Apr 4th, 4:30 PM - 4:45 PM

Snoqualmie Valley agricultural production district riparian restoration and Ag partnership building: EMDS pilot project

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Snoqualmie Valley APD Riparian Restoration and Ag Partnership Building

Ecosystem Management Decision Support (EMDS) Pilot Project

Salish Sea 2018

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County Council Action 2012:
KC Comp. Plan Policy R-650

Policy calls for:

"...a collaborative watershed planning process with the goal of maintaining and improving agricultural viability, improving ecological function and habitat quality, and restoring floodplains through integrated, watershed-wide strategies."

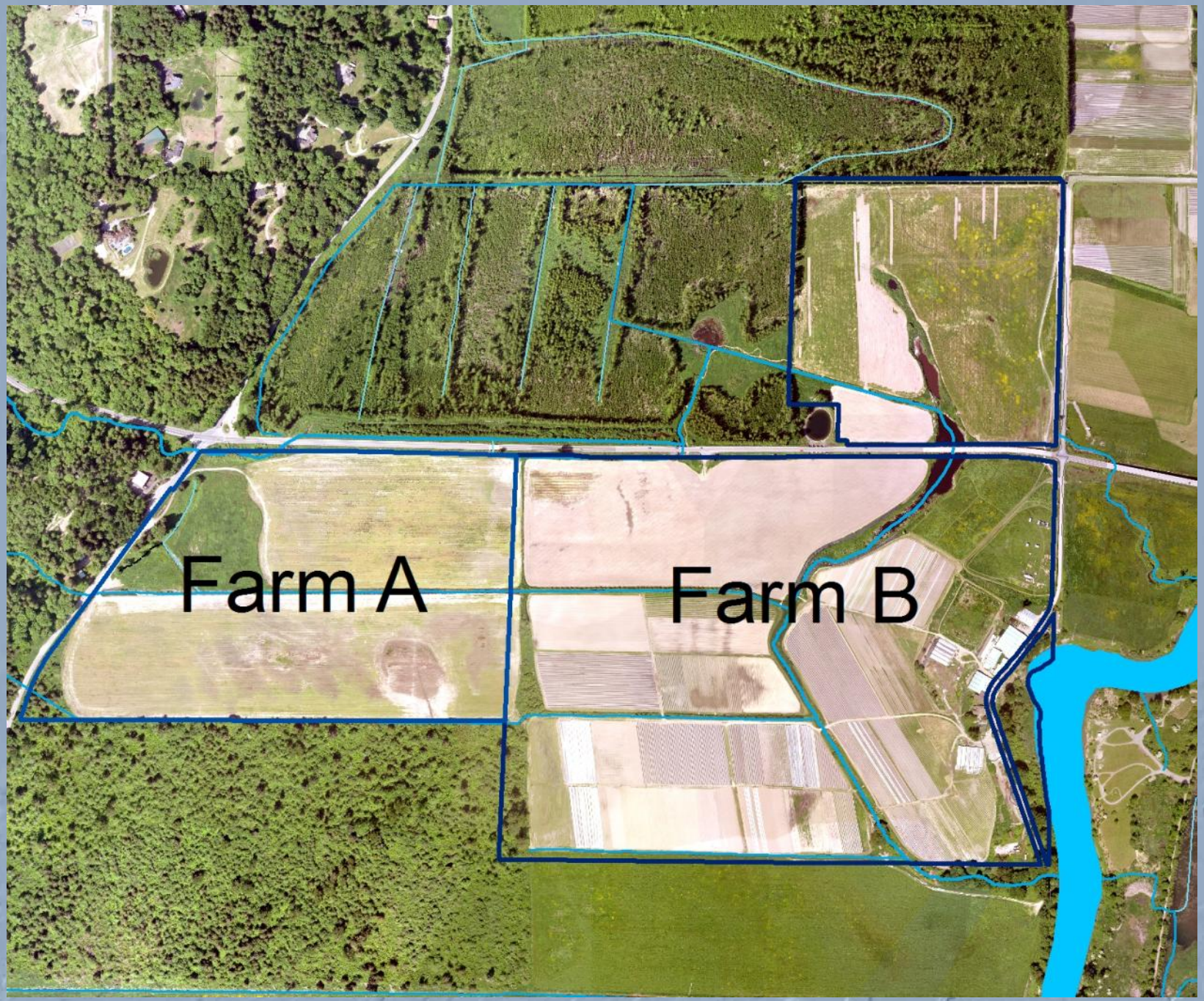
OR what we called

FFF

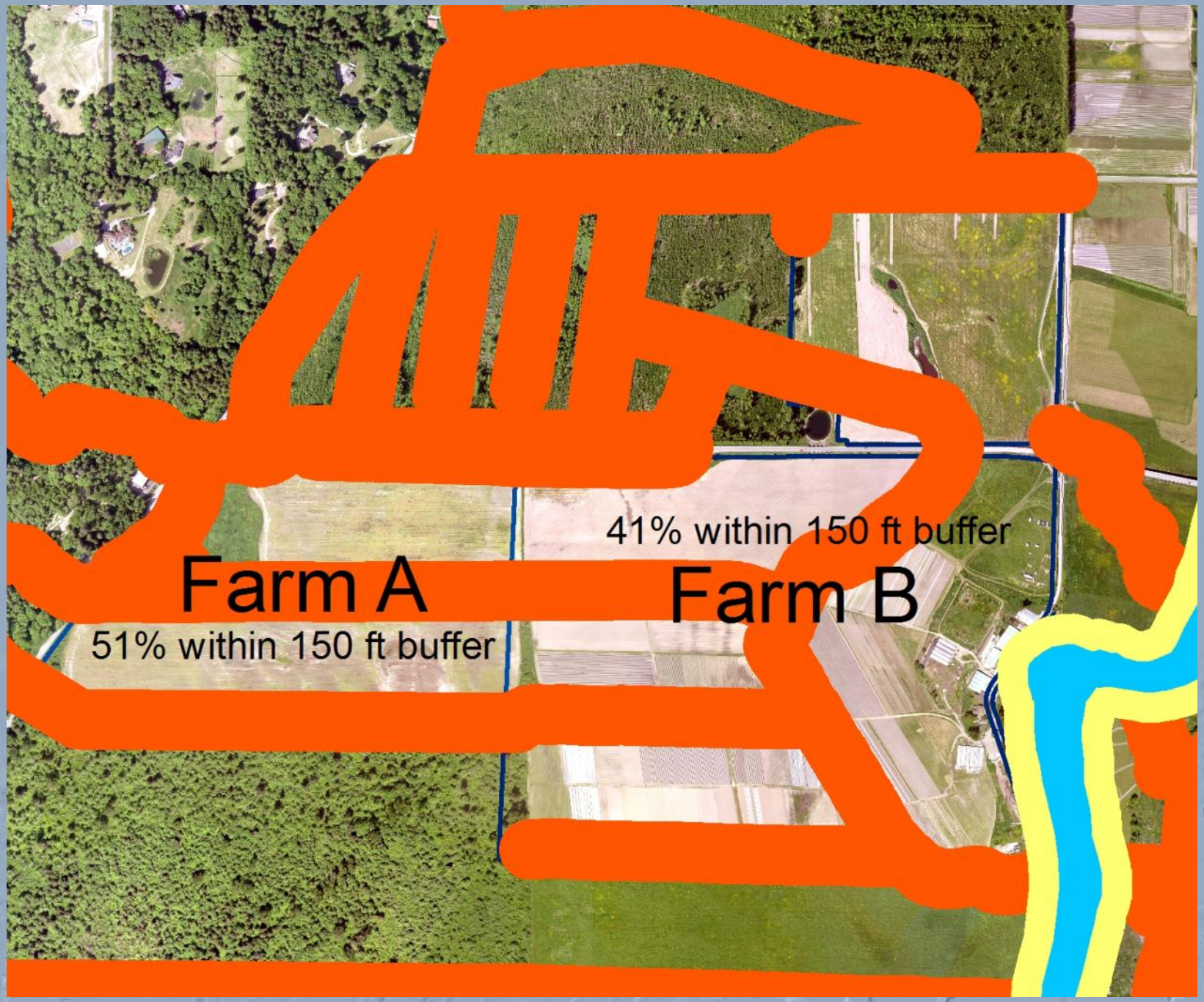
(Fish Farm Flood)

Riparian Area Mostly Treeless

Salmon Plan Policy recommendation: 150ft buffers on all salmonid bearing streams


Farm A
Farm B

150 ft. buffer



	100ft bufffer		150ft bufffer	
	Acres	%	Acres	%
APD combined	3445.52	23.63	4867.65	33.39
North APD	2317.53	24.56	3285.61	34.82
South APD	1127.99	21.94	1582.04	30.77

So, adding all that up means roughly 5,000 acres *OR* 1/3 of the Agricultural District would be converted back to riparian areas

$/acre	Acres	Total Cost?
5,000	5,000	$ 25,000,000
10,000	5,000	$ 50,000,000
15,000	5,000	$ 75,000,000
30,000	5,000	$ 150,000,000

Okay, Now What?

