

Watershed Selection

- What is the appropriate scale for the strategy?
- Target the Lower Skagit as a whole or focus on specific sub-watershed.
 - Additional targeting will be completed for other watersheds.
 - Do not want to exclude other voluntary efforts in areas outside of the specific sub-watershed.



Important Considerations

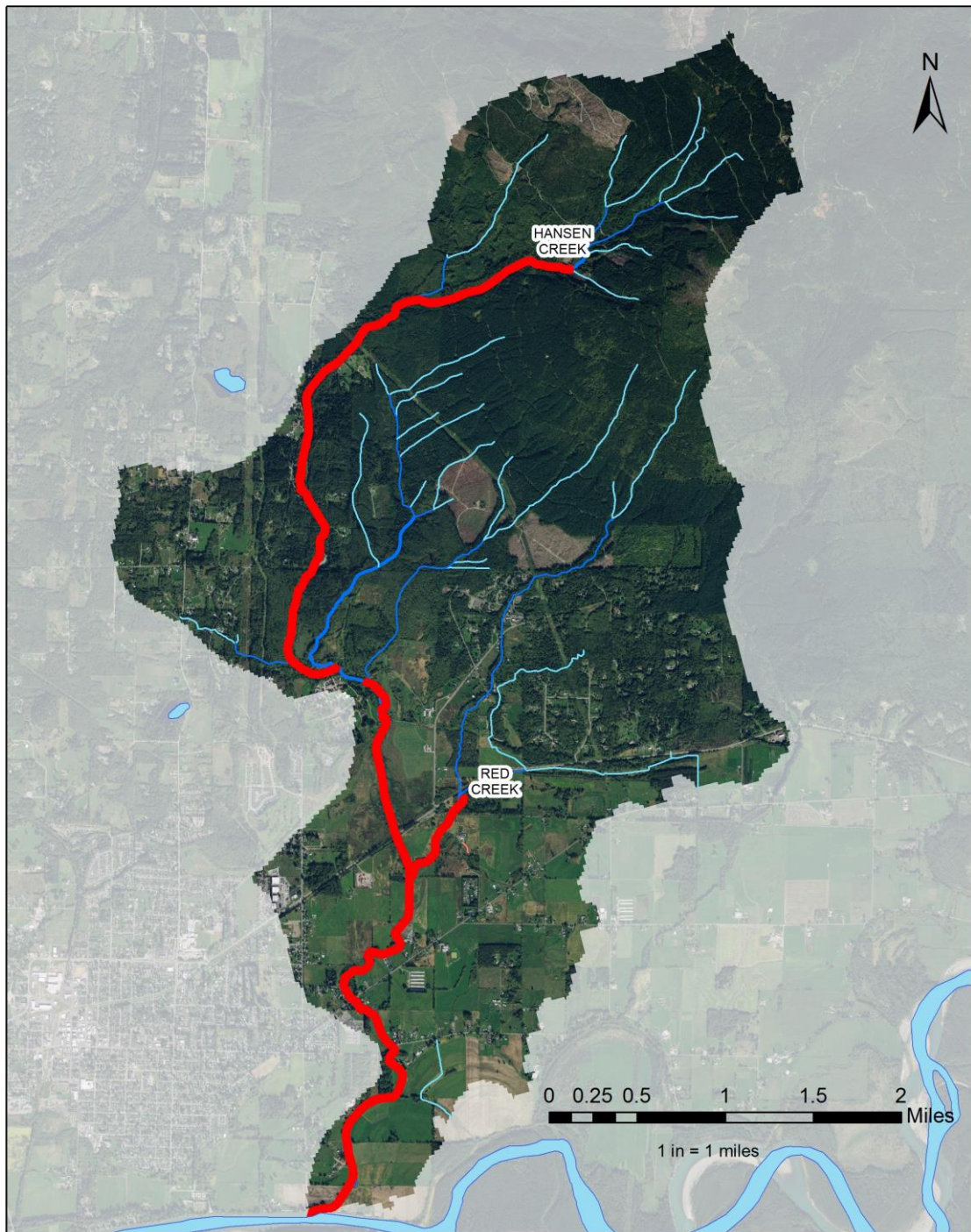
- How feasible is it based on levels of participation/willing property owners?
- What other projects or efforts are ongoing?
- What is the level of effort necessary?



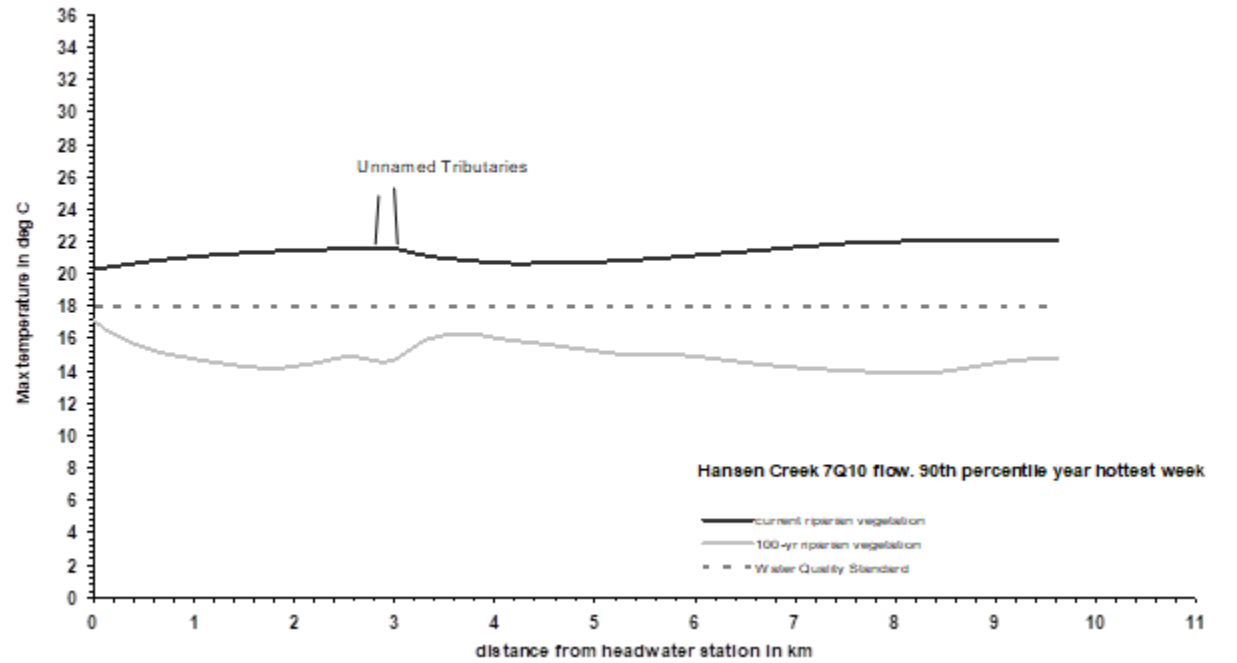
TMDL and recorded temperature levels

- Work with areas that are most impaired, or closest to meeting standards?
- Are other steps necessary to meet standards?
- Do we want to focus as individual or multiple fish species?

