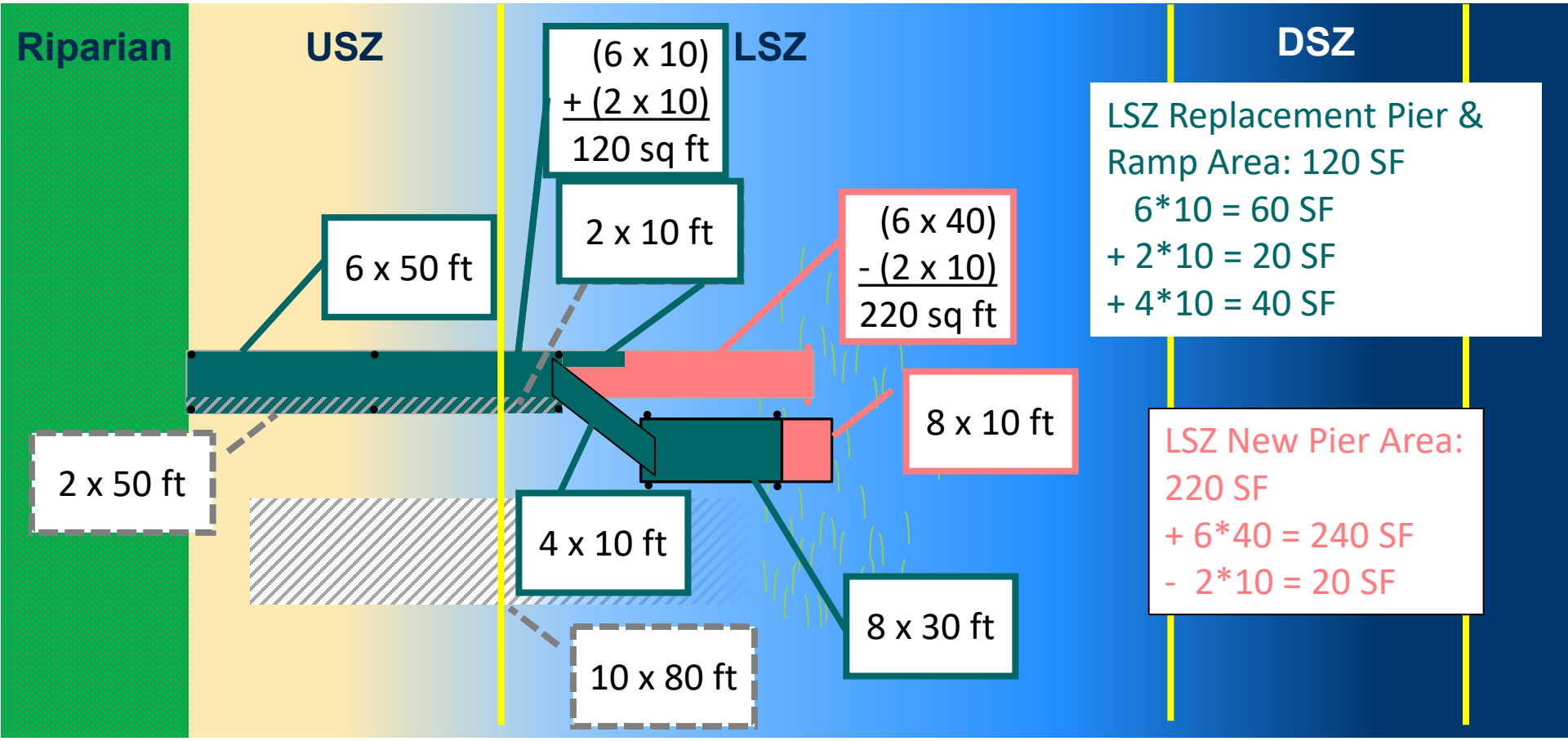


OWS Example: Determining New Coverage



To be replaced (Generates credits for removal and debits for installation)

Expansion (Generates debits)

Removal (Generates credits)

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Feedback

Please type your answer in the chat box:

1. Was the workshop example:
   too easy, just right, too difficult?
2. How was the allotted time for the workshop example?
   Too little time, too much, just right.