Ecosystem Management Decision Support (EMDS)

- Natural Resource Management Decision making tool that has been used for:
  - Wildfire Management Planning
  - Landscape Evaluation for restoration
- Incorporates two types of models to inform decision making
  - Logic Models (bio-physical condition)
  - Decision Models (policy choices)

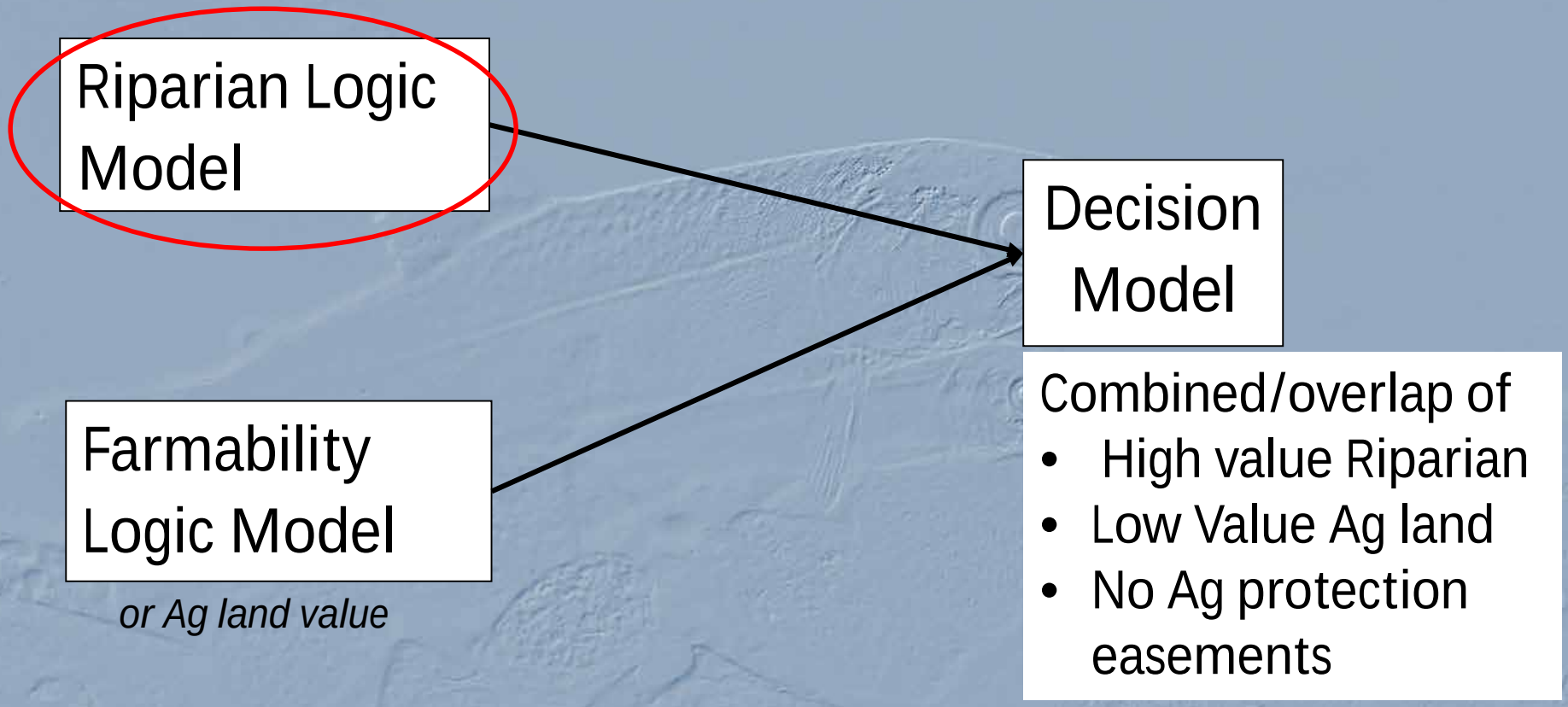
EMDS helps with…

- Wicked problems: no true win-win solutions
- Transparency: Allows all sides to see why each side values what it does
- Scalable and transportable
- Quantitative versus subjective
- Software packages work with ArcMap
- Allows quick changes of ‘policy’ choices and spatial display of outcomes of changes

EMDS Draft Decision Model

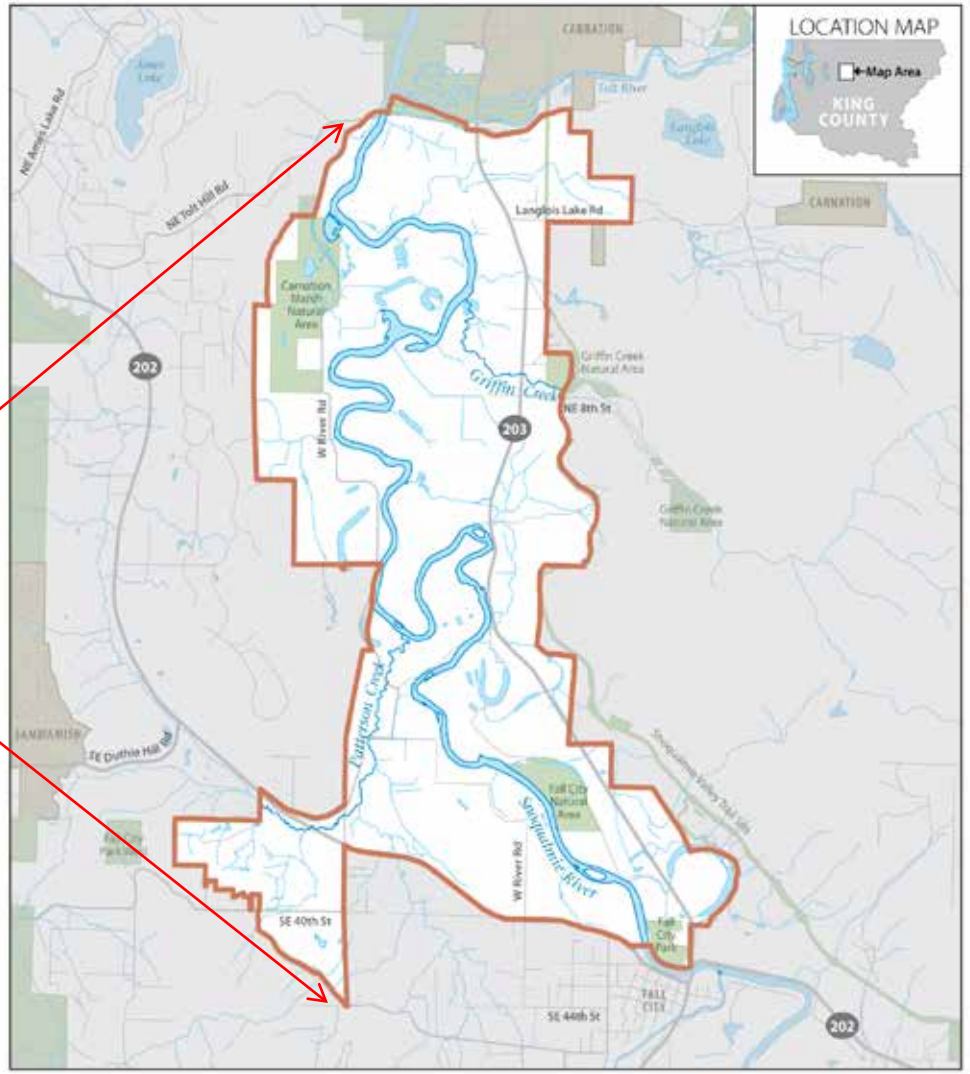
Bio-physical models

Policy Model



Only Evaluated:

- Snoqualmie River
- Griffin Creek
- Patterson Creek

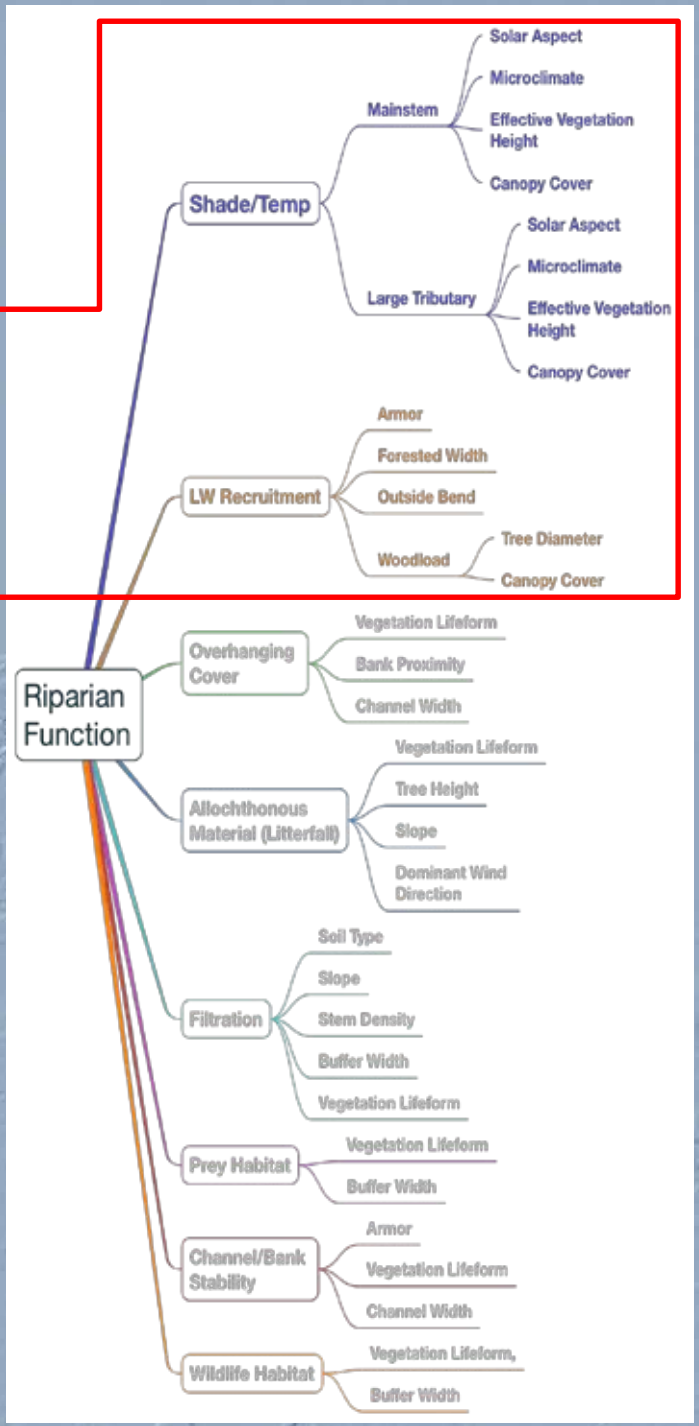


Salmon Recovery Plan

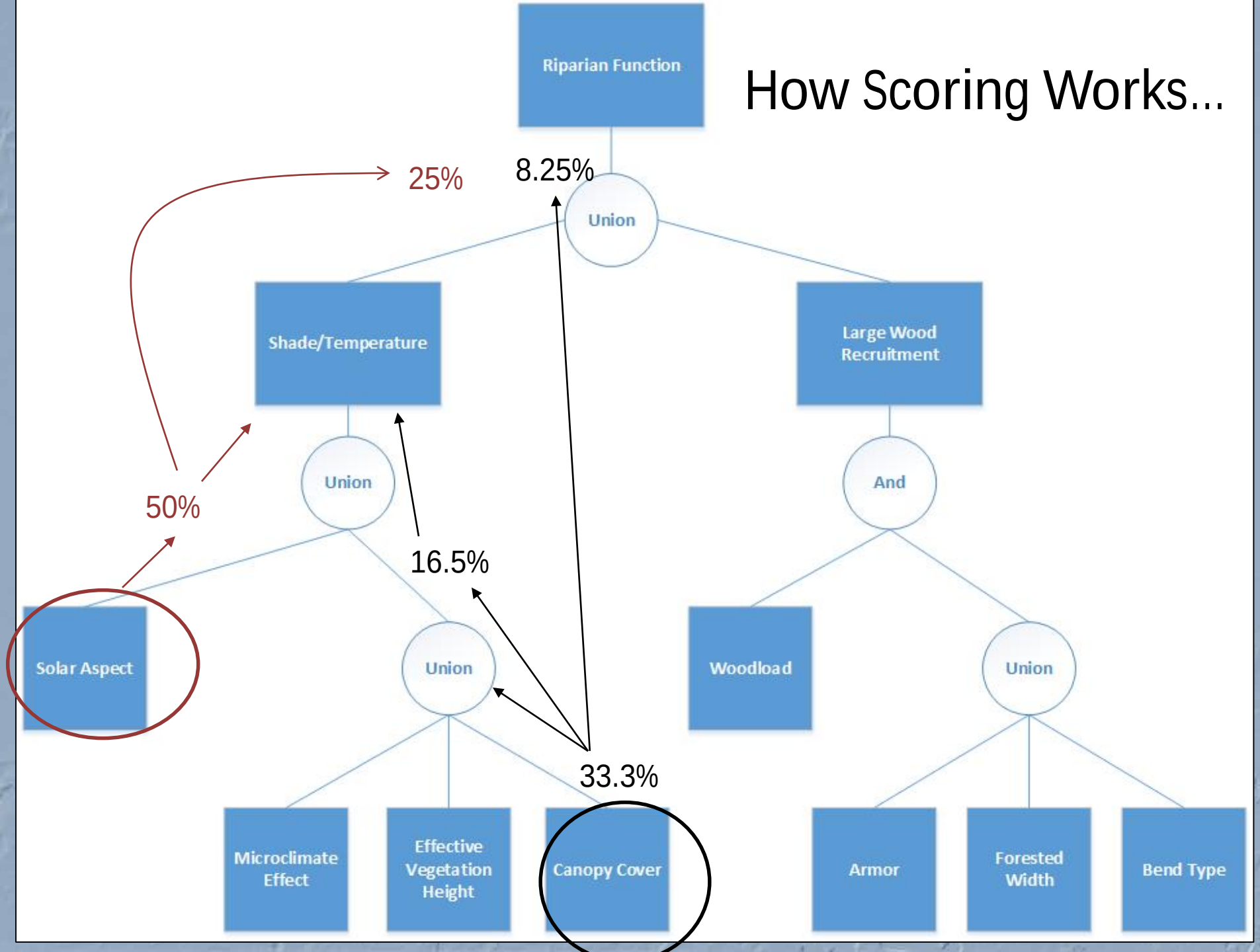
- Main purpose is to re-establish riparian processes, not just address temperature
- In the Plan, a functioning riparian area is 150 ft wide ***and*** 150 ft tall
- Have 50 year riparian goals for specific river/stream reaches

Riparian Functions

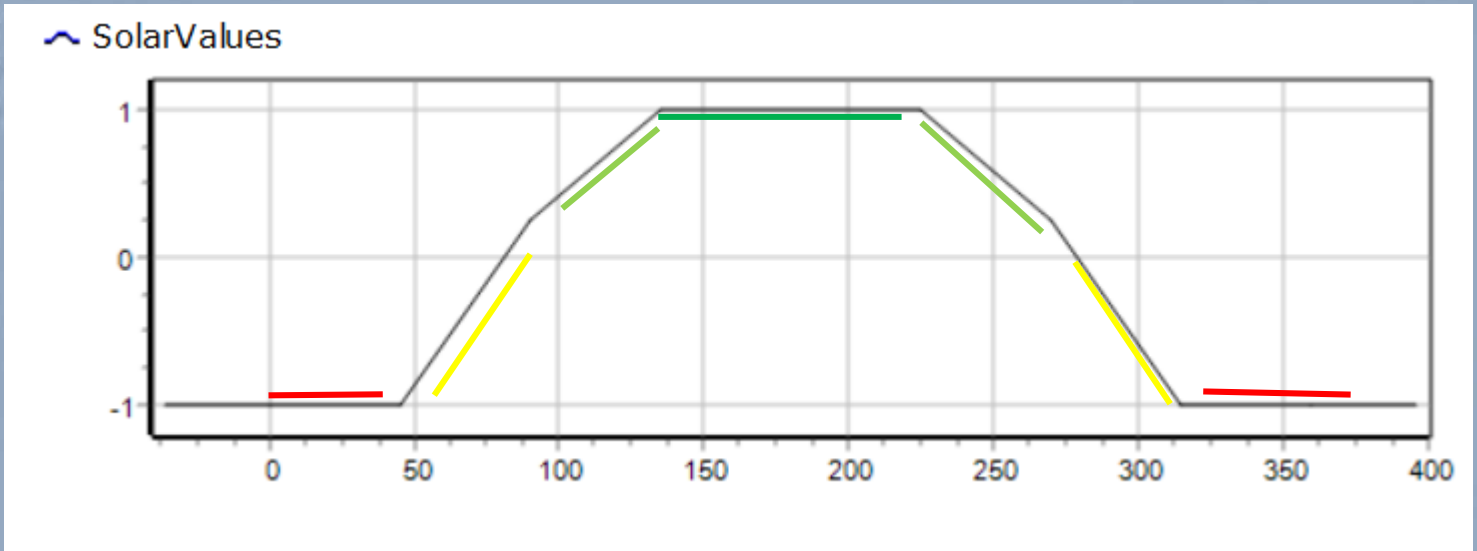
- **Shade/Temperature**
- **LW Recruitment**
- Overhanging Cover
- Leaf litter/organic material
- Filtration
- Prey production
- Bank stability
- Wildlife Habitat

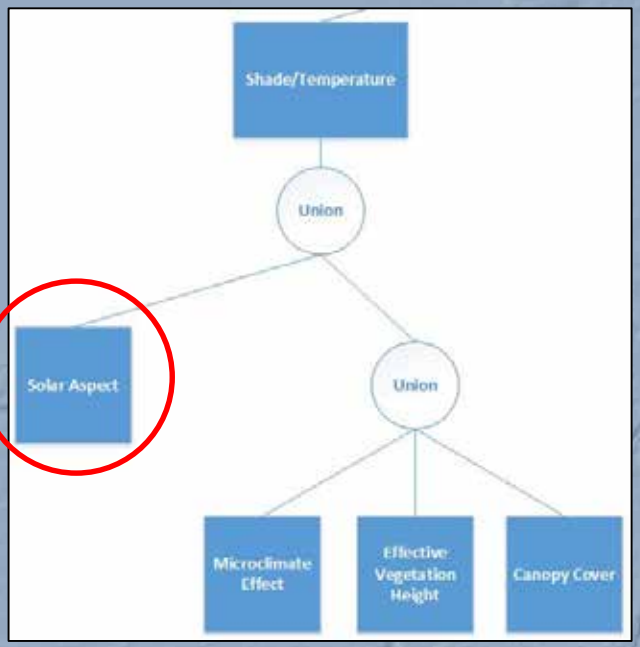


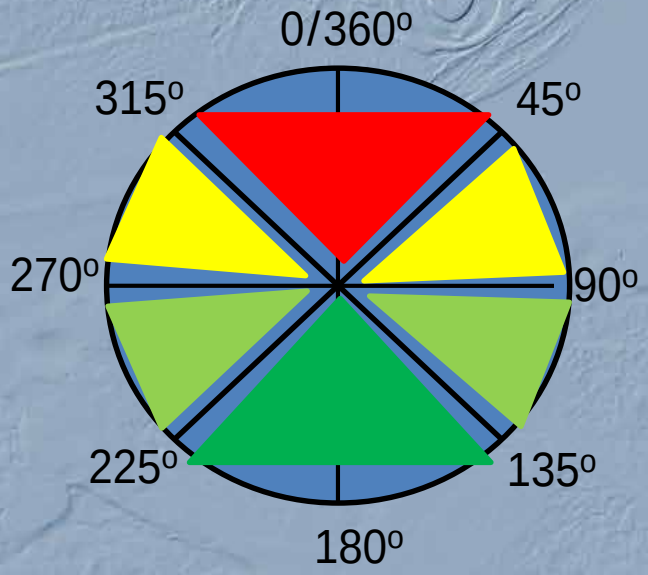
How Scoring Works...