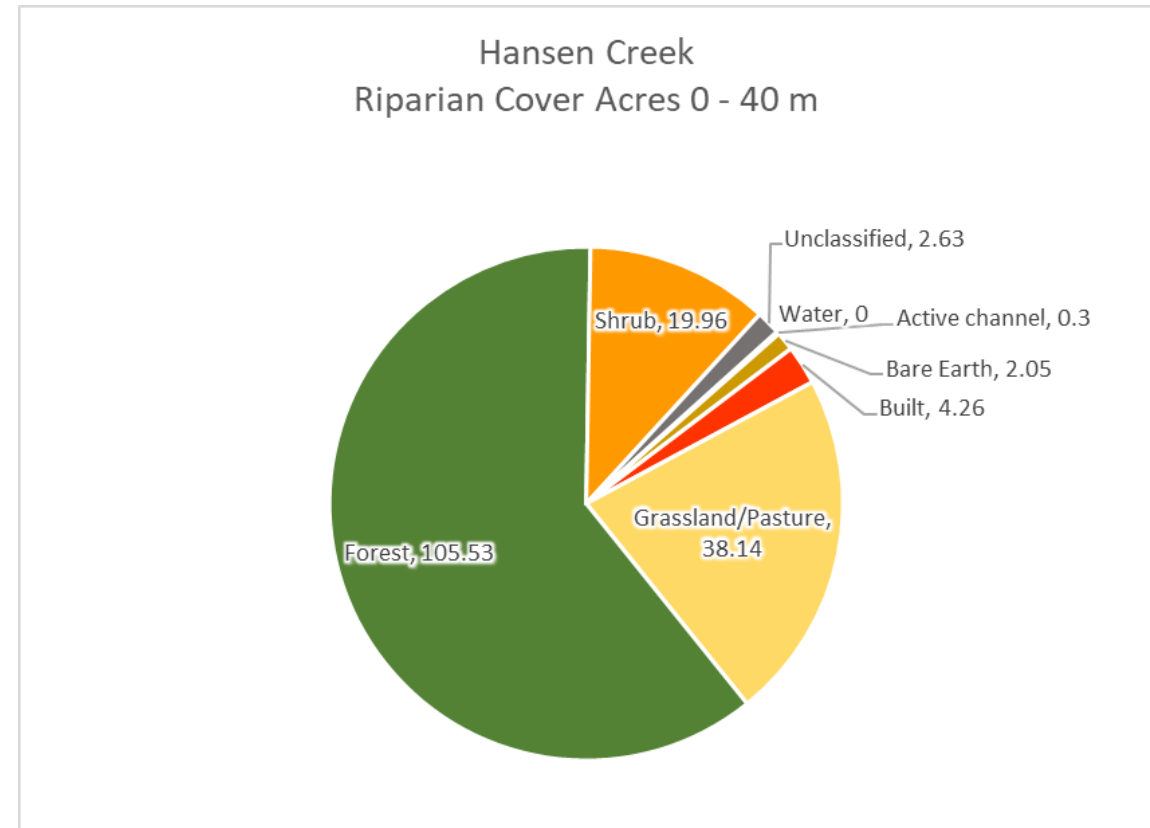




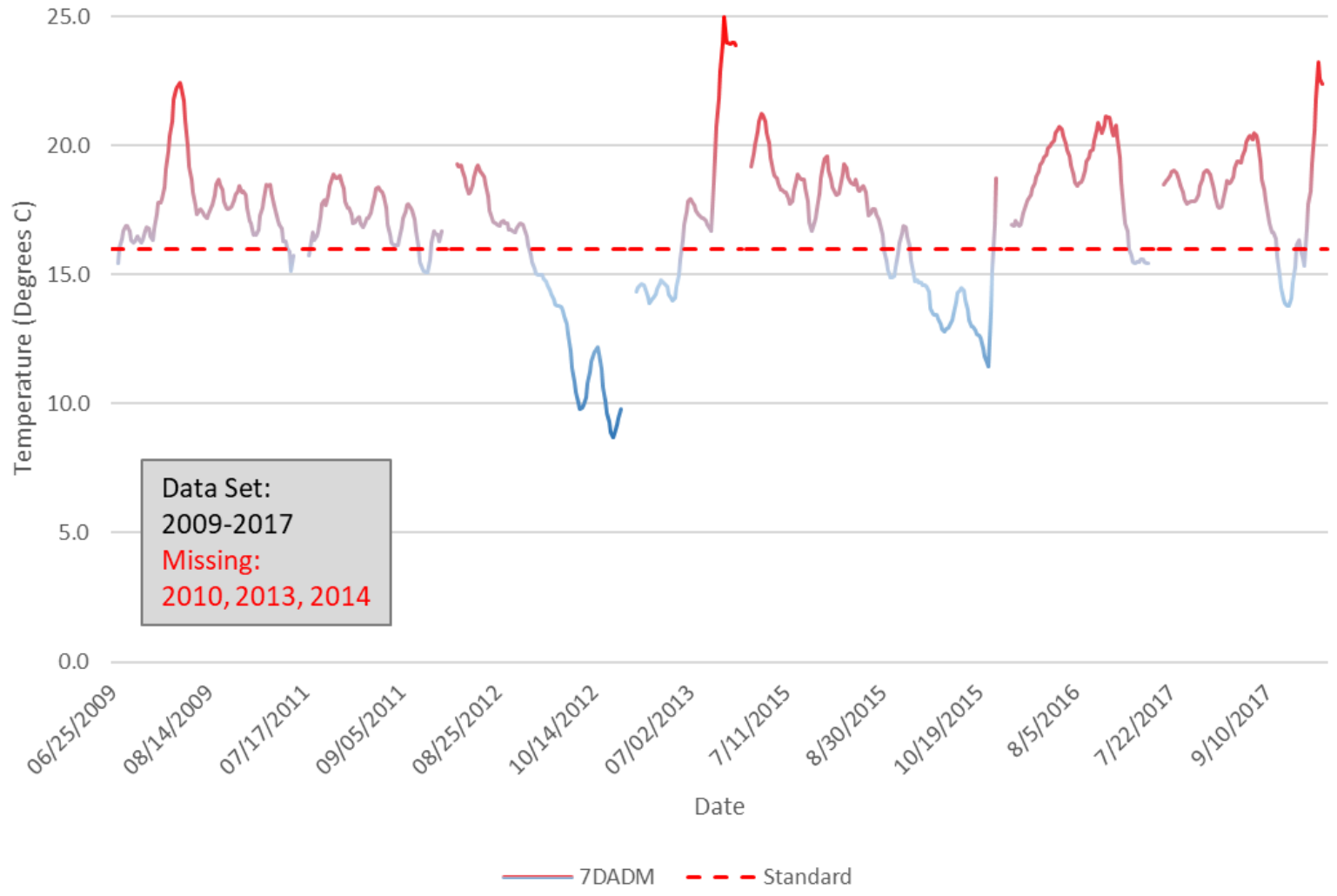
Hansen Creek



Hansen Creek

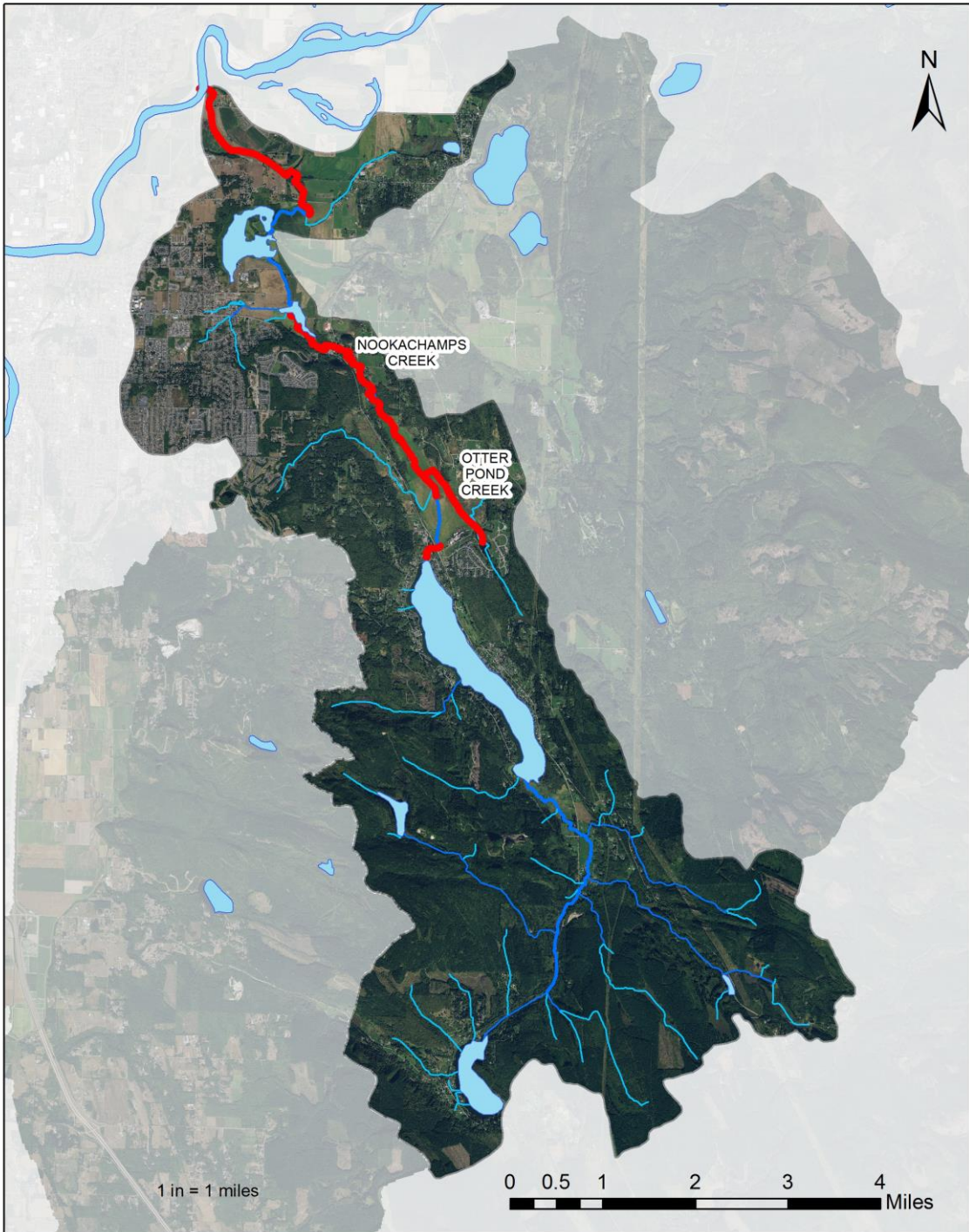


Hansen Creek
