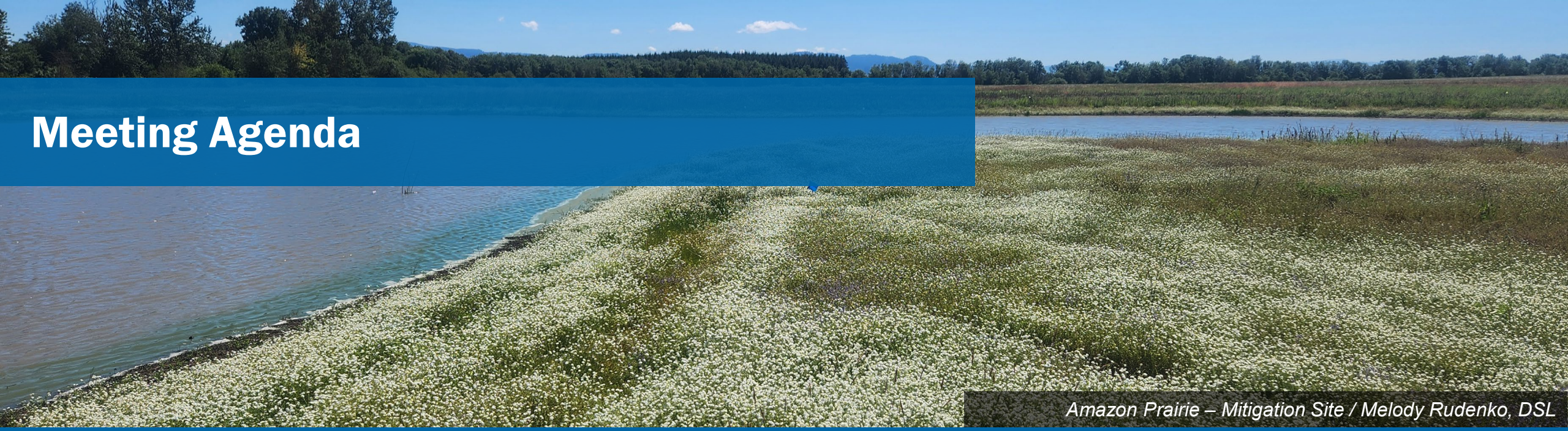
Rulemaking Advisory Committee

Permitting and Mitigation in Oregon's Wetlands and Waters (Division 85)

May 21, 2025

Amazon Prairie – Mitigation Site / Melody Rudenko, DSL

Meeting Agenda



Amazon Prairie – Mitigation Site / Melody Rudenko, DSL

9:00 AM	Introductions, Agenda Review, Zoom Protocols
9:15 AM	Presentation/Discussion – Stream Compensation Methodology
10:30 AM	Break
10:45 AM	Presentation and Discussion continued
11:45 AM	Interested Party Comments
11:55 AM	Next Steps
12:00 PM	*Meeting ends*

Meeting Goals: *Provide background on stream mitigation accounting to ensure a shared understanding for upcoming RAC discussions.*

Zoom Protocols

Each person who wishes to speak will be asked to raise their hand.

- To raise your hand, click the reactions near the bottom of your screen and click “raise hand” or by pressing star 9 if you are on the phone.
- Will seek a balance of speaking time during discussions
- *For technical support, please message us in the chat*.

- Please keep your mic muted unless it is your turn to speak. Use of video is encouraged.
- Closed captions are available.
- Please use the chat for questions and comments
- We ask that all participants be respectful of each other and DSL representatives.

Background Information

Harborton Mitigation Site / Bill Ryan, DSL

Spruce Swamp Estuary – Columbia River / Dan Cary, DSL (retired)

Replacing Functions and Values of Oregon's Aquatic Resources

- Removal Fill Law
- Description of "Water Resources"
- Definition of Mitigation

Oregon's Removal-Fill Law

"The protection, conservation and best use of the water resources of this state are matters of the utmost public concern. Streams, lakes, bays, estuaries and other bodies of water in this state, **including not only water and materials for domestic, agricultural and industrial use but also habitats and spawning areas for fish, avenues for transportation and sites for commerce and public recreation, are vital to the economy and well-being of this state and its people.** *Unregulated removal of material from the beds and banks of the waters of this state may create hazards to the health, safety and welfare of the people of this state. Unregulated filling in the waters of this state for any purpose, may result in interfering with or injuring public navigation, fishery and recreational uses of the waters."* – Excerpt from ORS 196.805

Oregon's Water Resources

"Water resources includes not only water itself but also aquatic life and habitats therein and all other natural resources in and under the waters of this state"– Excerpt from ORS 196.800

Oregon's Compensatory Mitigation

"Compensatory mitigation means activities conducted by a permittee or third party to create, restore, enhance or preserve **the functions and values of the water resources of this state** *to compensate for the removal-fill related adverse effects of project development to waters of this state or to resolve violations"*– Excerpt from ORS 196.600

Functions are the processes that create and support aquatic ecosystems.

- Science based
- Objective
- Based on the physical chemical and biological characteristics of the aquatic resource

Values are the ecological and societal benefits that aquatic ecosystems provide.

- Subjective
- Contextual
- Driven by where a site is located within the watershed or basin

Current Stream Mitigation Requirements

Stream Mitigation Eligibility: Answering the mitigation question of “What kind?”

A stream mitigation project is “Eligible” to compensate for a stream impact if these characteristics match:

- Same 4th field HUC
- Matching – Group function ratings, flow permanence, stream size, and ESH status
- OR – Out-of-kind mitigation with our watershed priority pathway
- OR – Aquatic Resource of Special Concern (ARSC) replaced with same ARSC

Current Stream Mitigation Requirements cont.