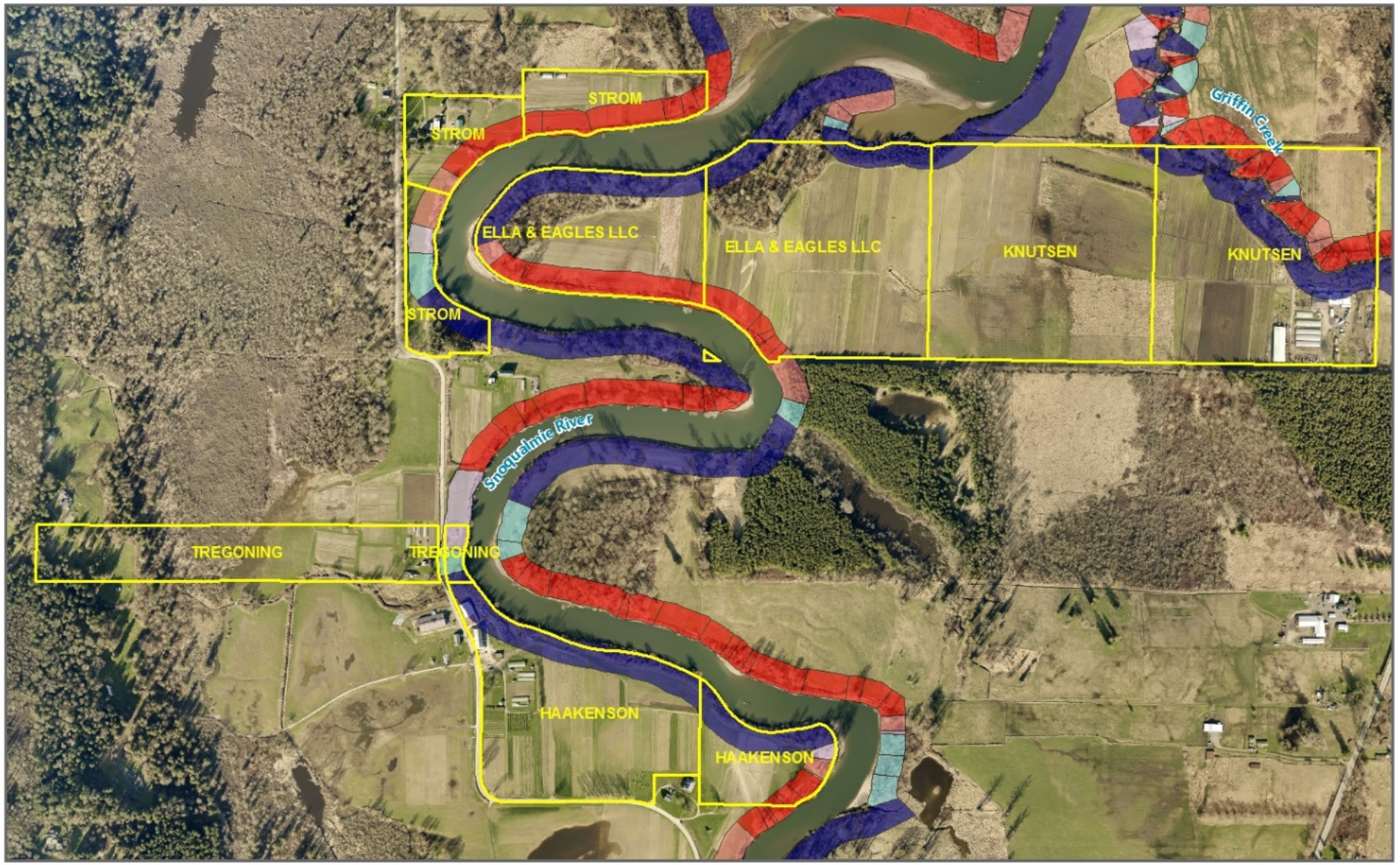


Shade-Solar aspect scoring









Level of Support:

- Very Low
- Low
- Moderate
- High
- Very High

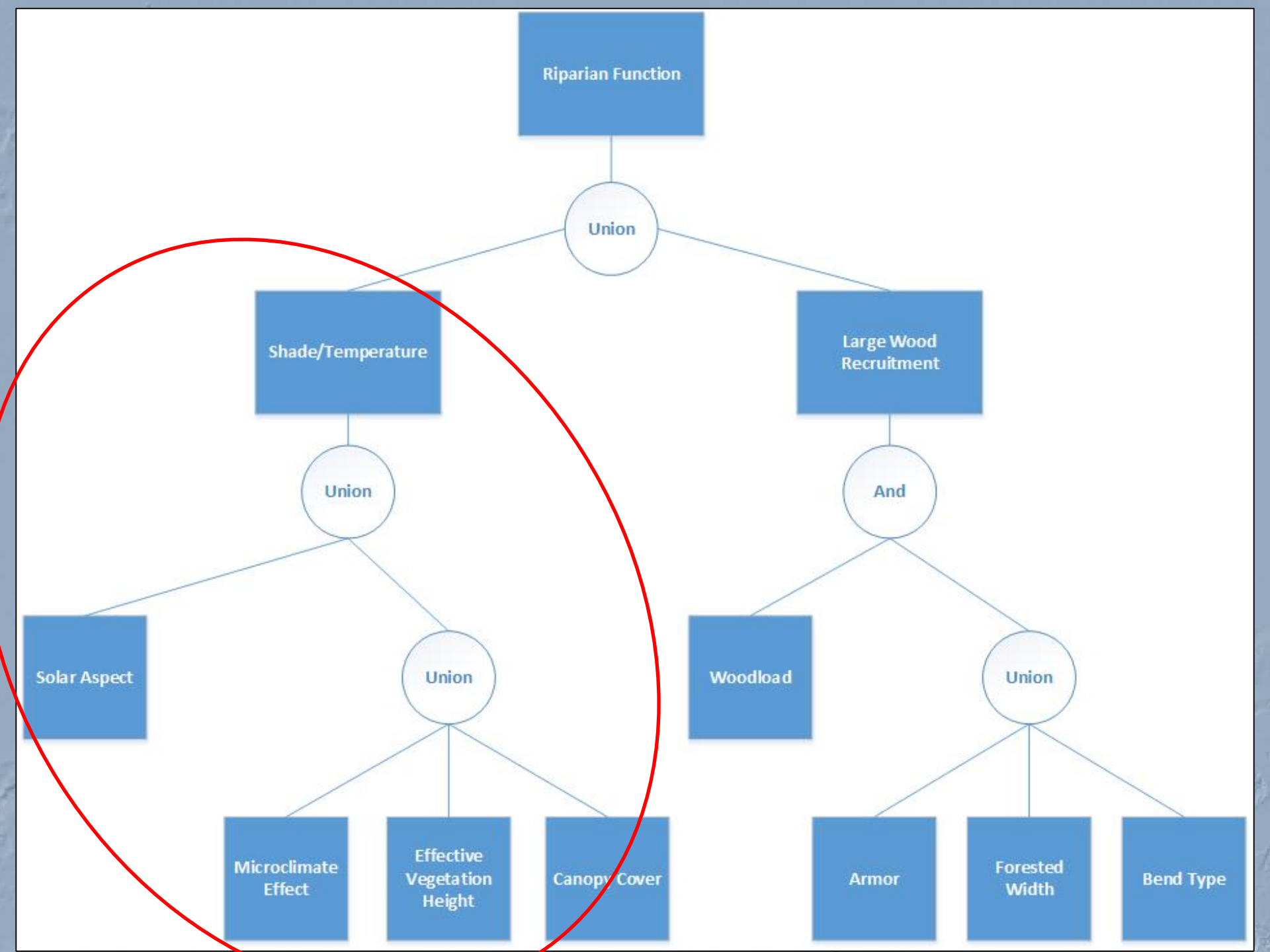
Current Solar Aspect

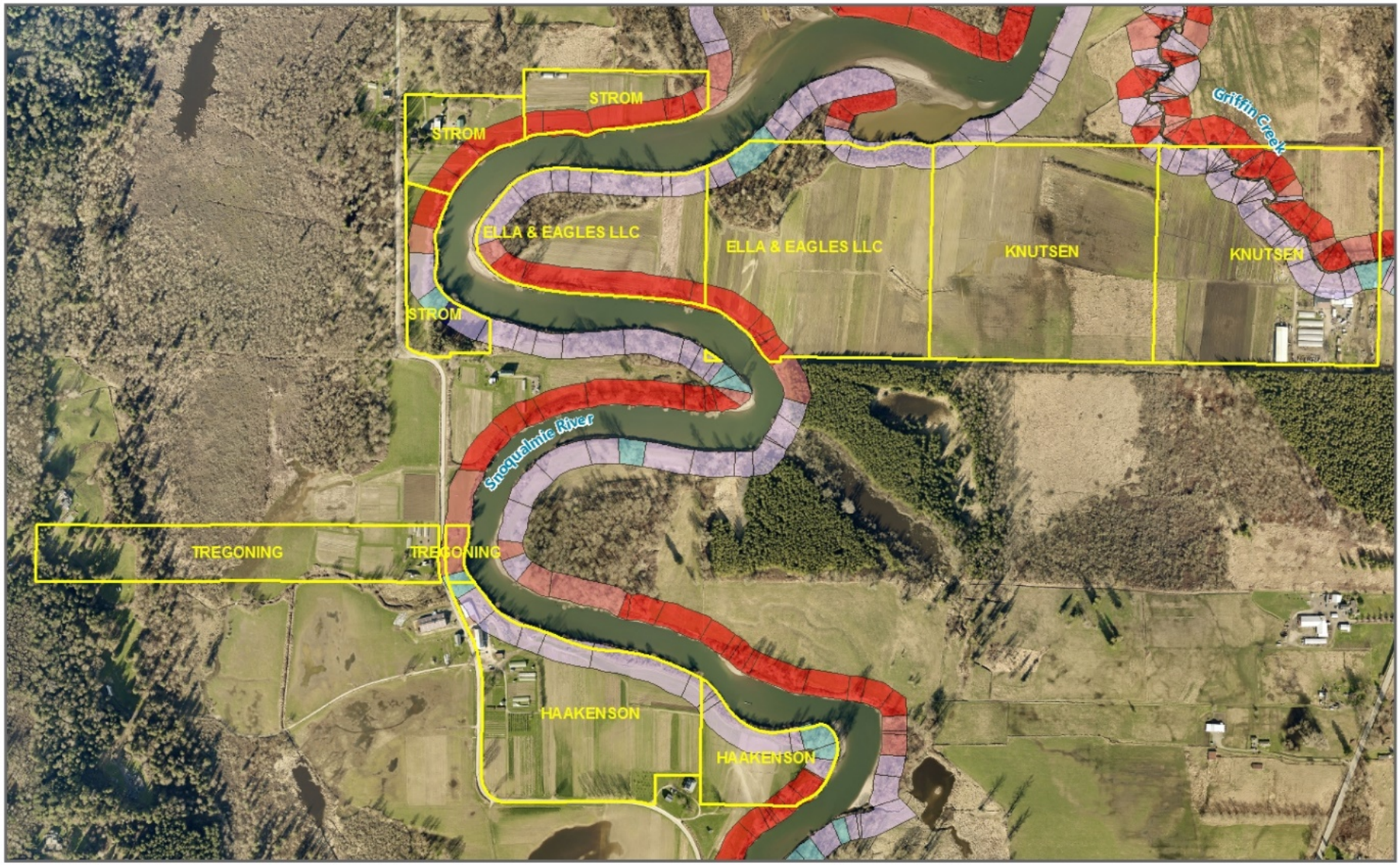
Example Area

King County

0 0.125 0.25 0.5 Miles

N


Riparian Function
Union
Shade/Temperature
Large Wood Recruitment
Union
And
Solar Aspect
Union
Woodload
Union
Microclimate Effect
Effective Vegetation Height
Canopy Cover
Armor
Forested Width
Bend Type