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Questions?
Fragen?
¿Preguntas?

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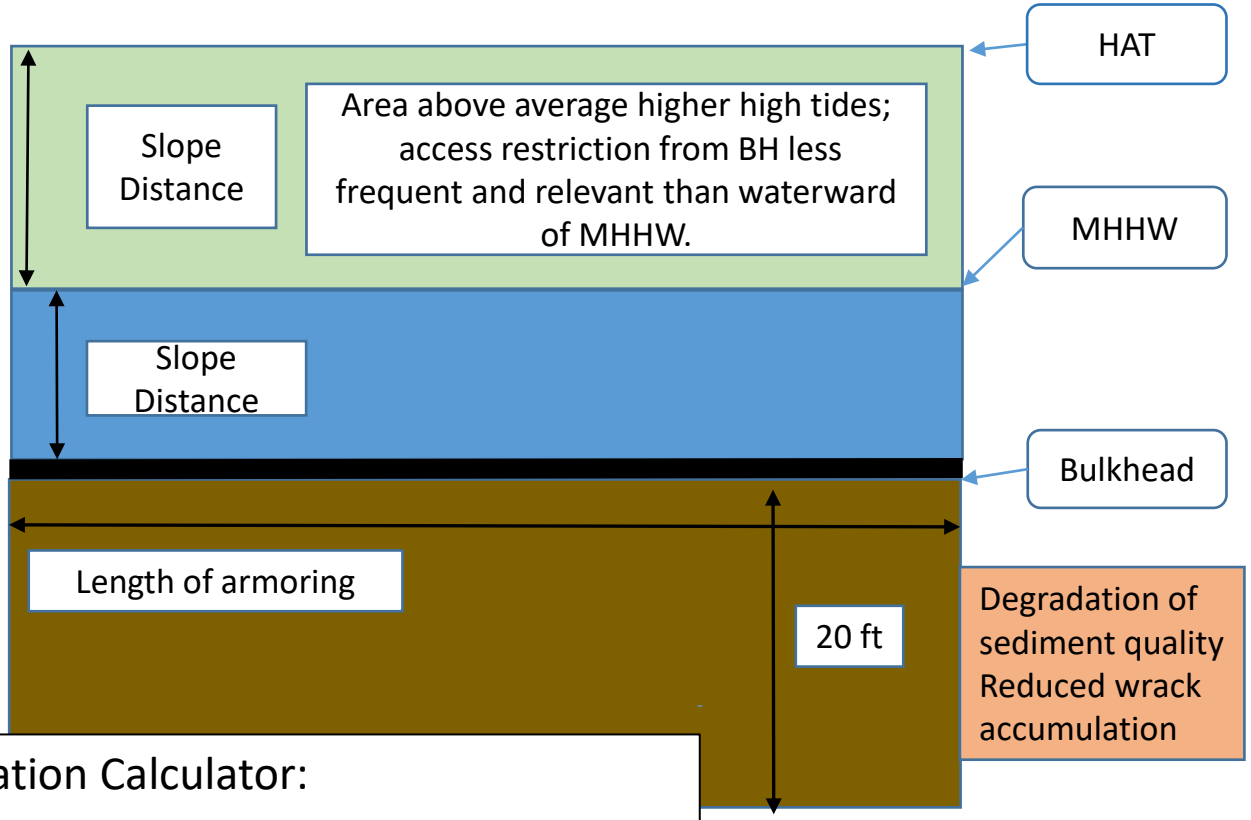
Hard armoring waterward of MHHW

- No fish access landward of BH. Area effectively leaves USZ and functions as disconnected riparian
- Interrupted sediment transport.



Entry parameters for Conservation Calculator:

- Length of armoring
- Type of armoring
- Is the toe of the to be installed armoring at or below MHHW?
- Slope/Ground distance between armoring and MHHW.
- Slope/Ground distance between MHHW and HAT
- Riparian Vegetation condition

TIDES & CURRENTS

Station Info | Tides/Water Levels | Meteorological Obs. | Phys. Oceanography

Datums for 9447130, Seattle WA

NOTICE: All data values are relative to the MLLW.