Stream Mitigation Accounting: answering the mitigation question of “How much?”

There is not an established ratio or compensation calculation for stream impacts.

- The amount of mitigation required is determined on a case-by-case basis.

Development Process

Sandy River – Troutdale / Katrina Scotto di Carlo, DSL

DSL Mitigation Program Development History

2009: Identified gaps & needs in Oregon

2009 – 2017: Wetland assessment (ORWAP) refinement, Stream Function Assessment (SFAM) development & testing, policy development, outreach, transition option for existing banks

2018 – 2019: Rulemaking for wetland function-based accounting, adoption of SFAM as required assessment

2020 – 2024: Stream accounting technical advisory committee (TAC), development of program elements, DSL policy development and outreach

2025 – 2026: Rulemaking for stream function-based accounting

Stream Mitigation Technical Advisory Committee (TAC)

Willamette River - Eugene / Erin Serra, DSL

Regional Experts representing state, tribal, federal, local agencies, and the consulting community

- Emily Alcott, Interfluve
- Leslie Bach, Northwest Power and Conservation Council
- Brian Cook, Clean Water Services
- Nicole Czarnomski, Washington Department of Fish and Wildlife
- Anne Hayden-Lesmeister, Oregon Department of Fish and Wildlife
- Amy Horstman, U.S. Fish and Wildlife Service
- Brad Livingston, Oregon Department of Transportation
- Rudy Salakory, Cowlitz Indian Tribe

Stream Mitigation Technical Advisory Committee (TAC)

Reviewed and provided input on mitigation accounting approaches and components such as:

- Stream Function Assessment Method
  - Process and science behind the method
  - The function and value score that are outputs from the method
  - How it can be used to estimate the effects of a project on stream functions
- Unit of measure options
- Adjustments to mitigation requirements
- Stream Performance Standards and Monitoring Requirements

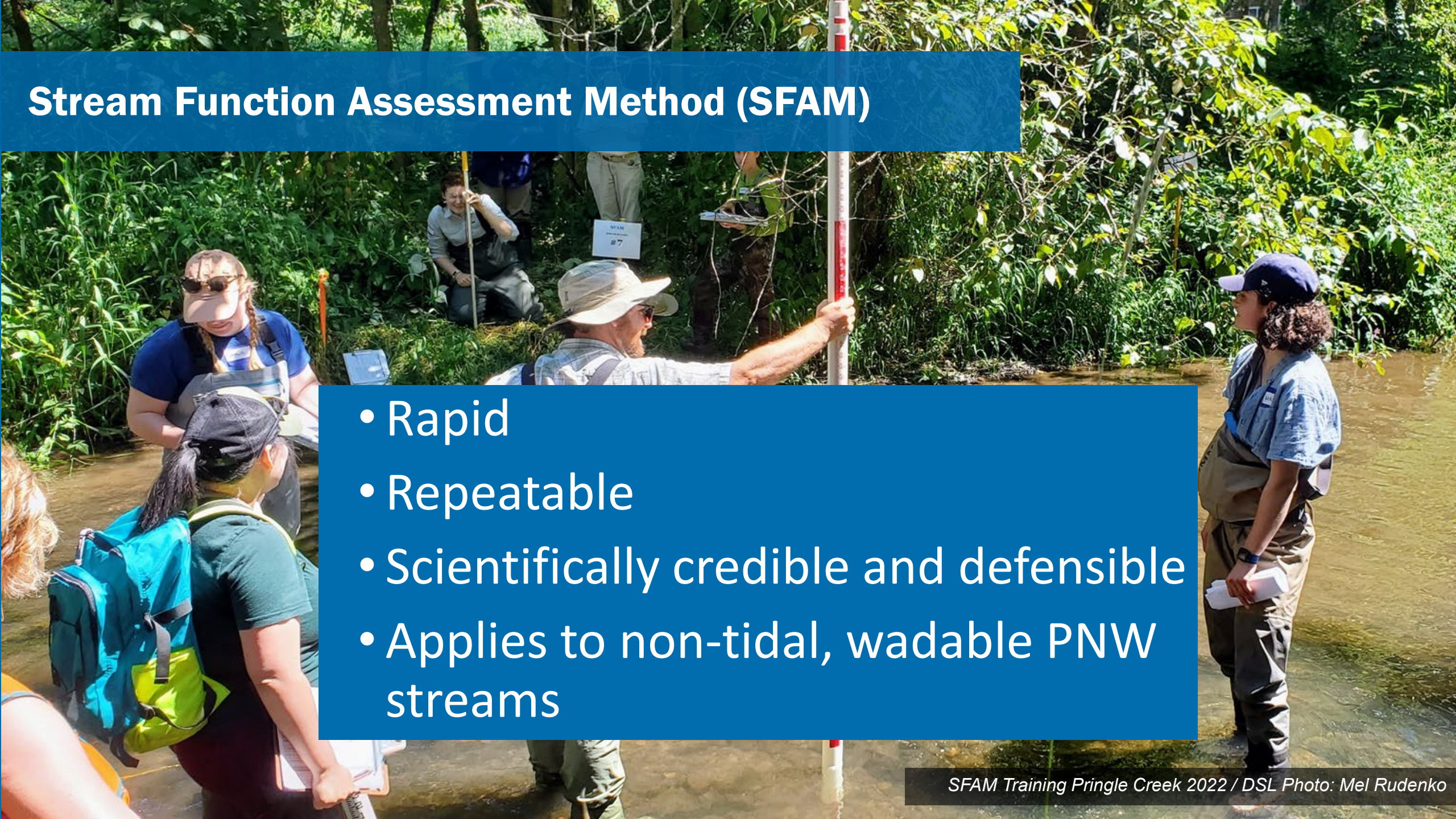
Stream Mitigation Project Development Team

- Melody Rudenko, Oregon Dept. of State Lands
- Andrea Seager, U.S. Army Corps of Engineers
- Grey Wolf, Oregon Dept. of State Lands
- Tracie Nadeau, U.S. Environmental Protection Agency
- Dana Hicks, Oregon Dept. of State Lands
- Also pictured: Shauna Everett, U.S. Fish and Wildlife Service

What is SFAM and when is it used?