Site 19 - Hoehn Road
2009-2017

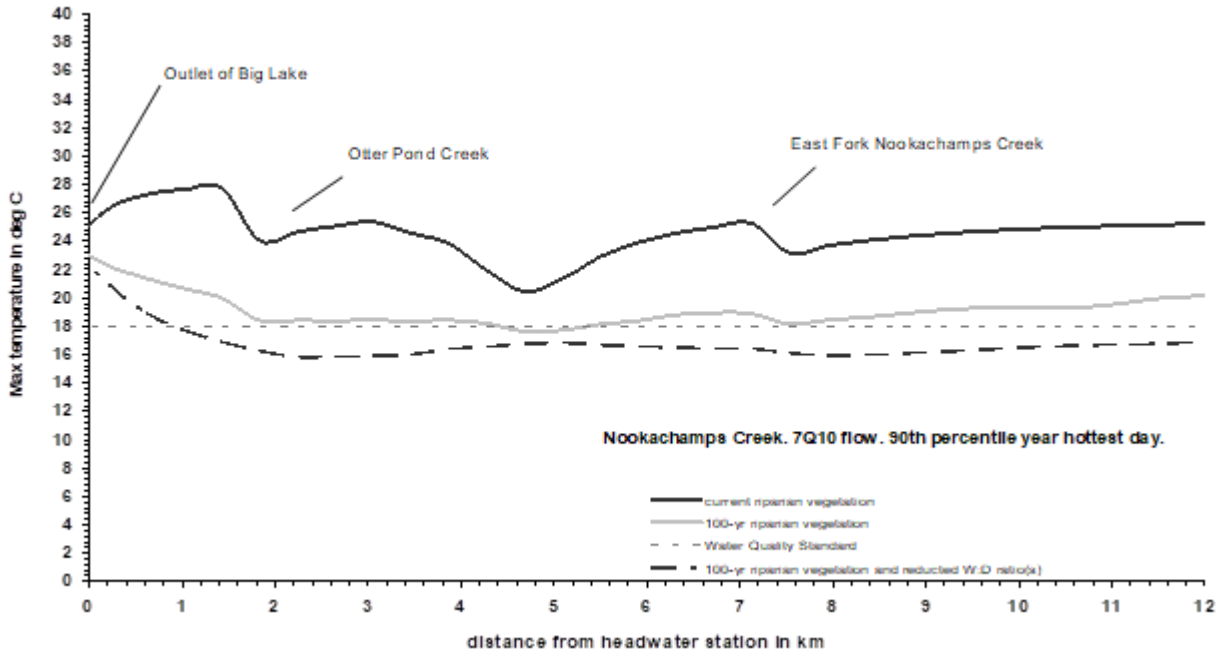


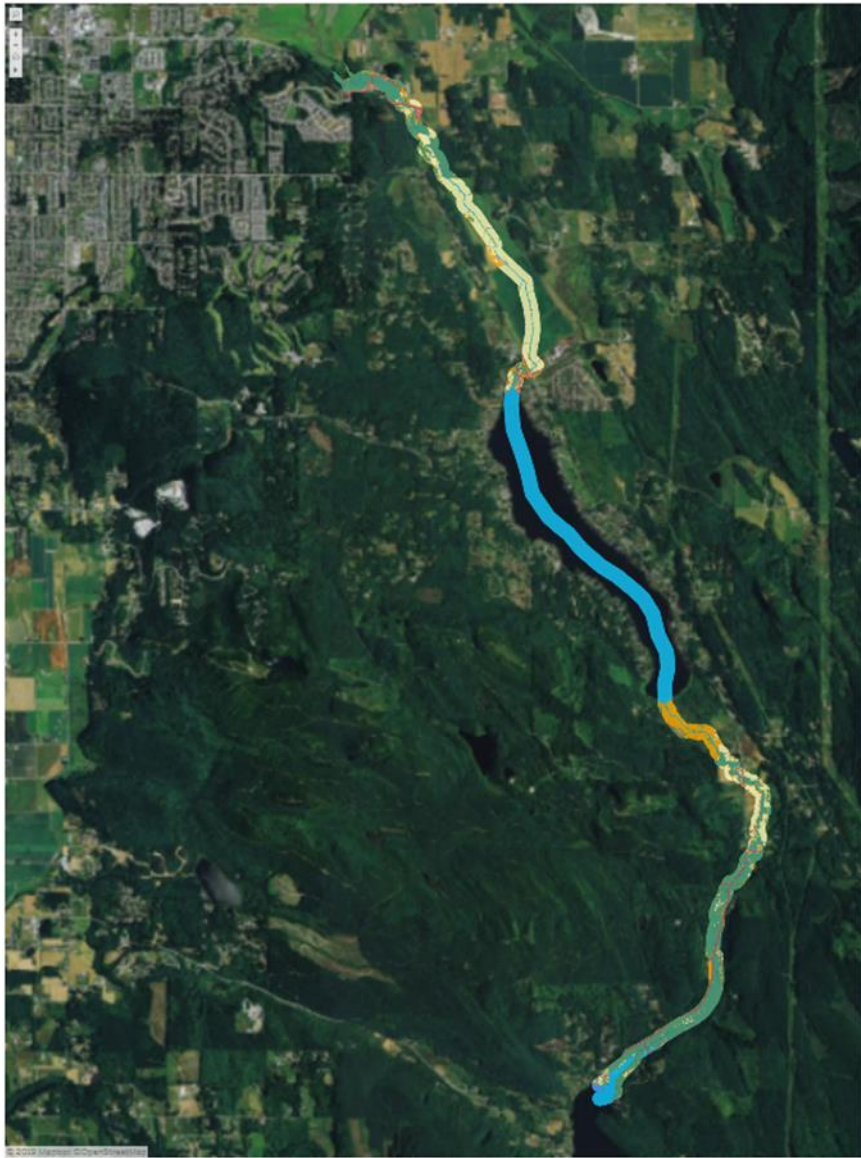
158 days above the standard (80% of dataset)