Elevations on Mean Lower Low Water

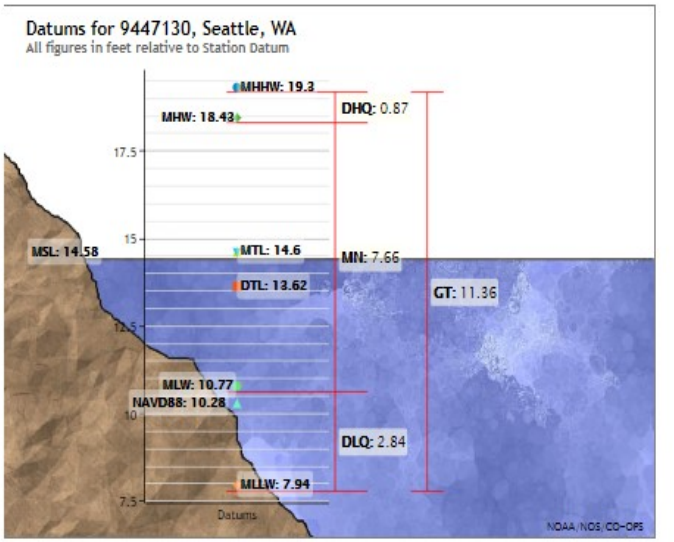
Station: 9447130, Seattle, WA
Status: Accepted (Apr 17 2003)
Units: Feet
Control Station:

T.M.: 0
Epoch: 1983-2001
Datum: MLLW

Datum	Value	Description
MHHW	11.36	Mean Higher-High Water
MHW	10.49	Mean High Water
MTL	6.66	Mean Tide Level
MSL	6.64	Mean Sea Level
DTL	5.68	Mean Diurnal Tide Level
MLW	2.83	Mean Low Water
MLLW	0.00	Mean Lower-Low Water
NAVD88	2.34	North American Vertical Datum of 1988
STND	-7.94	Station Datum
GT	11.36	Great Diurnal Range
MN	7.66	Mean Range of Tide
DHQ	0.87	Mean Diurnal High Water Inequality
DLQ	2.84	Mean Diurnal Low Water Inequality
HWI	0.40	Greenwich High Water Interval (in hours)
LWI	6.64	Greenwich Low Water Interval (in hours)
Max Tide	14.48	Highest Observed Tide
Max Tide Date & Time	01/27/1983 04:36	Highest Observed Tide Date & Time
Min Tide	-5.04	Lowest Observed Tide
Min Tide Date & Time	01/04/1916 00:00	Lowest Observed Tide Date & Time
HAT	13.26	Highest Astronomical Tide
HAT Date & Time	01/12/1997 15:36	HAT Date and Time
LAT	-4.30	Lowest Astronomical Tide
LAT Date & Time	06/22/1986 18:36	LAT Date and Time

Tidal Datum Analysis Periods

01/01/1983 - 12/31/2001



Showing datums for

9447130 Seattle, WA

Datum

STND

Data Units ◉ Feet
○ Meters

Epoch ◉ Present (1983-2001)
○ Superseded (1960-1978)

Submit

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Shoreline Armoring Example Replacement

- Replace 100 LF of concrete BH
- Toe located at MHHW
- No beach profile
- No information on HAT
- Vegetation landward of bulkhead is lawn

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Last Questions?
Fragen?
¿Preguntas?

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Feedback Please!

Please type your answer in the chat box:

1. Was the workshop: too easy, just right, too difficult?
2. What topics would you like to hear more about in a future workshop?

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Questions and/or Need Project Specific help?

Contact : PSNearshoreConservation.wcr@noaa.gov

Questions

- Include in Subject Line: *"Question(s) – Puget Sound Calculator"*

Help with project specific calculator

- Include in Subject Line: *"Request for Meeting – Puget Sound Calculator"*
- Attach a draft project calculator. You will need to have a draft in order to schedule a meeting.