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Current Shade on Stream

Example Area

King County

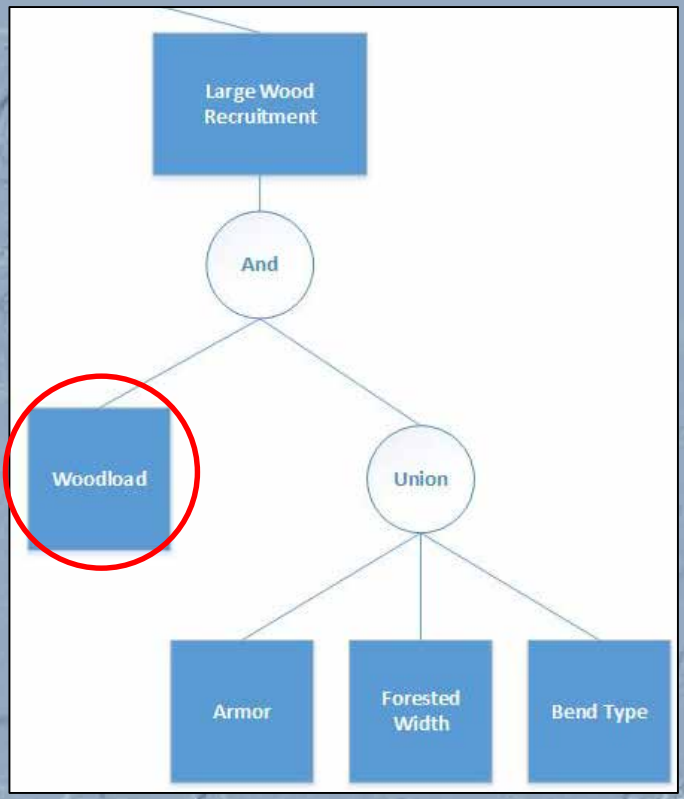
0 0.125 0.25 0.5 Miles

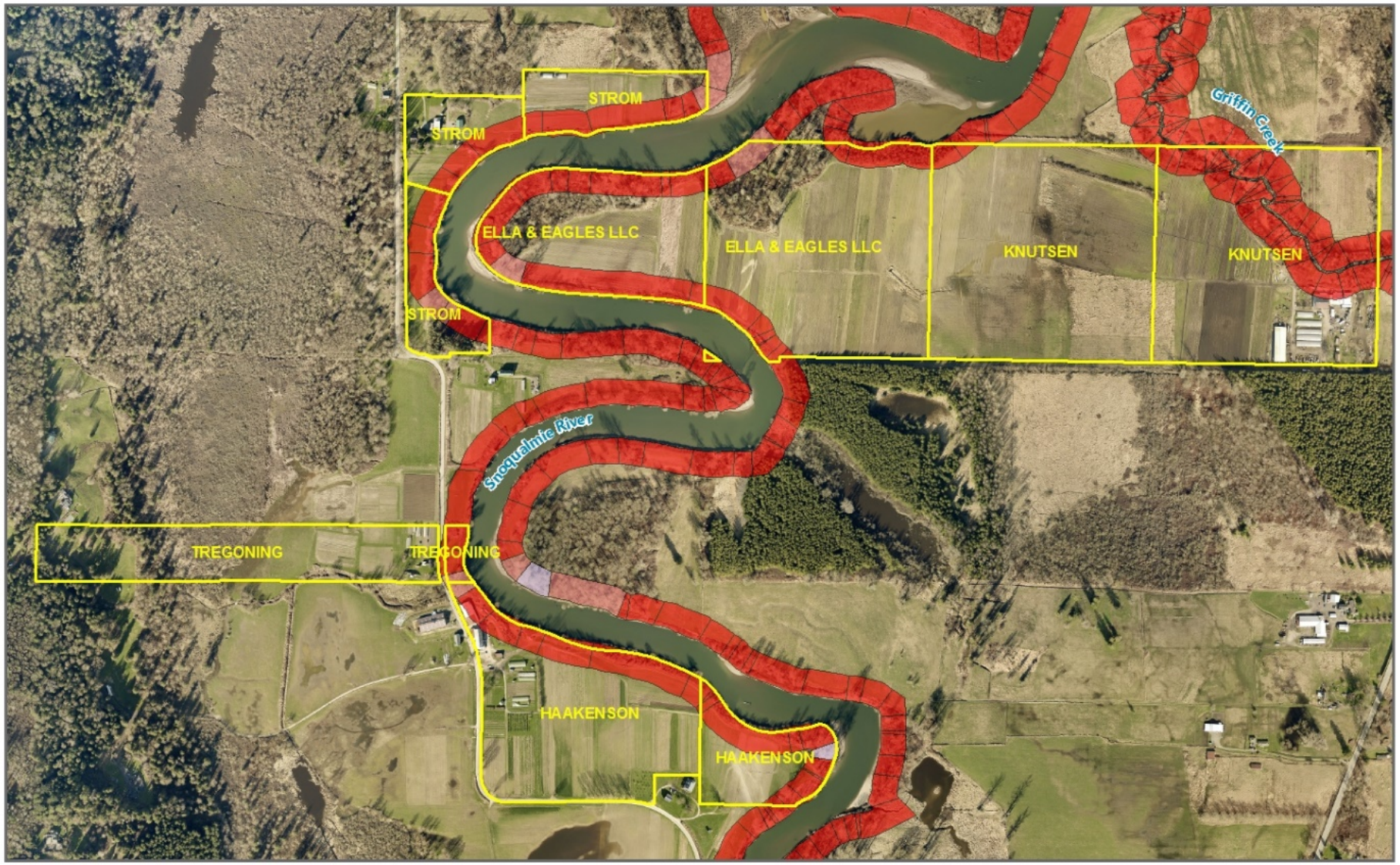
N

LWD-woodload

Wood load combined

- Canopy Cover
- Tree Diameter
  - back calculated from lidar tree height
  - assumed cottonwood as dominant historically tall tree
  - 10 inch DBH set as bottom end





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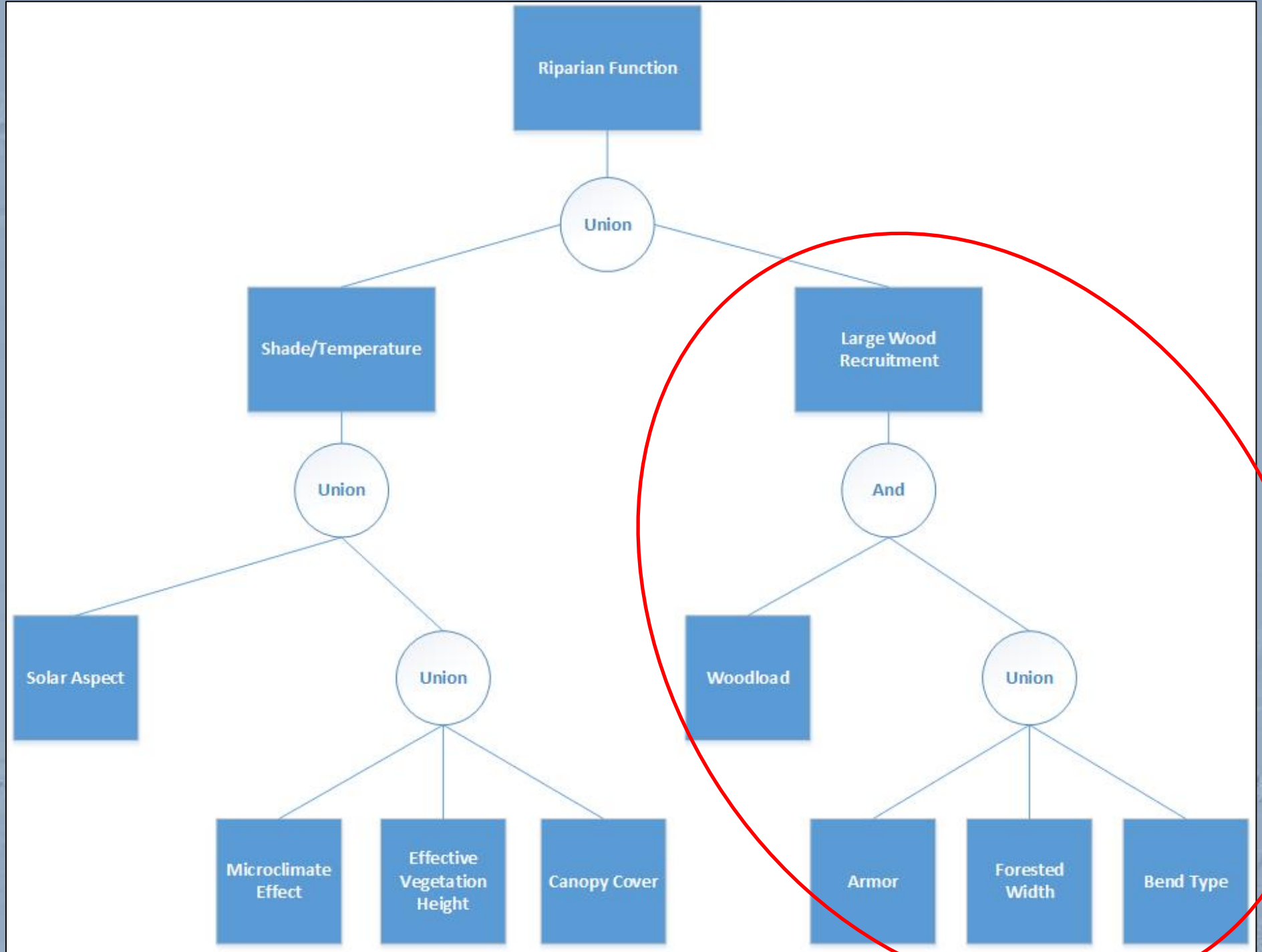
Current Woodload