Santiam River / Grey Wolf, DSL

Stream Function Assessment Method (SFAM)

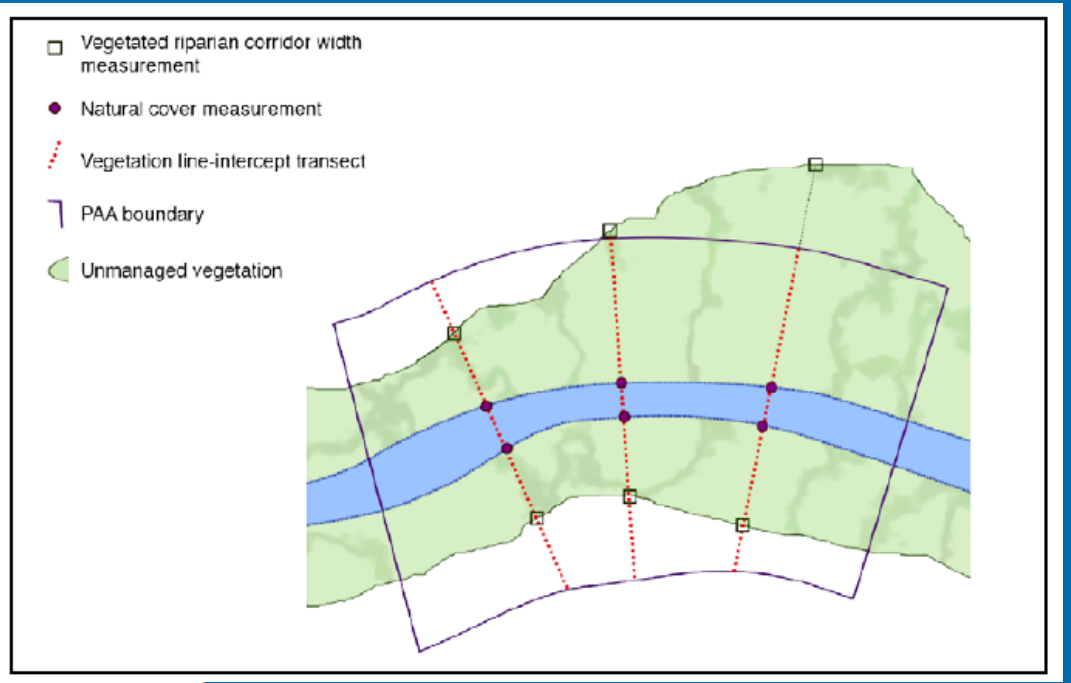


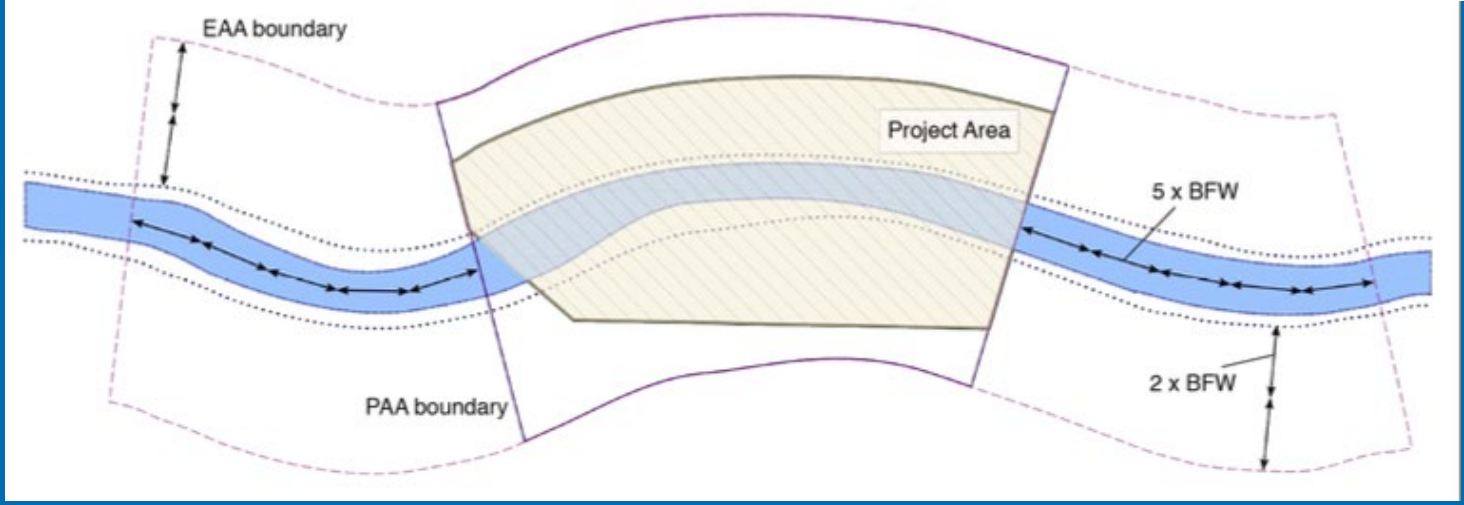
- Rapid
- Repeatable
- Scientifically credible and defensible
- Applies to non-tidal, wadable PNW streams

SFAM Training Pringle Creek 2022 / DSL Photo: Mel Rudenko

SFAM – Layout of Field Assessment

- *Assessment area:*
  - Aligns with a linear stretch of stream
  - Scaled by stream size (width at OHW)
  - Includes riparian area/floodplain





Peter Ryan conducting SFAM in Pringle Creek/ Mel Rudenko, DSL

- Functions are difficult to directly measure.
- Quantifiable features are measured and used to calculate function scores.
- Function measures are:
  - Quantifiable
  - Rapid
  - Repeatable
  - Sensitive

EXAMPLE FUNCTION MEASURES:

Incised channel?