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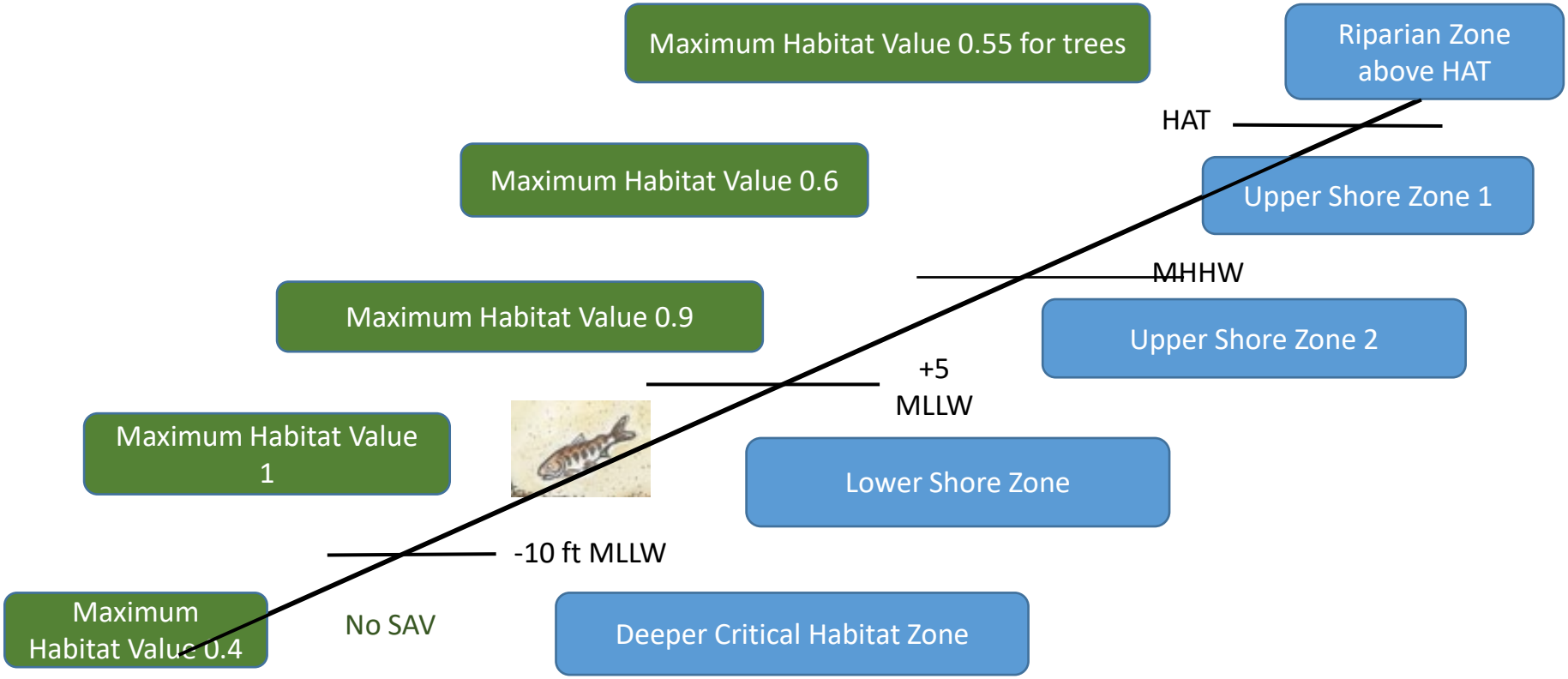