Example Area

King County

0 0.125 0.25 0.5 Miles

N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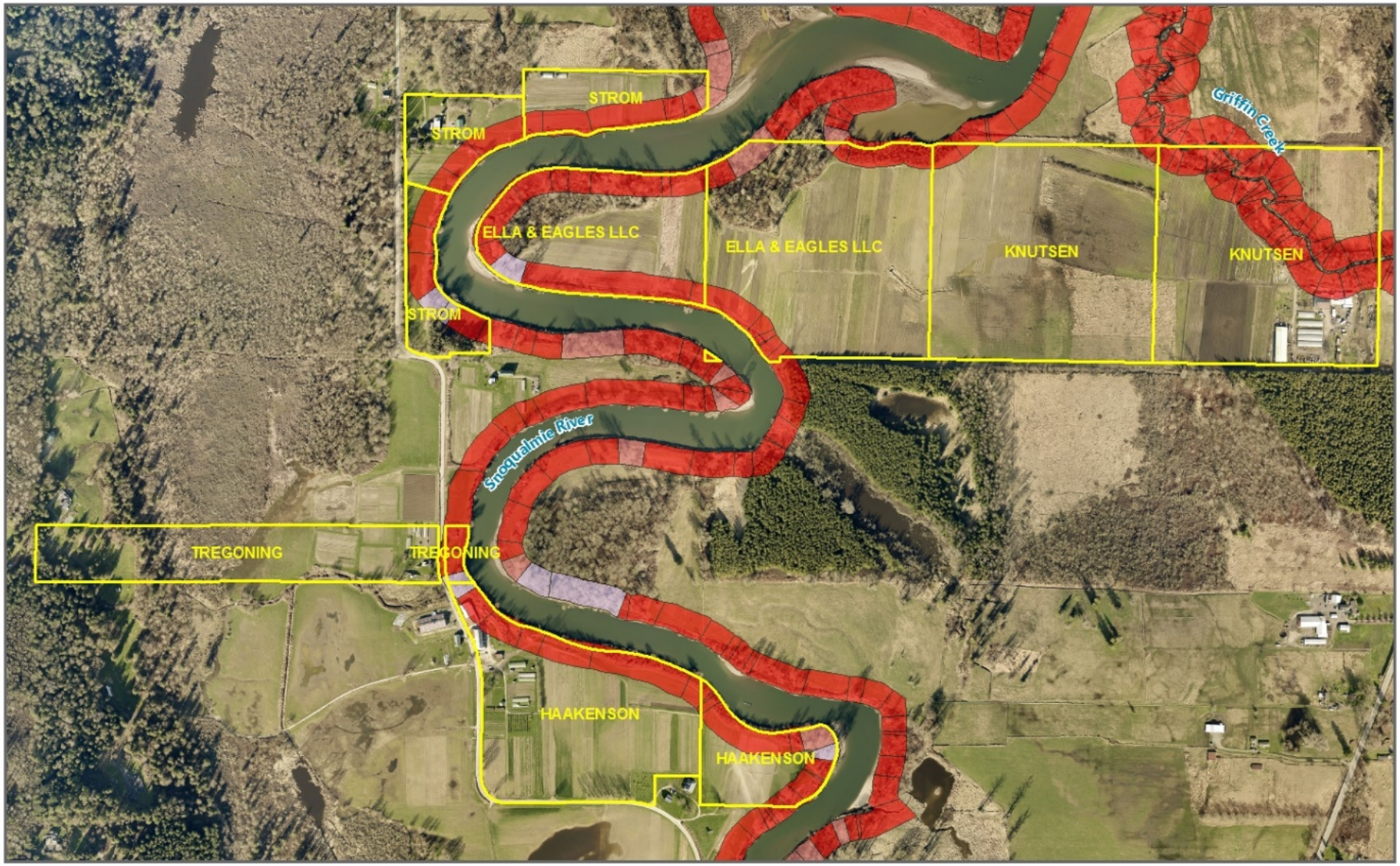

Level of Support:

- Very Low
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- Very High

Current Large Wood Recruitment

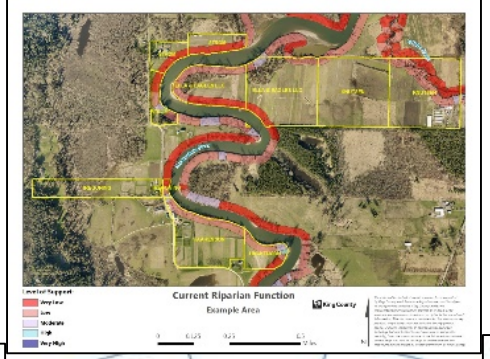
Example Area

King County

0 0.125 0.25 0.5 Miles

N

Current Riparian Condition



Shade Total

LWD Recruit total

Union

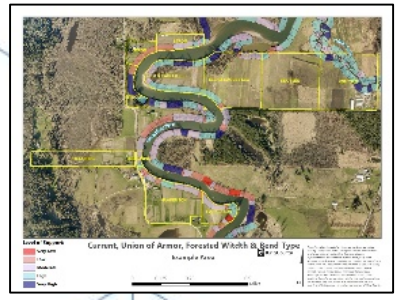
And

Solar Aspect

Roll up

Wood Load

Roll up



MicroClimate

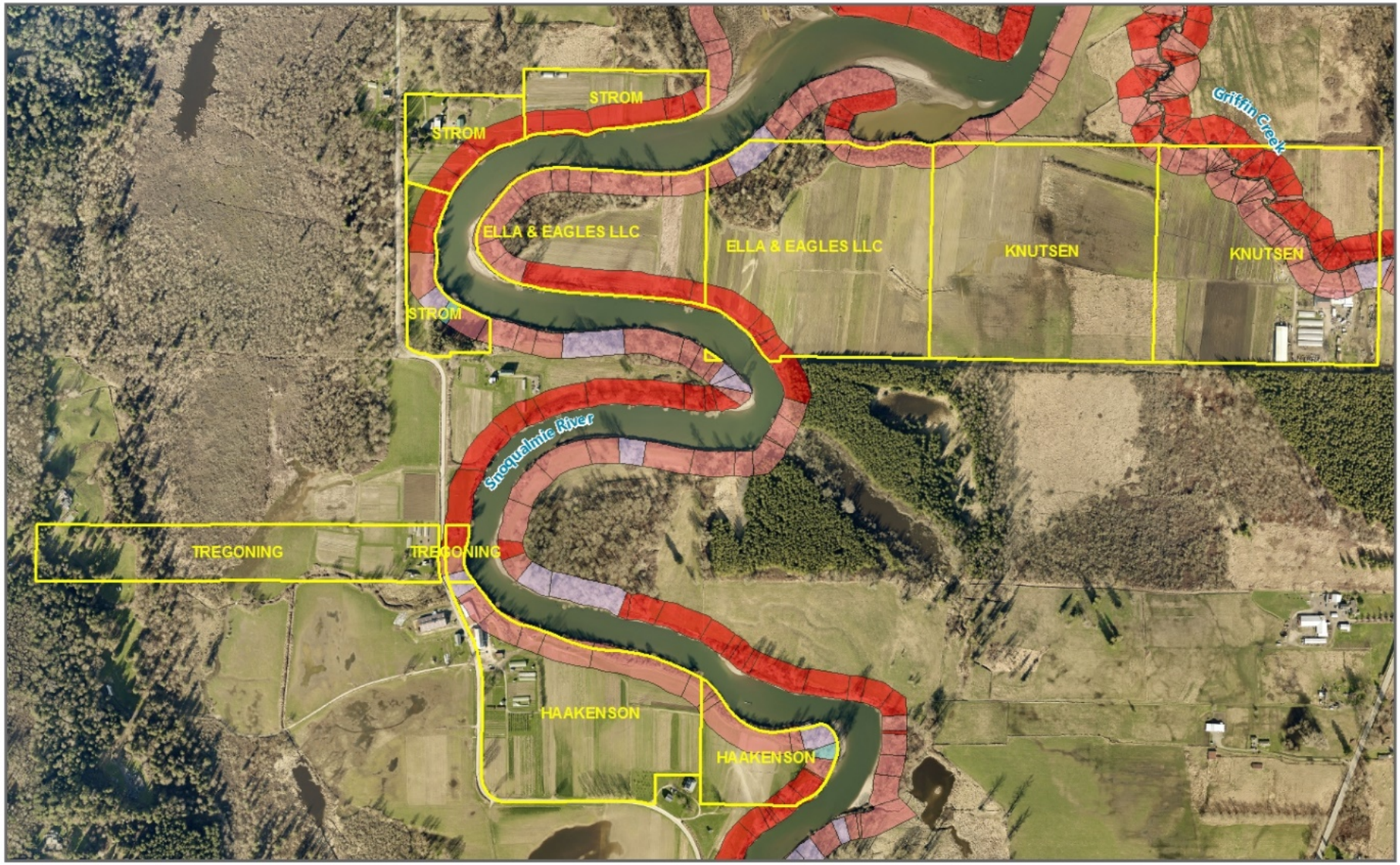
Eff Veg Ht

Canopy Cover

Bank Armor

Forested width

Bend Type



Level of Support:

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Current Riparian Function

Example Area

King County

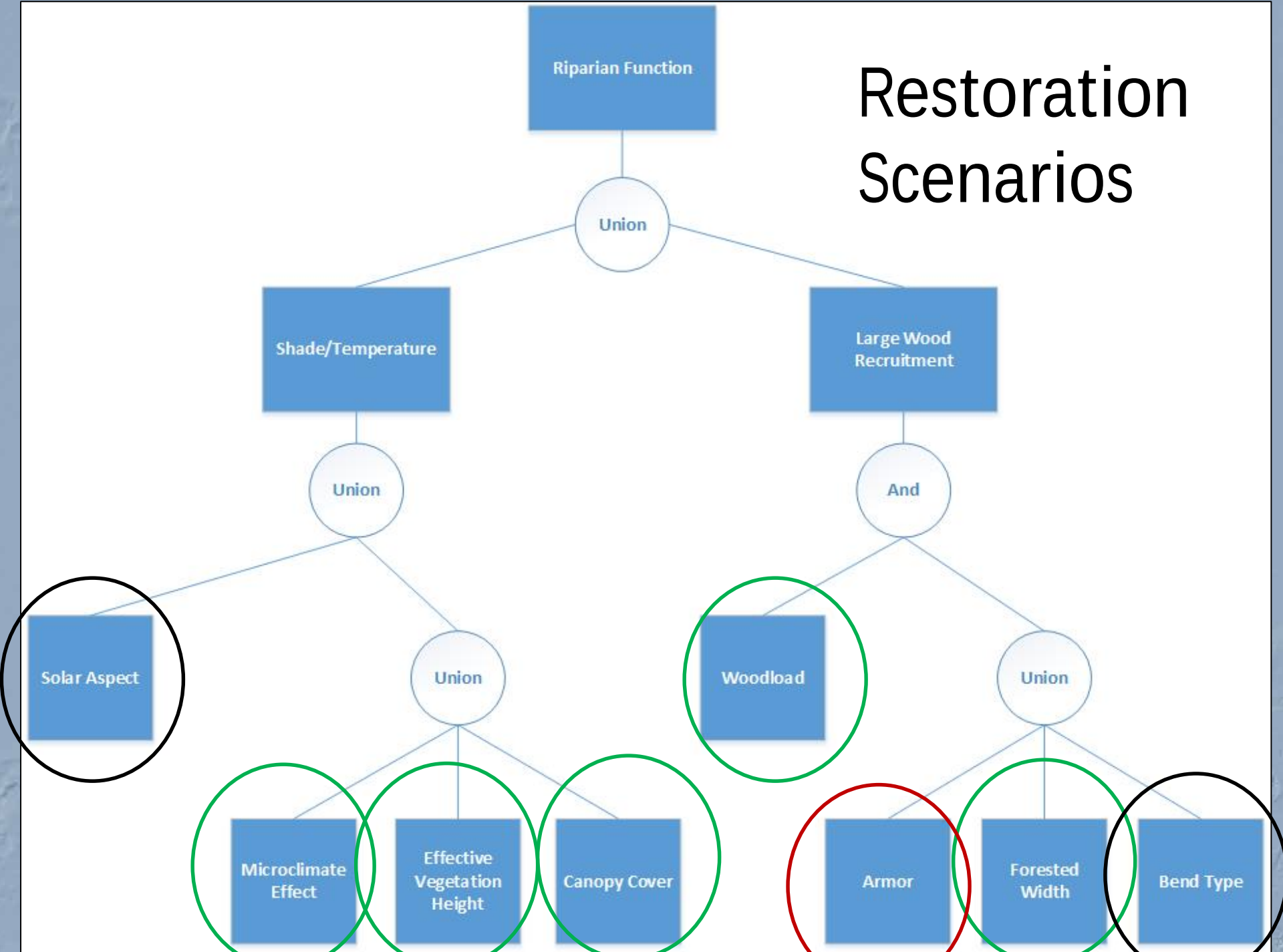
0 0.125 0.25 0.5 Miles

N

Switching Gears…

- Okay, so we know the riparian condition is highly degraded. No big surprises there, though there were a few small ones…
- How do we prioritize where to focus riparian restoration?

Restoration Scenarios



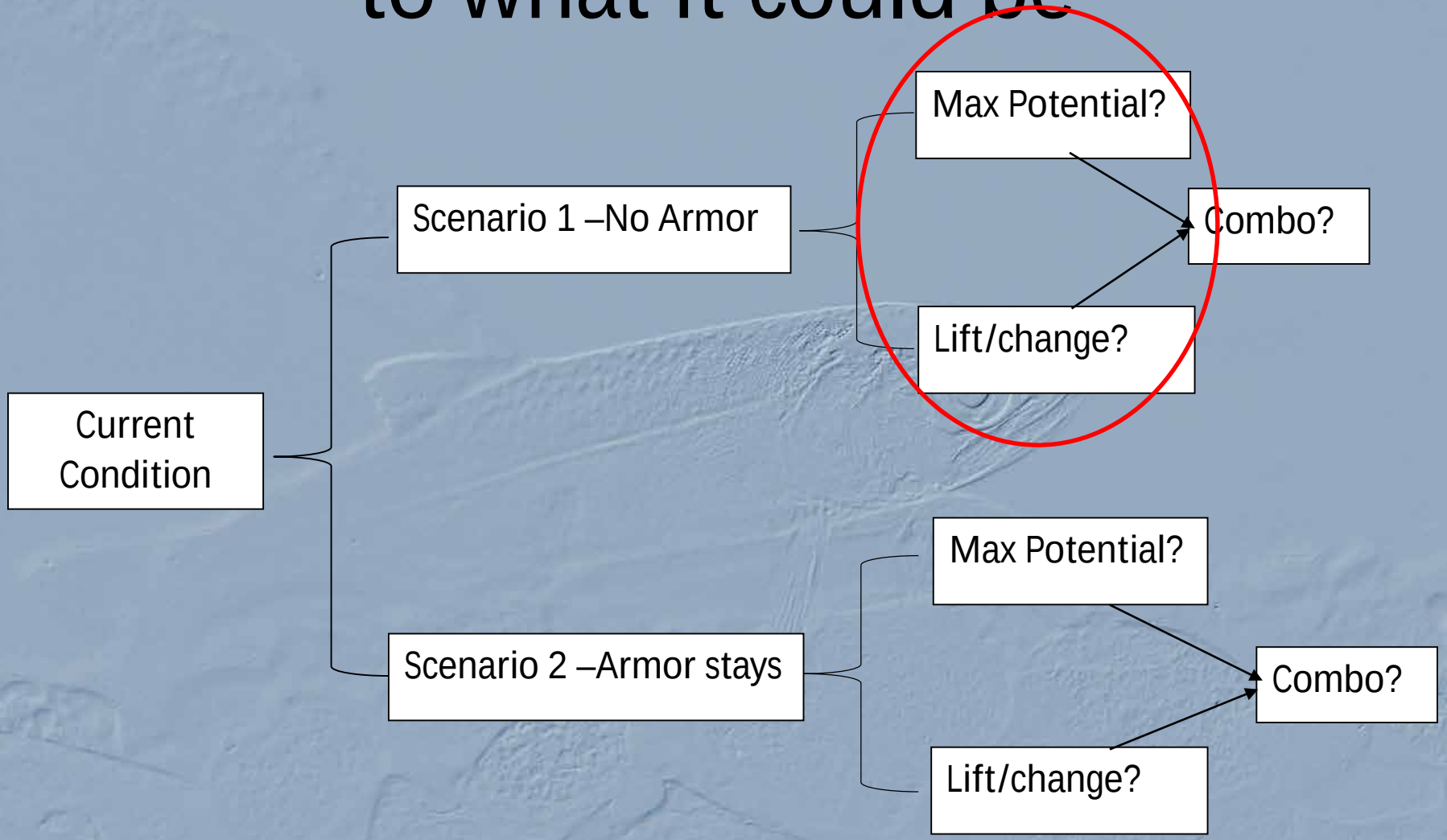
Created 2 future scenarios

- 1st Scenario assumed all shoreline armor goes away
- 2nd Scenario assumed all shoreline armor stays

Both scenarios assumed effective revegetation

- All areas were planted and thrived and grew tall and dense over 50 years
- So, not 100% maximum values, but relatively high