Variable channel bed?

Wood in stream?

SFAM

11 Functions and Values assessed

- Scored on 0-10 scale
- Results comparable across streams statewide

Hydrologic Functions
-Surface Water Storage
-Subsurface Water Transfer
-Flow variation

Water Quality Functions
-Nutrient Cycling
-Chemical Regulation
-Thermal regulation

Biologic Functions
-Maintain Biodiversity
-Create and Maintain Habitat
-Sustain Trophic Structure

Geomorphic Functions
-Sediment Continuity
-Sediment Mobility

Example Score Output:

SPECIFIC FUNCTIONS	Function Score	Function Rating	Value Score	Value Rating
Surface Water Storage (SWS)	5.39	Moderate	6.33	Moderate

Using SFAM to Predict Project Outcomes

Wetland - Siletz Bay / Dan Cary, DSL (retired)

- SFAM Function scores are sensitive (meaning scores will increase or decrease) to small amounts of change in the stream area assessed.
- Predicted function and value scores can be calculated during the planning phase of a project by following the instructions in the user's manual (and provided during SFAM trainings) to adjust the baseline site assessment.
- The difference in the current and predicted functions can then be used in mitigation accounting.

Example of Using SFAM Predictively

This process can be completed for projects with:

- Negative impacts
- Mitigation Projects
- Projects that integrate both negative impacts and mitigation actions

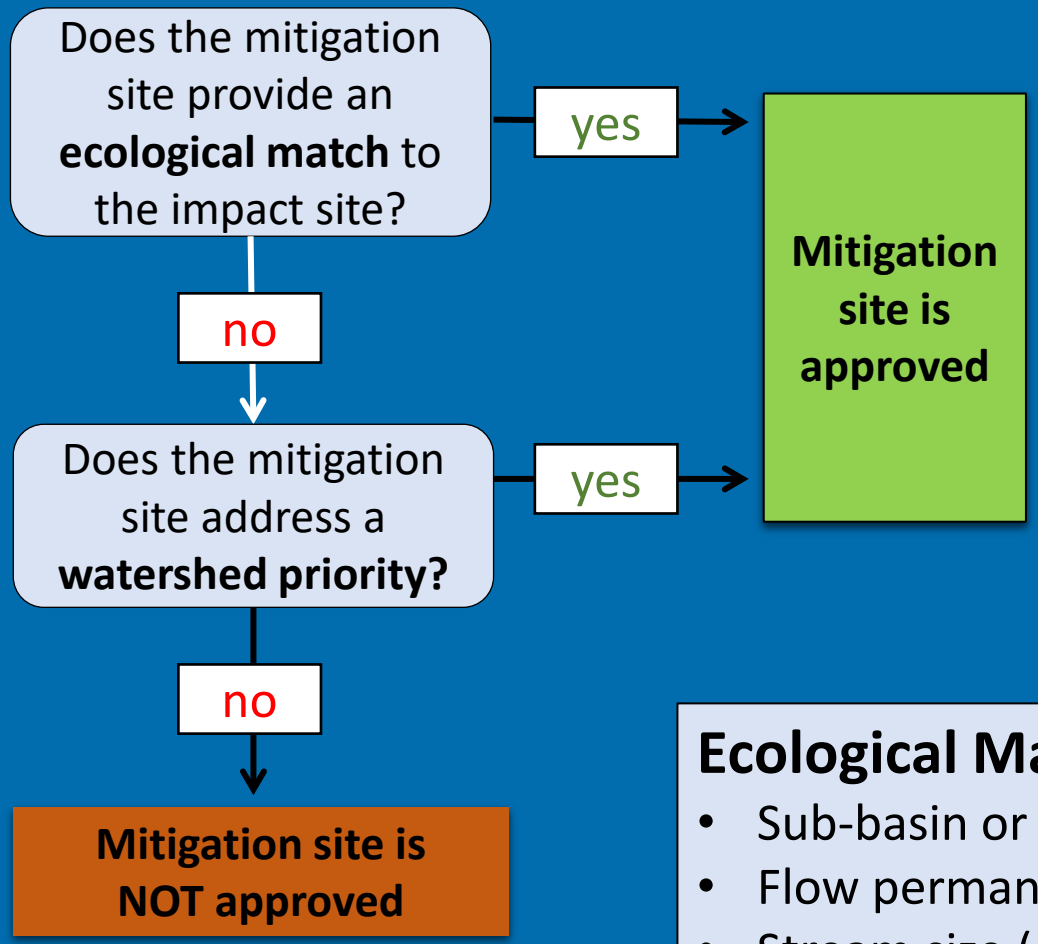
Specific Stream Functions	Baseline Function Score	Predicted Function Score
Surface Water Storage	4.02	4.62
Sub/Surface Water Transfer	3.88	3.91
Flow Variation	4.34	4.88
Sediment Continuity	4.98	5.26
Sediment Mobility	2.11	1.71
Maintain Biodiversity	1.42	2.25
Create and Maintain Habitat	2.87	2.93
Sustain Tropic Structure	4.08	4.49
Nutrient Cycling	4.29	3.27
Chemical Regulation	4.31	4.09
Thermal Regulation	4.22	0.00