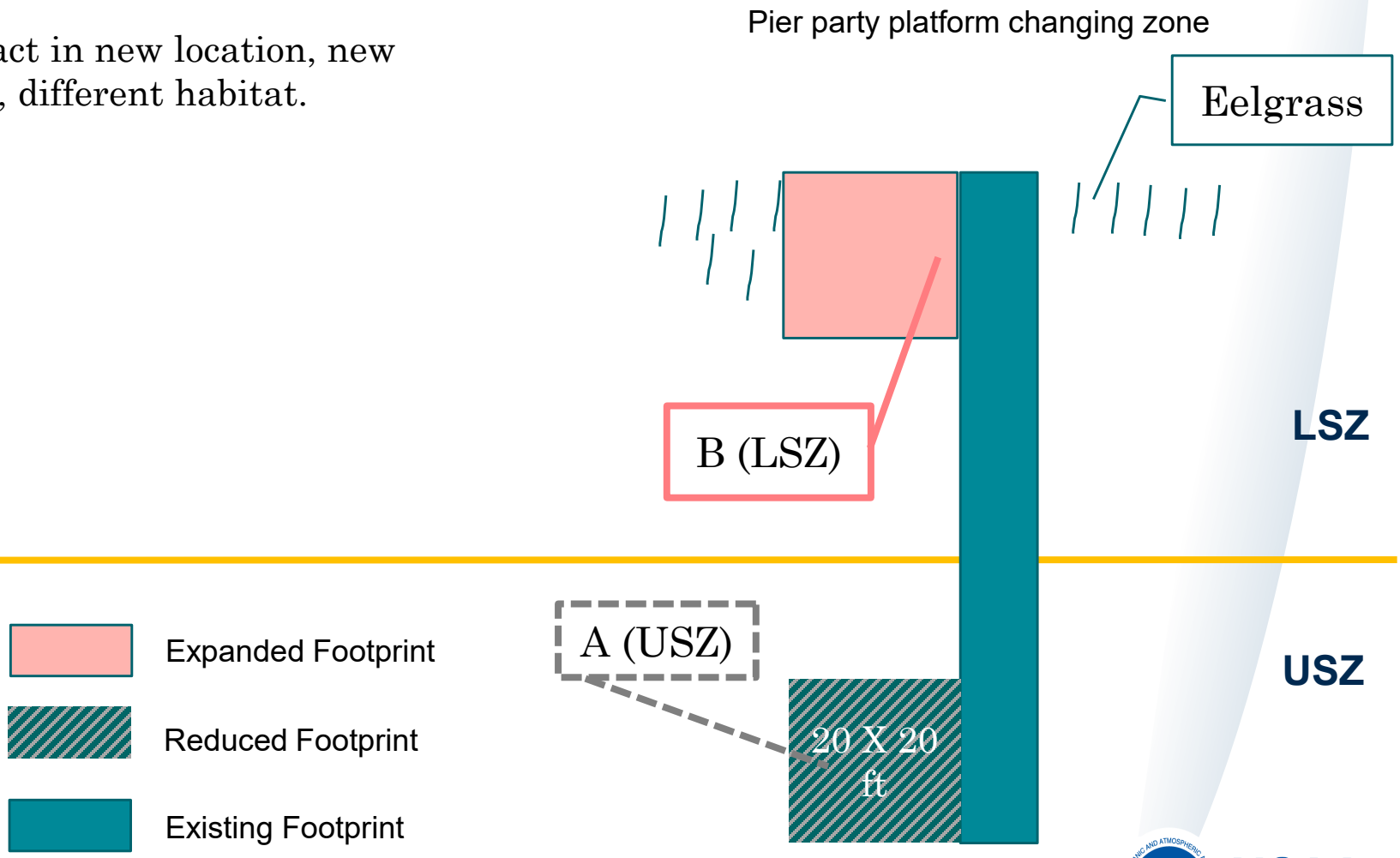
Extra Slides that might be useful for Questions