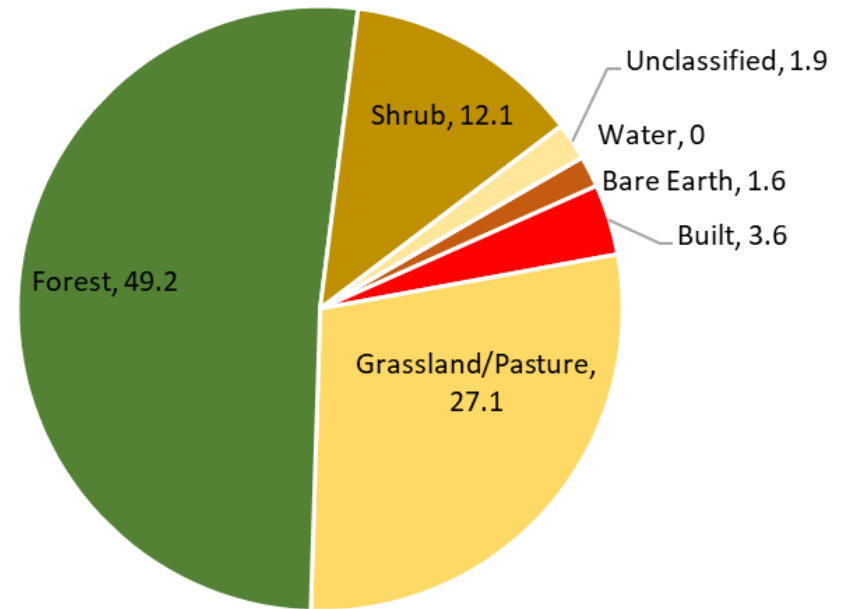


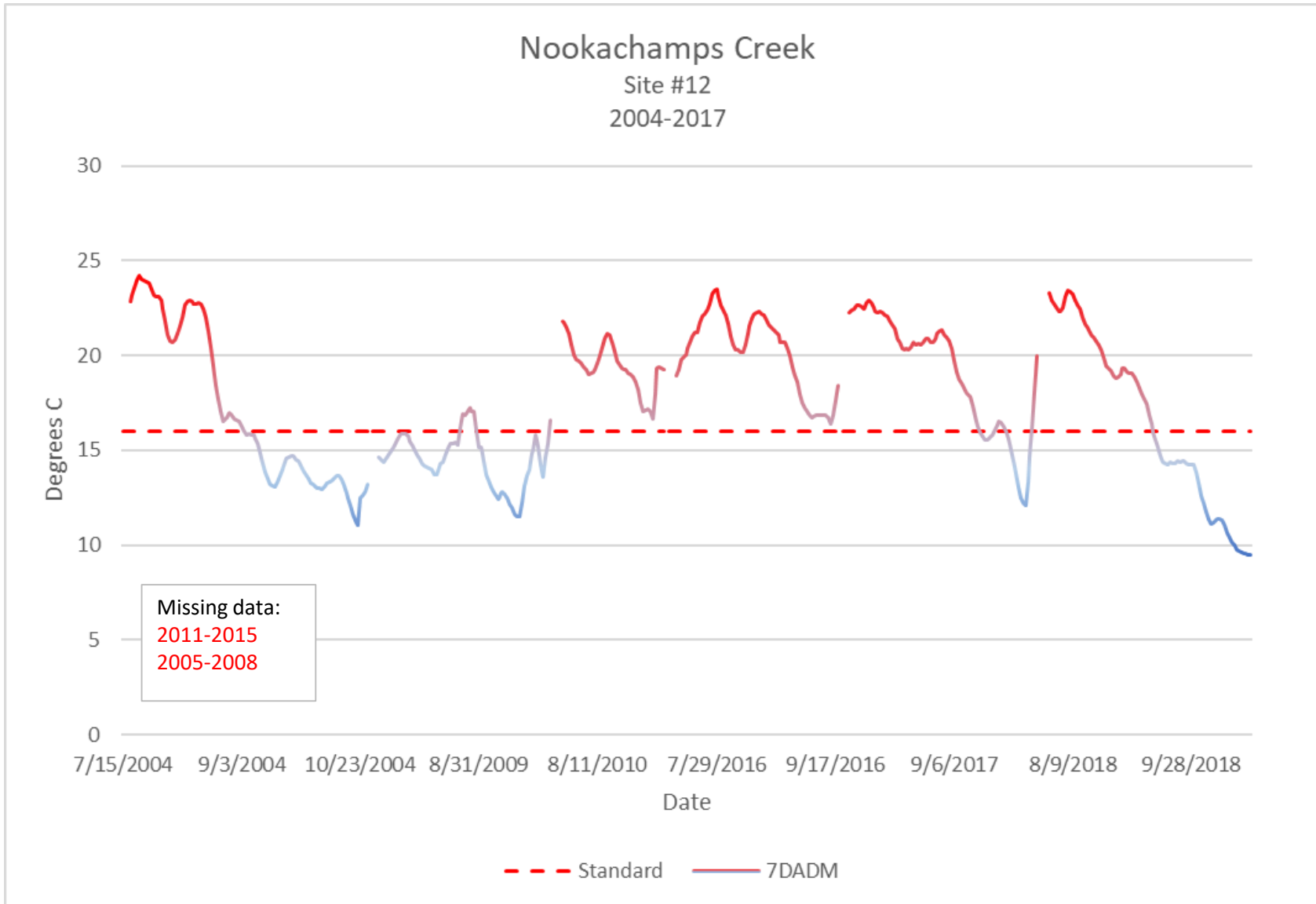
Nookachamps and Otter Pond Creek



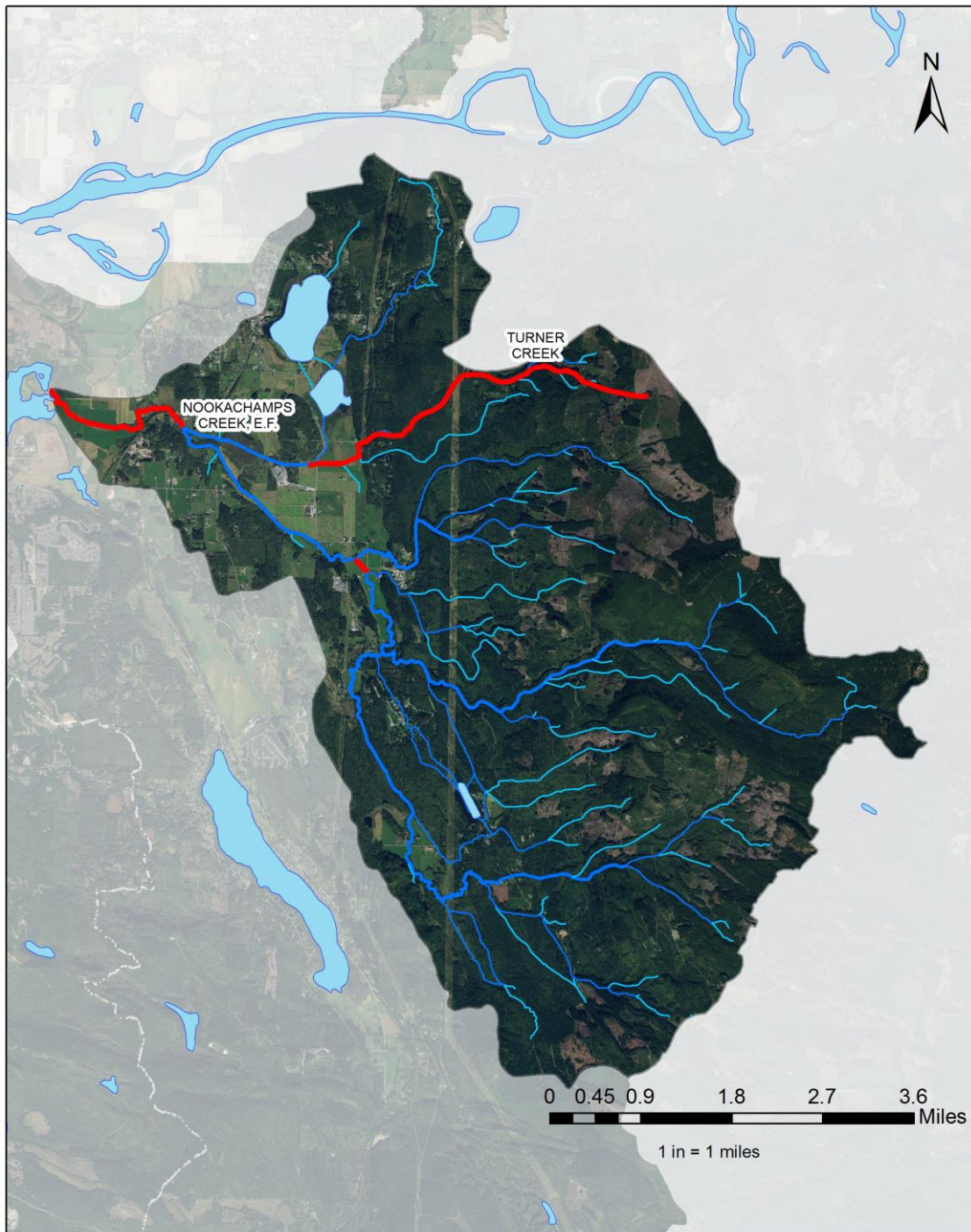