Stream Mitigation Accounting

Kingston Prairie / Matt Unitis, DSL

Two Step Process: Eligibility and Accounting *(What kind? & How much?)*

Step 1: DETERMINE SITE ELIGIBILITY



Step 2: MITIGATION ACCOUNTING

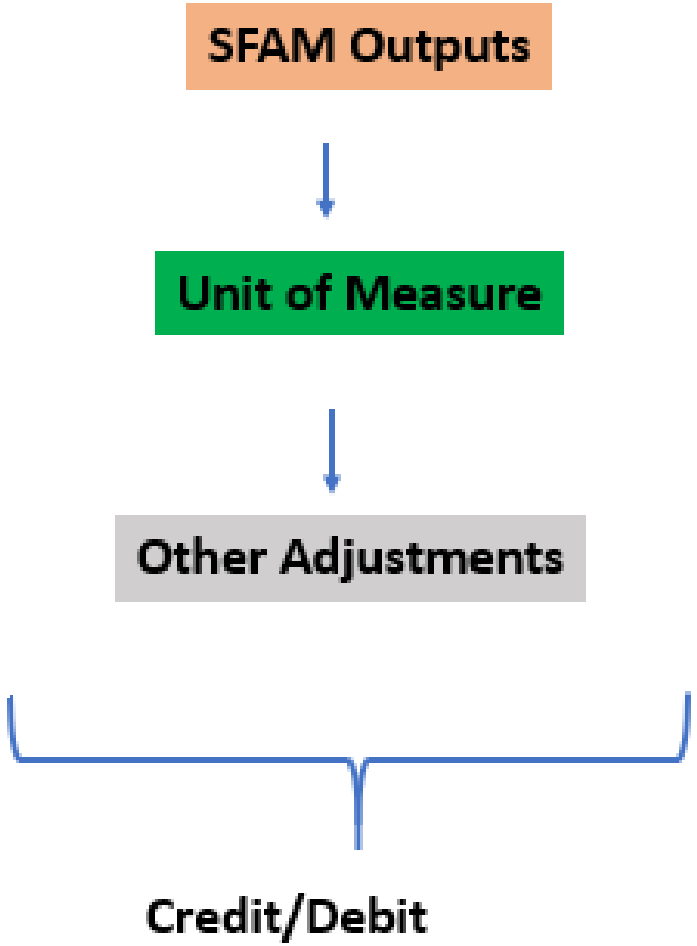
Determine steam mitigation requirements using accounting protocol:

- Calculate the number of **debits** (adverse impact) at project sites
- Calculate the number of **credits** (restoration) at mitigation sites

Ecological Match:

- Sub-basin or estuary
- Flow permanence (perennial or intermittent)
- Stream size (small, medium, large)
- ESH designation, if applicable at impact site

Foundational Accounting Components and Key Objectives



1. Use **SFAM Function Scores** in a way that **quantifies** functional change resulting from an action (impact or restoration).
2. Reflect the watershed context where changes to stream function occur using **SFAM Values Scores**
3. Apply a **Unit of Measure** in a way that appropriately accommodates changes to that unit of measure within a project
4. Create a mathematical 'model' that can accommodate **Adjustments**

Debits or Credits = (Value Weighted SFAM Function Scores * Unit of Measure) + Adjustments

SFAM Outputs – Change in Function

Specific Stream Functions	Baseline Function Score	Predicted Function Score	Gain or Loss
Surface Water Storage	4.02	4.62	0.6
Sub/Surface Water Transfer	3.88	3.91	0.03
Flow Variation	4.34	4.88	0.54
Sediment Continuity	4.98	5.26	0.28
Sediment Mobility	2.11	1.71	-0.4
Maintain Biodiversity	1.42	2.25	0.83
Create and Maintain Habitat	2.87	2.93	0.06
Sustain Tropic Structure	4.08	4.49	0.41
Nutrient Cycling	4.29	3.27	1.02
Chemical Regulation	4.31	4.09	-0.22
Thermal Regulation	4.22	0.00	-4.22

Debits or Credits = (Value Weighted **SFAM Function Scores** * Unit of Measure) + Adjustments

Value Weighting Change in Function

- The stream mitigation TAC recommended using the value score in addition to the function scores.
- Reflects the importance of the opportunity to provide a function and the significance of that function in the location being assessed.
- Increases credits/debits for impacts/mitigation to functions of higher value.
- Values alone cannot result in a credit/debit.

Value Weighting SFAM Function Scores

Example using one function: Surface Water Storage

- Baseline score: 4.02
- Predicted score: 4.62
- Value score: 8.0

Step 1 calculate change in function score due to project action

Surface Water Storage: 4.62-4.02 = 0.60

Step 2 calculate value weight

Surface Water Storage: 0.60 x (8.0/10) = 0.48

Step 3 add value weight to change in function score

Surface Water Storage: 0.6 + 0.48 = 1.08

Debits or Credits = (**Value Weighted** SFAM Function Scores * Unit of Measure) + Adjustments

Value weighting – ODOT Pringle Creek project example

Function	Existing Function Score	Predicted Function Score	Change in Function Score	Value Score	Value weighted function score
Sub/Surface Water Transfer	3.3	6.0	2.7	0.0	2.7

Function	Existing Function Score	Predicted Function Score	Change in Function Score	Value Score	Value weighted function score
Flow Variation	7.2	7.2	0.0	3.0	0

Function	Existing Function Score	Predicted Function Score	Change in Function Score	Value Score	Value weighted function score
Surface Water Storage	2.5	4.7	2.2	7.3	3.8

Sub/surface water transfer

Value score is zero so no change in scoring from Value weighting.