Moving from Current Conditions to what it could be

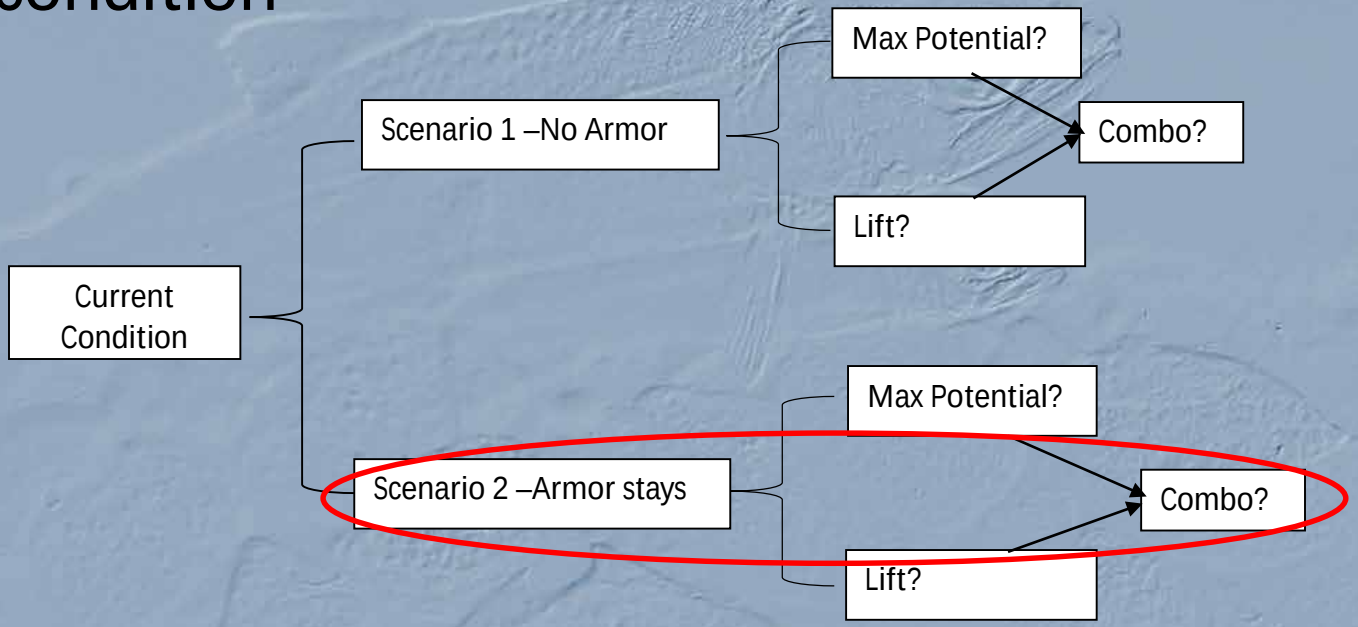


Max Potential vs Lift

- Potential *(max values)*
  - Shows the maximum potential that areas have
- Lift/Change=potential-current
  - Shows an approximation of how much improvement is possible

Armor or Not- Max potential

- Maximum Potential Value
  - This focuses on the places that have the biggest long term potential—irrespective of current condition



Prioritization Using Armored Scenario

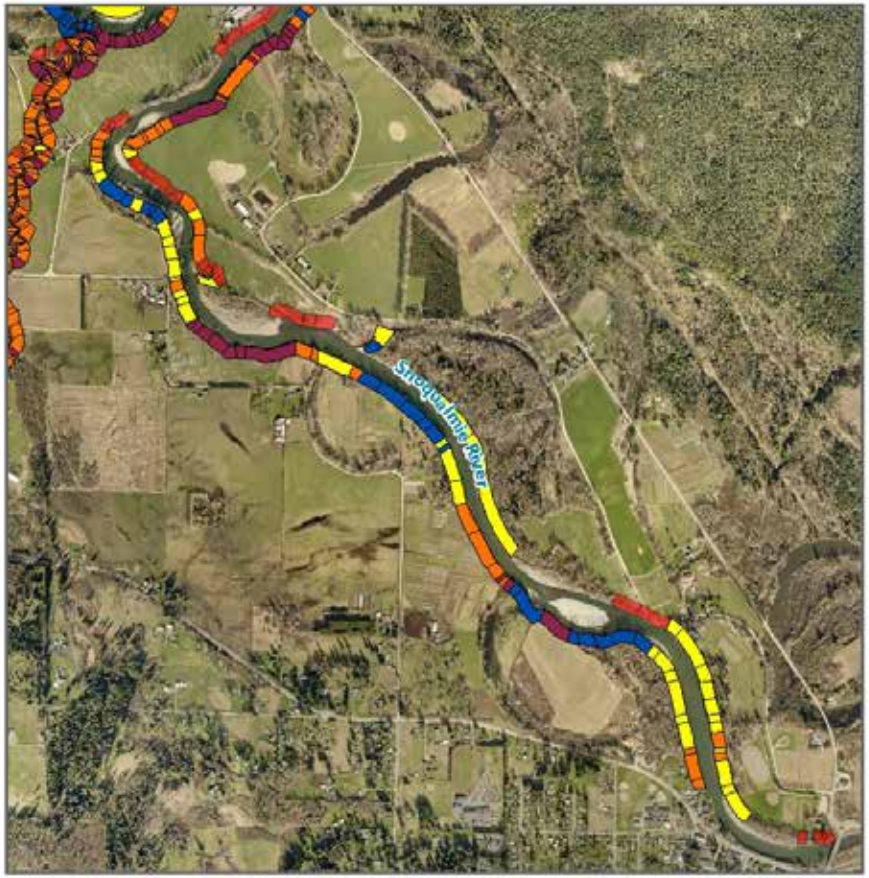
Very High Potential

Very High + High Potential + Very High Lift

Very High Potential + Very High Lift

Riparian Function Scenario De
Snoqualmie River (South)
Level of Change:
DARK BLUE-VERY HIGH POTENTIAL

0 0.15 0.3



Riparian Function Scenario Delta, Armored
Snoqualmie River (South)
King County
Level of Change:
RUBY-VERY HIGH LIFT AND POTENTIAL
DARK BLUE-VERY HIGH POTENTIAL
YELLOW-ONLY HIGH POTENTIAL
ORANGE-HIGH POTENTIAL & VERY HIGH LIFT
PINK-ONLY VERY HIGH LIFT

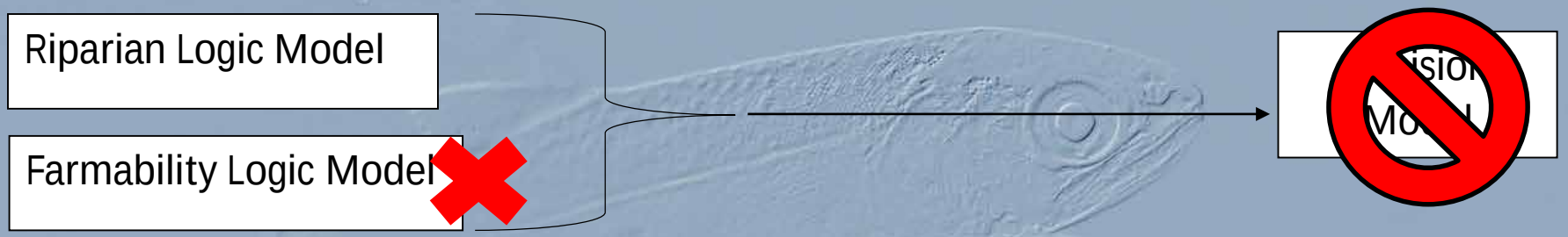
0 0.15 0.3 0.6 Miles N

Delta, Armored
King County

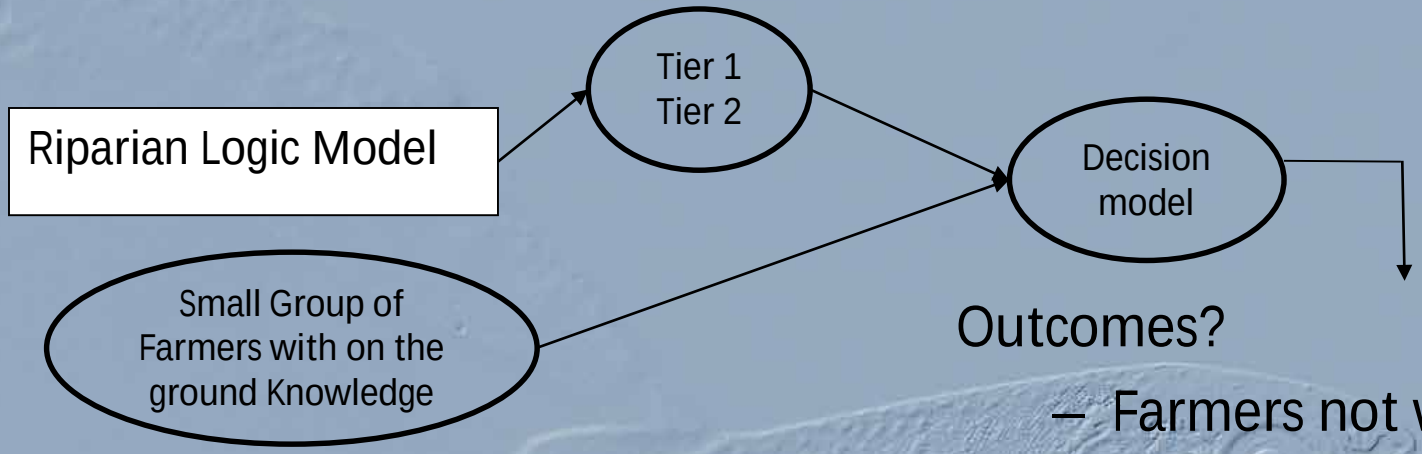
0.6 Miles N

EMDS Decision Model

Ag Logic model is close, but data inputs are not available at the fine scale we need



Alternative Decision Approach



Outcomes?

- Farmers not willing to say much was ‘low’ value
- Relatively few areas identified for outreach
- Created a lack of transparency for decisions
- Good conversations with a small group of farmers
- Better understanding of each groups needs

Separately, this approach is useful for Salmon Recovery Planning work

	Tier 1 acres	Tier 2 acres	Subtotal 1 & 2 acres	Total 150ft buffer acres	% of buffer in Tier 1 & 2	Plan goal %	% short of goal	% of APD Tier 1 & 2	% of APD 150ft total
Patterson	18.59	36.58	55.16	74.58	74%	65%	9%	1%	1%
Griffin	13.04	10.52	23.56	36.03	65%	80%	-15%	0%	1%
Focal reach Mainstem	18.98	93.14	112.13	172.09	65%	80%	-15%	2%	3%
remaining mainstem	26.75	110.42	137.17	206.75	66%	75%	-9%	3%	4%
subtotal	77.36	250.66	328.02	489.44	67%	n/a	n/a	6%	10%
South APD is 5142.29 acres									

- Helps prioritize where to direct effort
- Perhaps more importantly, identifies the least important areas for salmon recovery partners to plant

Next Steps

- FFF agreement was signed
- NEP grant for a ‘Buffer Task Force’ March 2018
- Will build off the EMDS riparian approach to evaluate all streams/channels
- Create a viable/acceptable farmability model
- Create a robust decision model that reflects the best uplift for fish and least impact to farms