Nookachamps Creek
Riparian Cover Acres 0 - 40m

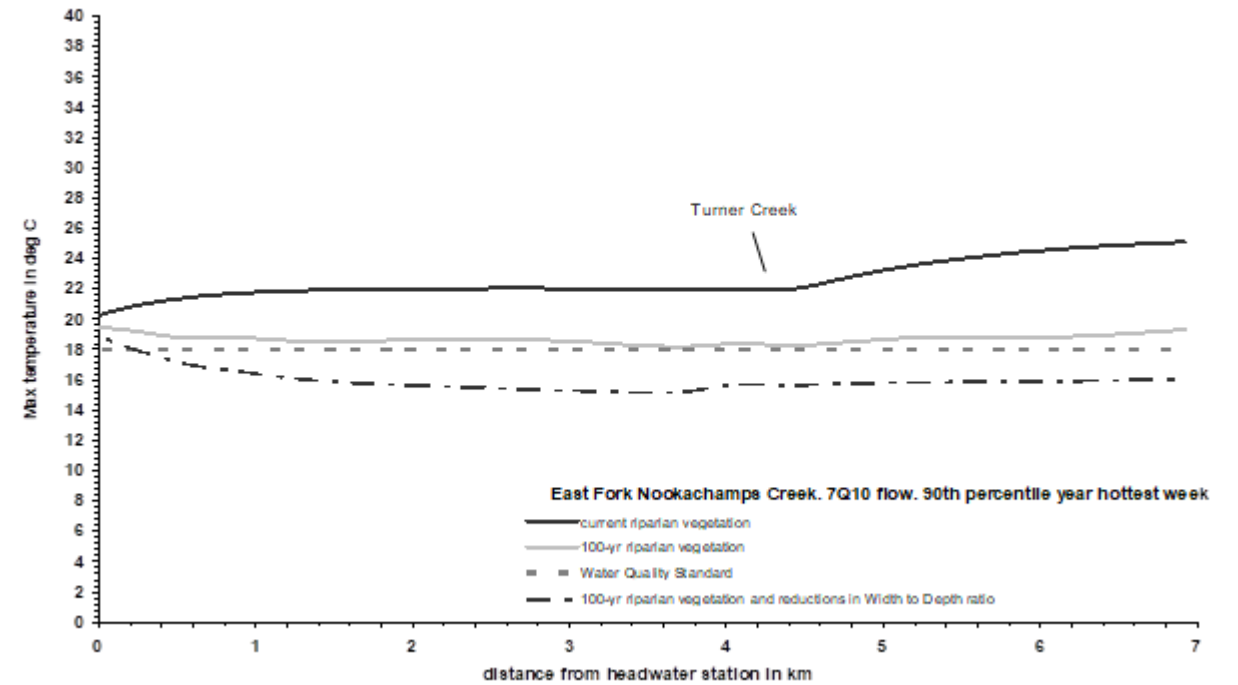




Exceeded temperature standards 295 days (60% of dataset)