Flow Variation

No change predicted in flow variation function. No gains of losses (mitigation debits or credits) and no value weight applied.

Surface water storage

Change in function 2.2

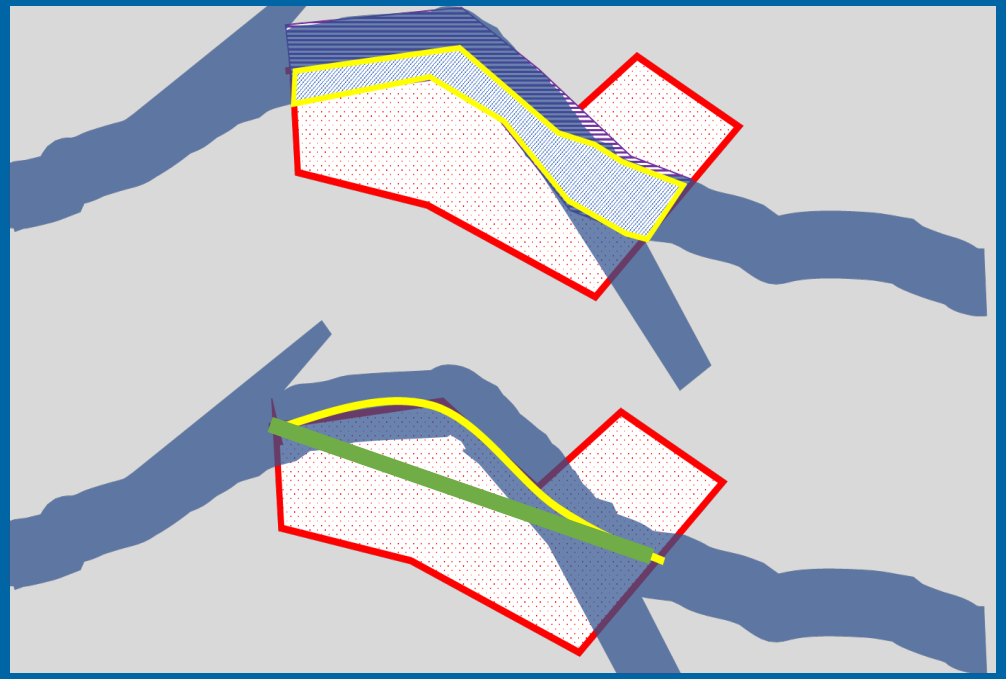
Value weight:

2.2 x (7.3/10) = 1.6

Value weighted function score:

2.2 + 1.6 = 3.8

Unit of Measure



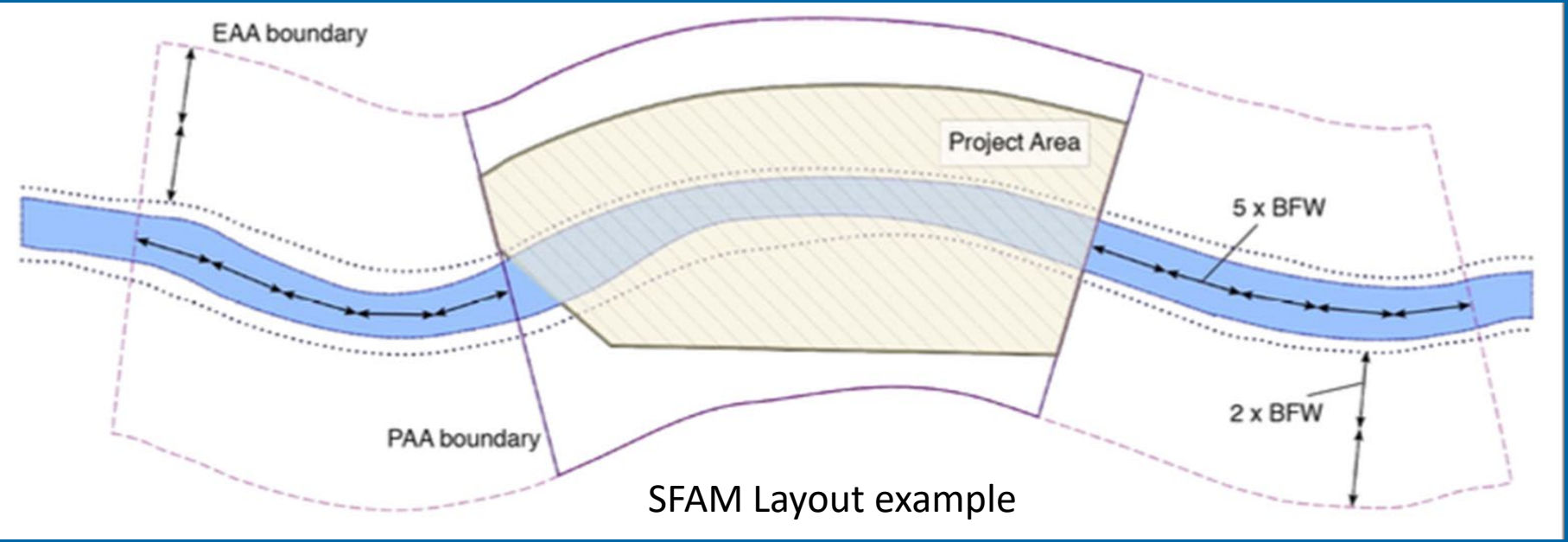
- The stream mitigation TAC recommended considering both linear feet and area.
- Acts as a multiplier to quantify the quality of stream functions being gained or lost due to project activities.
- Directly related to the assessment method used to evaluate stream function (SFAM).