Maximum Habitat Values by Elevation



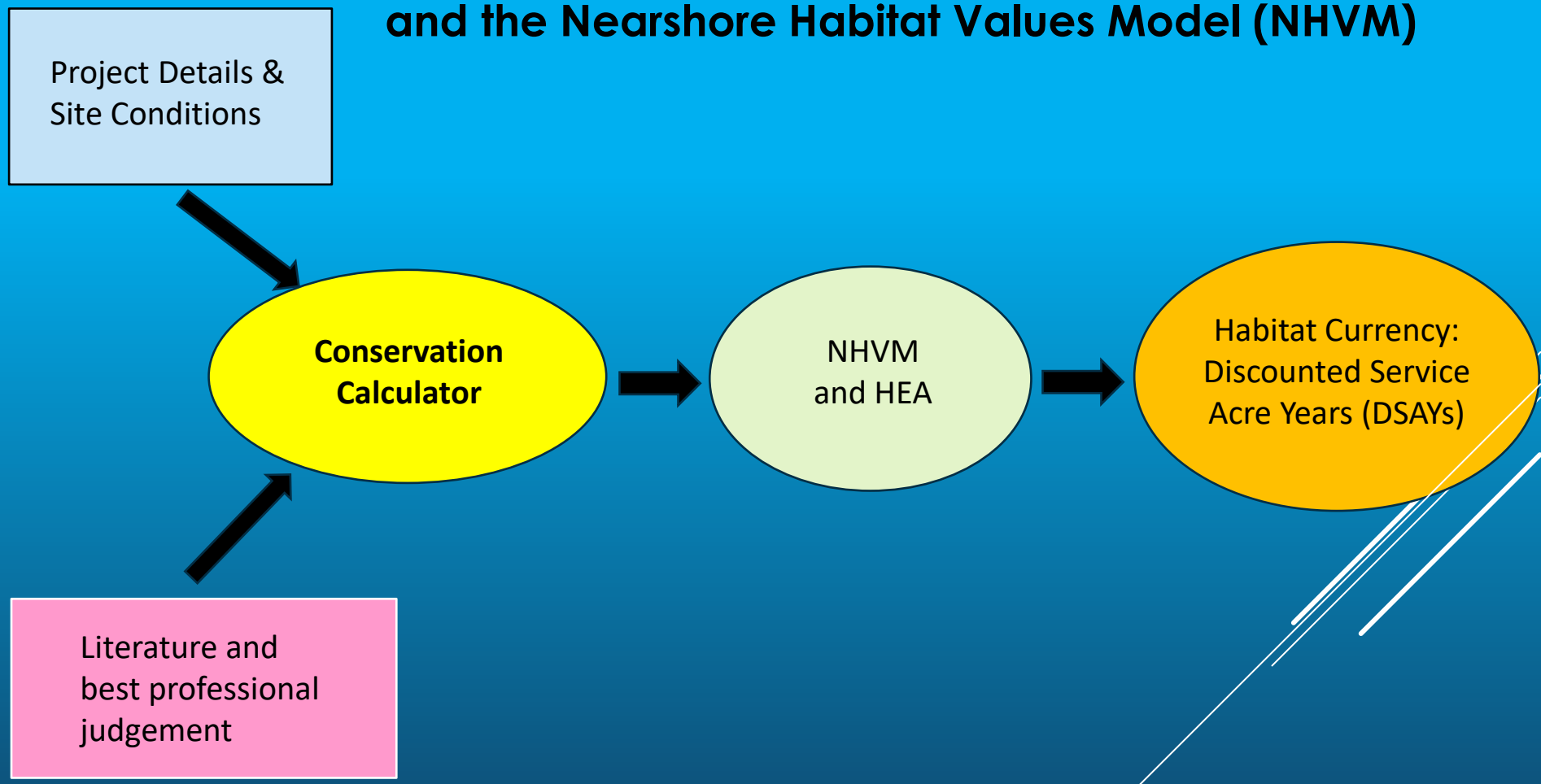
Why not look at Totals Across Zones?

- Impact in new location, new zone, different habitat.