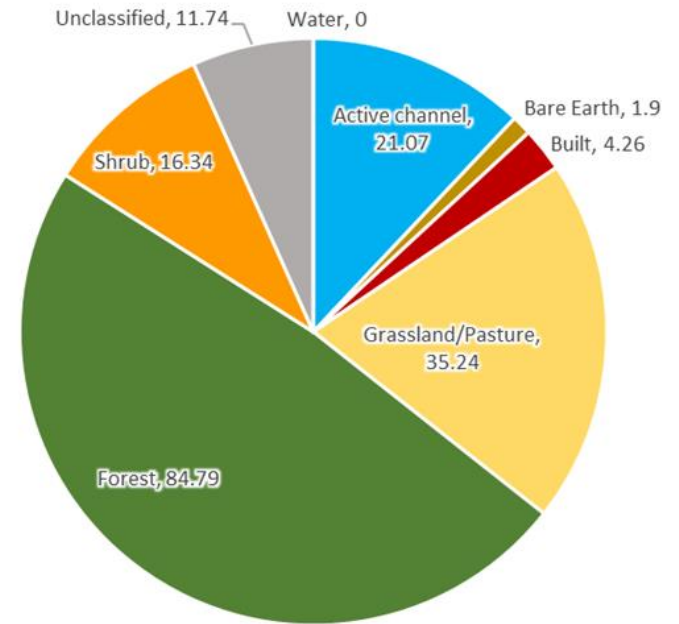


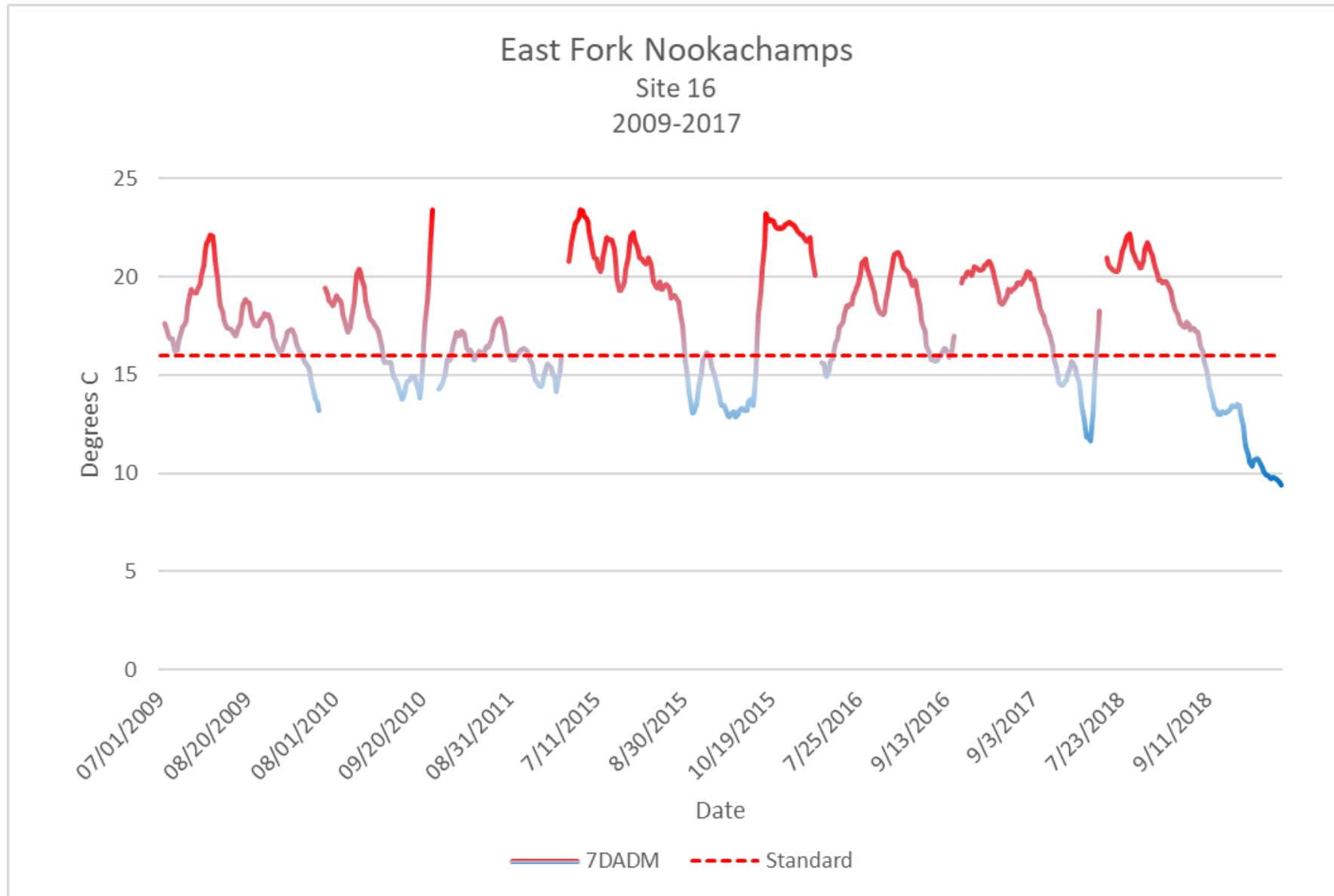
E. Fk Nookachamps and Turner Creek