St. Helens (camas stream) / Dan Cary, DSL (retired)

A “Good” Unit of Measure

- Is easy and repeatable to identify (measure).
- Represents (or correlates to) the ‘space’ that SFAM represents.
- Utilizes an existing measure or set of landmarks from SFAM or permitting process.
- Facilitates equitable function offset.

Unit of Measure



SFAM Layout example

Example using 1 function score:

Value Weighted Change in Surface water storage = 1.08

Length of project = 185 feet

1.08 x 185 = 199.8 gain in surface water storage function for the example project

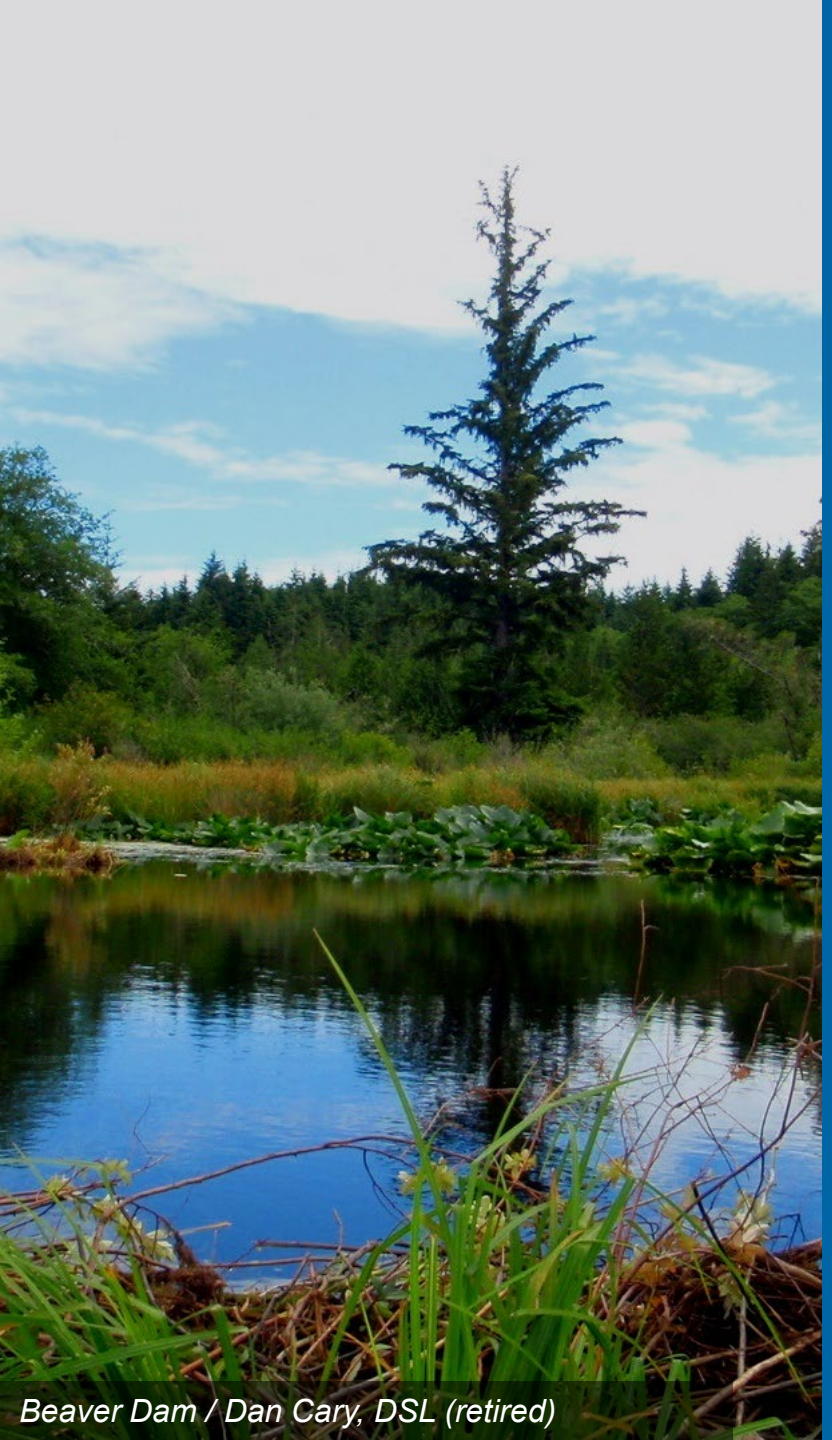
Oregon's proposed unit of measure - Linear Feet of Stream (centerline)

- Best captures the quantity of the functional quality.
- Easy to measure consistently and can be submitted with application.
- Provides parity between impact debit calculation and mitigation credit calculation.

Debits or Credits = (Value Weighted SFAM Function Scores * **Unit of Measure**) + Adjustments

Adjustments

- Incorporating adjustments can reflect factors not captured elsewhere in the mitigation calculation.
- The TAC recommended we consider adjustments for long term site protection, temporal lag of vegetation development and channel complexity.
- Adjustments can increase or decrease the amount of mitigation, be applied at the impact site or mitigation site, and can be applied at the individual function level or the total site level.
- Rule would reflect the incorporation of adjustments into the accounting process.



Beaver Dam / Dan Cary, DSL (retired)

Adjustments – Vegetation and Temporal Loss

- This adjustment reflect the temporal loss associated with re-establishment of vegetation in the riparian area.
- It is applied to at the impact site
- Tiered based on vegetation type.
- Applies only to the functions that include vegetation data in the scoring.