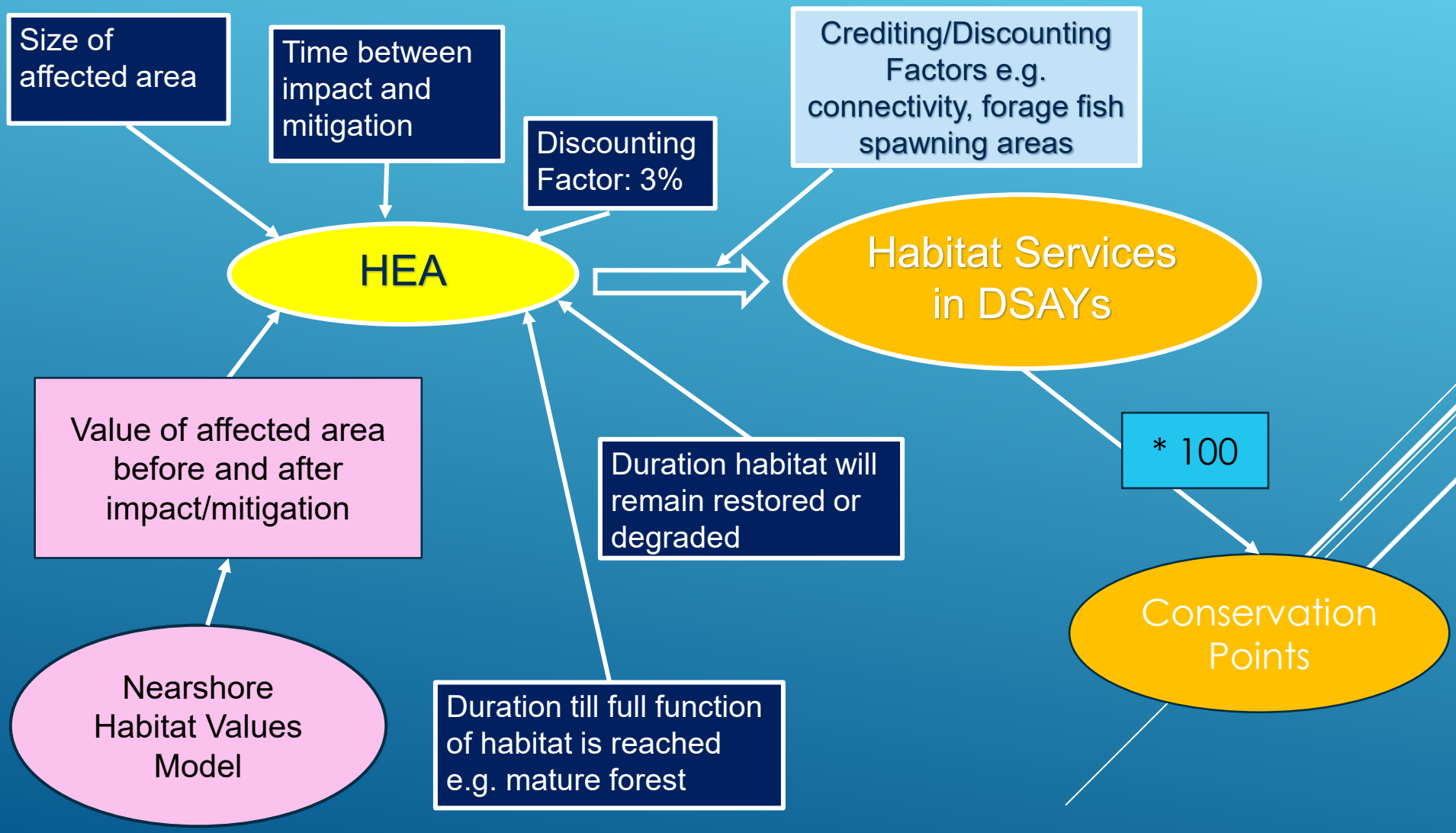


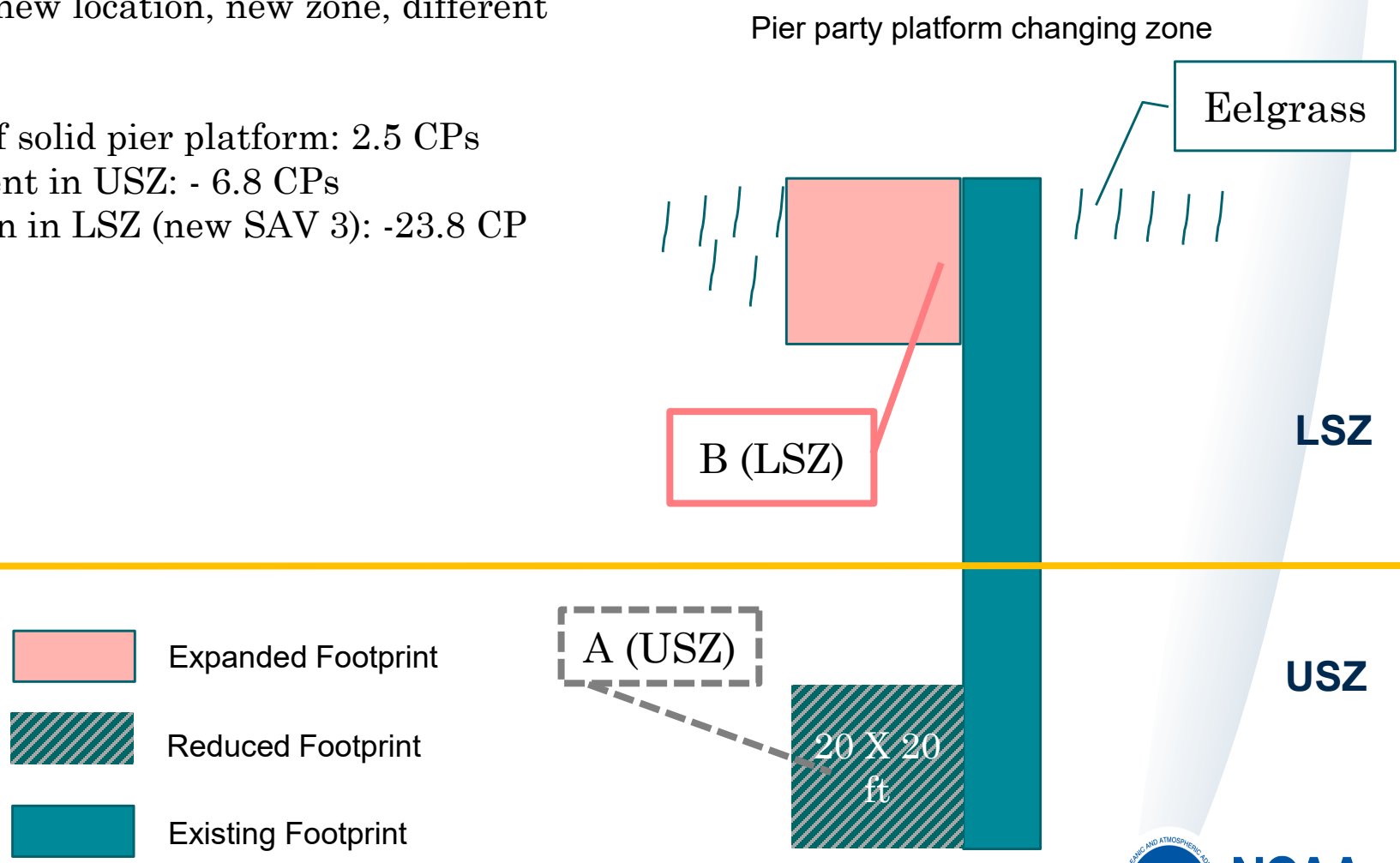
PUGET SOUND NEARSHORE CONSERVATION CALCULATOR

Easy Interface to Habitat Equivalency Analysis (HEA) and the Nearshore Habitat Values Model (NHVM)



HABITAT EQUIVALENCY ANALYSIS: THE BASICS



Why we do not look at Totals Across Zones

- Impact in new location, new zone, different habitat.
- The Math:
  Removal of solid pier platform: 2.5 CPs
  Replacement in USZ: - 6.8 CPs
  Installation in LSZ (new SAV 3): -23.8 CP