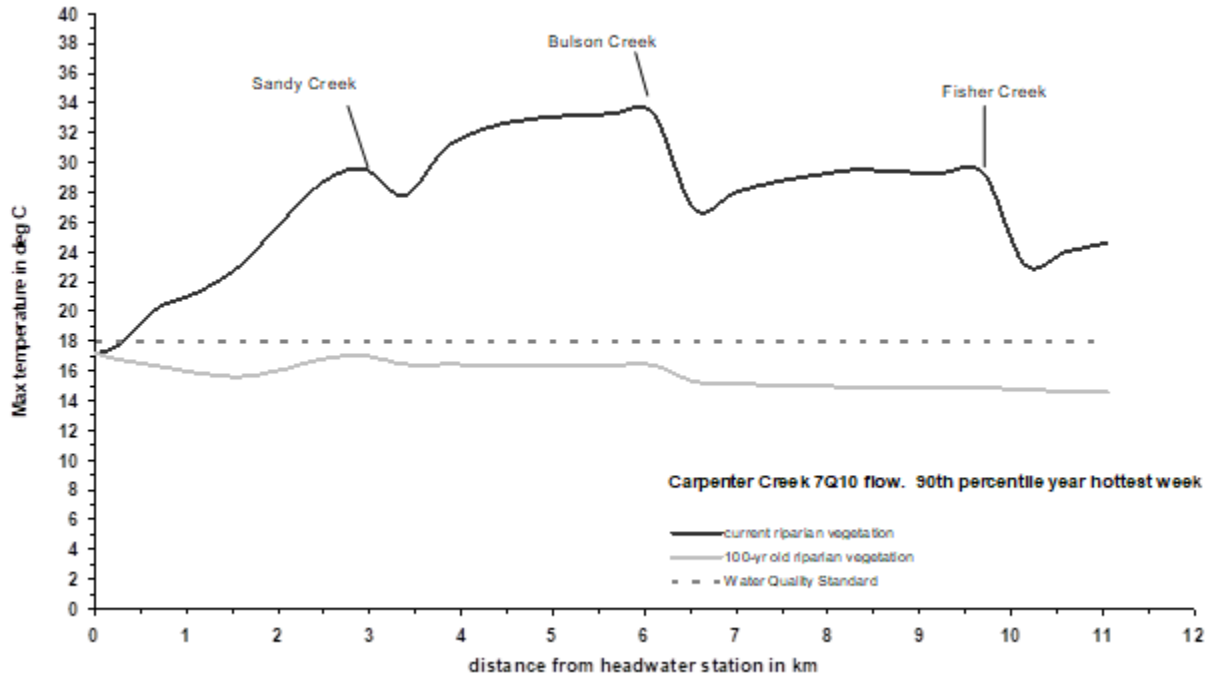
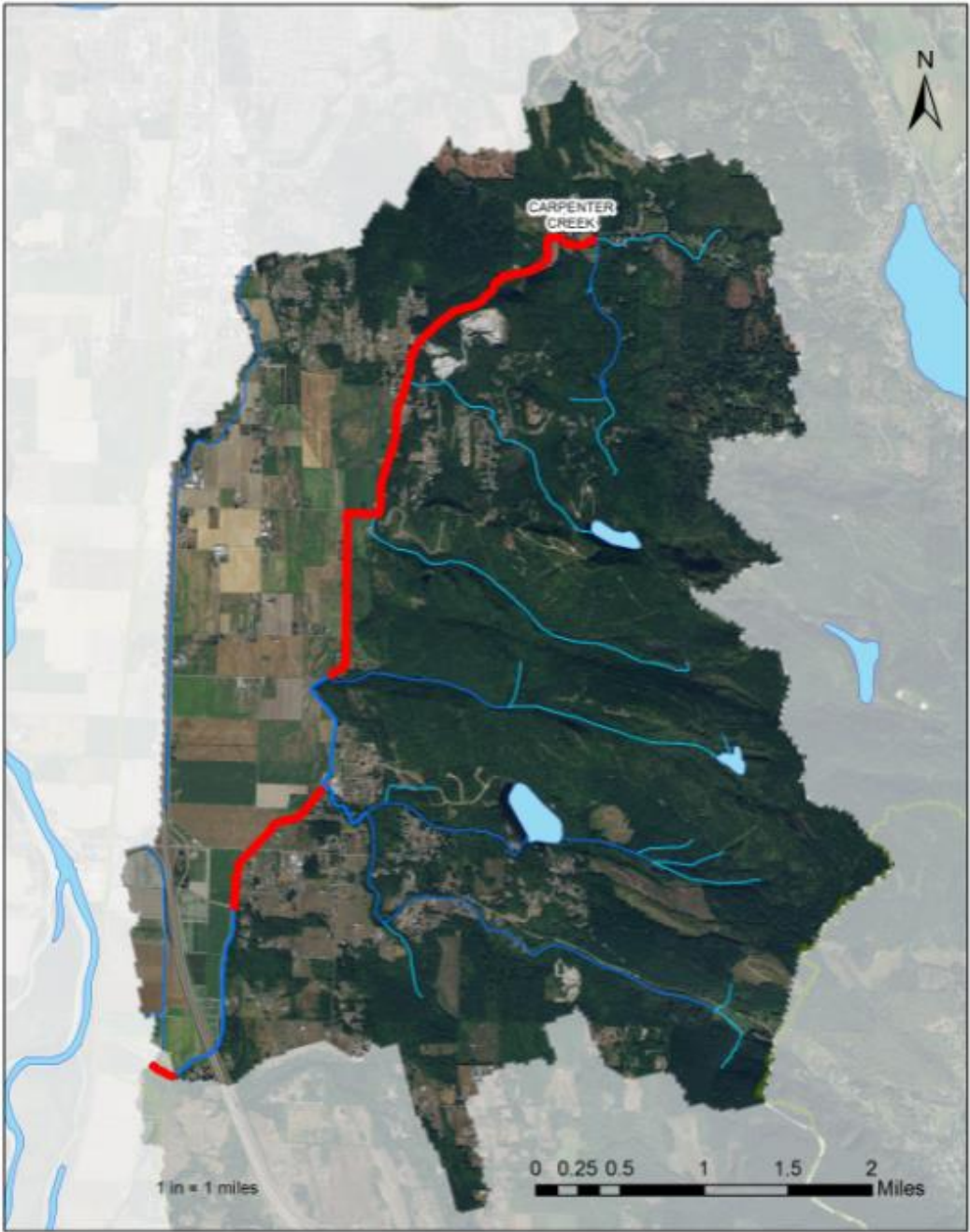
East Fork Nookachamps
Riparian Cover Acres 0-40 M