Vegetation Adjustment

- Herbaceous vegetation
  - 15% adjustment
  - 2 functions: chemical regulation and nutrient cycling
- Shrub-dominated riparian areas
  - 20% adjustment
  - 6 functions: maintain biodiversity, create and maintain habitat, sustain trophic structure, nutrient cycling, chemical regulation, and thermal regulation
- Tree-dominated riparian areas
  - 30% adjustment
  - 6 functions: maintain biodiversity, create and maintain habitat, sustain trophic structure, nutrient cycling, chemical regulation, and thermal regulation
- Adjustments are not additive

Vegetation Adjustment Example with Trees Lost at Impact Site

Function	Existing Function Score	Predicted Function Score	Value Score	Value weighted function score * UoM	30% adjustment for loss of trees
maintain biodiversity	2.0	3.7	5.0	((3.7-2.0) + (3.7-2.0)x(5.0/10)) x 170ft = 433.5	303.5
create and maintain habitat	2.6	2.3	7.3	((2.3-2.6) + (2.3-2.6)x(7.3/10)) x 170ft = -88.2	-144.7
sustain trophic structure	0.5	1.8	6.5	((1.8-0.5) + (1.8-0.5)x(6.5/10)) x 170ft = 364.7	255.3
nutrient cycling	1.8	1.5	5	((1.5-1.8) + (1.5-1.8)x(5/10)) x 170ft = -76.5	-99.5
chemical regulation	2.3	1.9	5	((1.9-2.3) + (1.9-2.3)x(5/10)) x 170ft = -102.0	-132.6
thermal regulation	0.0	0.0	7.2	0	0

Debits or Credits = (Value Weighted SFAM Function Scores * Unit of Measure) + **Adjustments**

Function Replacement and Trade Offs – ODOT Willow Creek Project Example

Function	Value weighted function score	30% adjustment for loss of trees
Surface Water Storage	- 67.8	-67.8
Sub/Surface Water Transfer	102.0	102.0
Flow Variation	227.1	227.1
Sediment Continuity	24.1	24.1
Sediment Mobility	170.0	170.0
Maintain Biodiversity	433.5	303.5
Create and Maintain Habitat	- 88.2	-114.7
Sustain Trophic Structure	364.7	255.3
Nutrient Cycling	- 76.5	-99.5
Chemical Regulation	- 102.0	-132.6
Thermal Regulation	0.0	0.0
total	986.9	667.4

Total before adjustment for tree loss: 986.9

Total after adjustment for tree loss: 667.4

Metolius River – Pioneer Ford Campground / Jessica Salgado, DSL

Adjustments – Long-Term Site Protection

- This adjustment reflects the long-term benefits of stream functions being provided and protected at a site.
- It is applied to the mitigation site.
- Tiered based on type of protection.
- Applies to the total site level.

Site Protection Adjustment

- Deed Restriction (or an agency approved natural resource management plan)
  - 10% adjustment applied to the total
  - For public entities a funded management plan is an alternative option
- Conservation Easement (or fee-title held by land-trust)
  - 20% adjustment applied to the total
  - Stewardship funding plan

Wood River / Dan Cary, DSL (retired)

Long-Term Site Protection Mitigation Bank Example

- Increase in 10 out of 11 stream functions
- 1,050 ft stretch of stream
- Credit total before site protection adjustment: 42,926 credits
- 10% increase for basic site protection: 47,218 credits
- 20% increase for enhanced site protection: 51,511 credits

Stream Mitigation Accounting Summary

Calapooia Creek, Oakland OR/ DSL Photo: Mel Rudenko

- SFAM scores capture the gain and loss of functions resulting from a project
- Value-weighting the functional change from a project reflects the importance of the opportunity to provide a function and the significance of that function in the location
- Unit of measure acts as a multiplier to quantify the quality of stream functions being gained or lost due to project activities and which unit of measure is most appropriate depends on function assessment used – Linear Feet for Oregon (SFAM)
- Adjustments to the mitigation calculation can be applied at the appropriate level to incorporate agency policies and to reflect factors not captured elsewhere in the mitigation calculation

Camas Field – Butler Mitigation Bank / Grey Wolf, DSL

Interested Party Comments

Please raise your hand to speak.

Please keep comments limited to 3 minutes.

Interested Party Comments

Use the "Raise Hand" feature to provide community input. Time is limited and we may not be able to hear from all of you today.

- To raise your hand, click the reactions near the bottom of your screen and click “raise hand” or by pressing star 9 if you are on the phone.
- You will be called in the order in which hands are raised.
- Please keep your mic muted unless it is your turn to speak.

When it’s your turn to speak:

- When your turn is coming up, the moderator will call on you to begin speaking.
- Please say your name, where you’re from, and any organization you’re representing.
- Please keep your remarks to ***three minutes*** and be respectful of each other and agency representatives. We will help track your time.

What's Next?

Middle Fork – Willamette River / Dan Cary, DSL (retired)

- The next RAC meeting is June 12 (1-4 p.m.); this has been rescheduled from June 11.
  - A meeting agenda will be sent by June 5, with a list of the rules to be discussed.
  - Office hours for RAC members will be held at 10 a.m. on Monday, June 9.
  - If you are unable to attend and do not have an alternate, you may send your comments to Samantha or Maria by close of business on June 10.
- In the next week, a meeting summary will be sent to RAC members and today's meeting recording will be posted.
- All meeting materials will be posted to DSL's Rulemaking website: www.oregon.gov/dsl/Pages/rulemaking.aspx

Thank You!

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Oregon Department of State Lands
Danielle Boudreaux, Rulemaking Coordinator

Oregon.gov/DSL

Middle Fork – Willamette River / Dan Cary, DSL (retired)