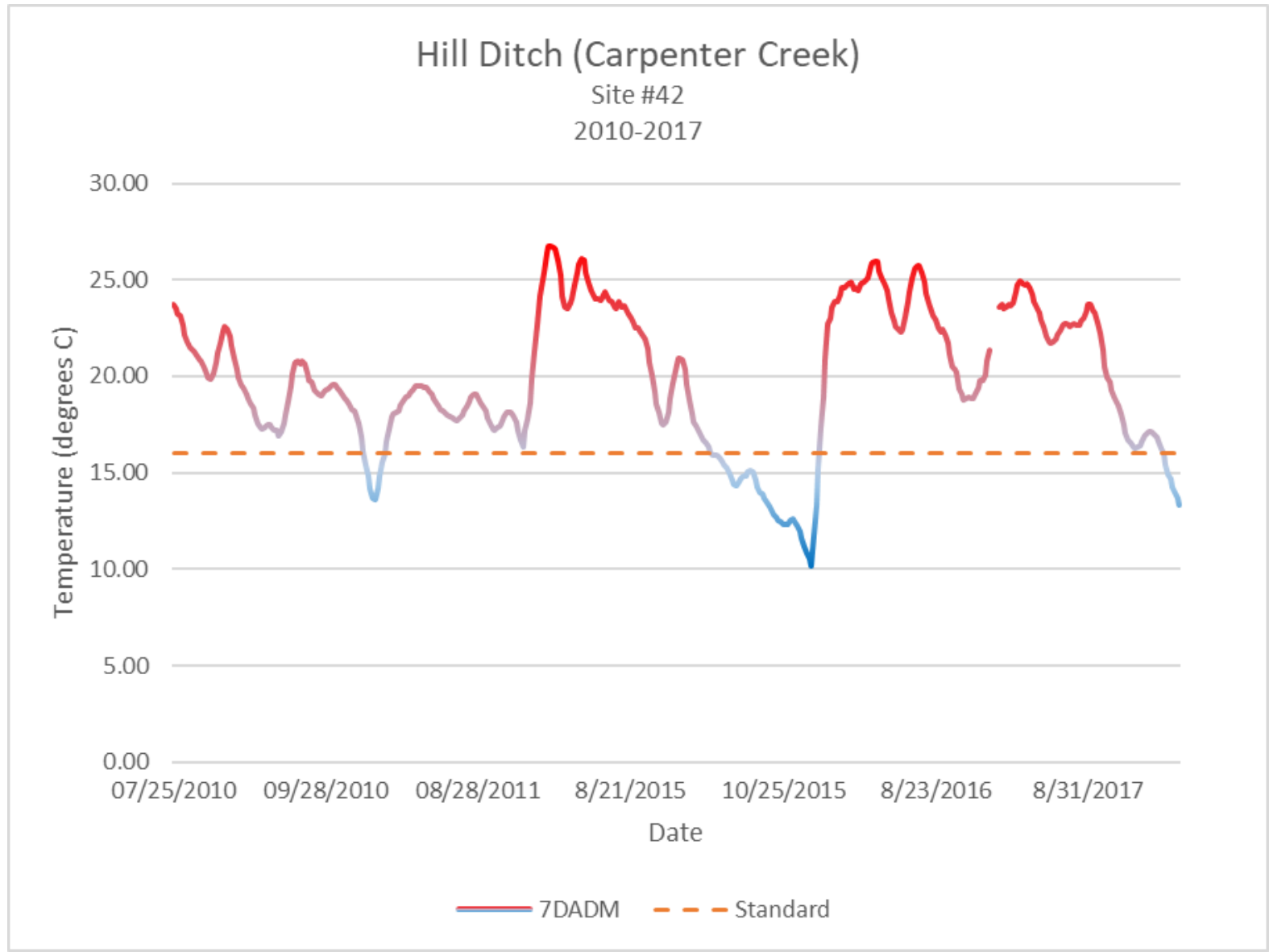




Exceeded temperature standards 463 days (62% of dataset)

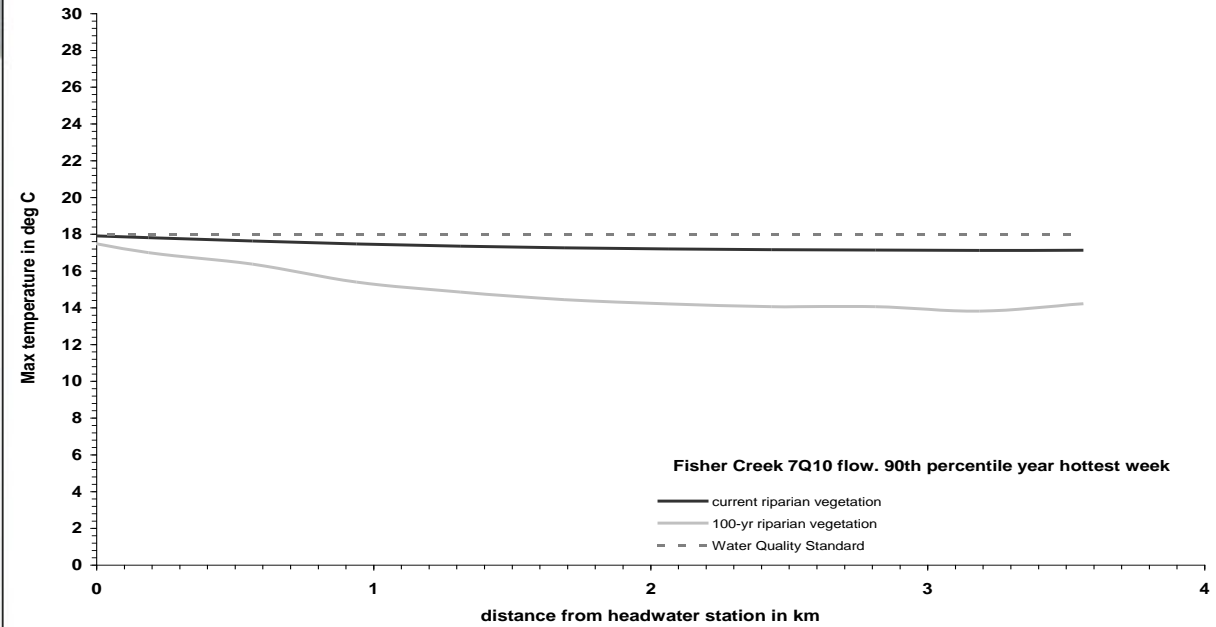
Carpenter and Fisher Creek



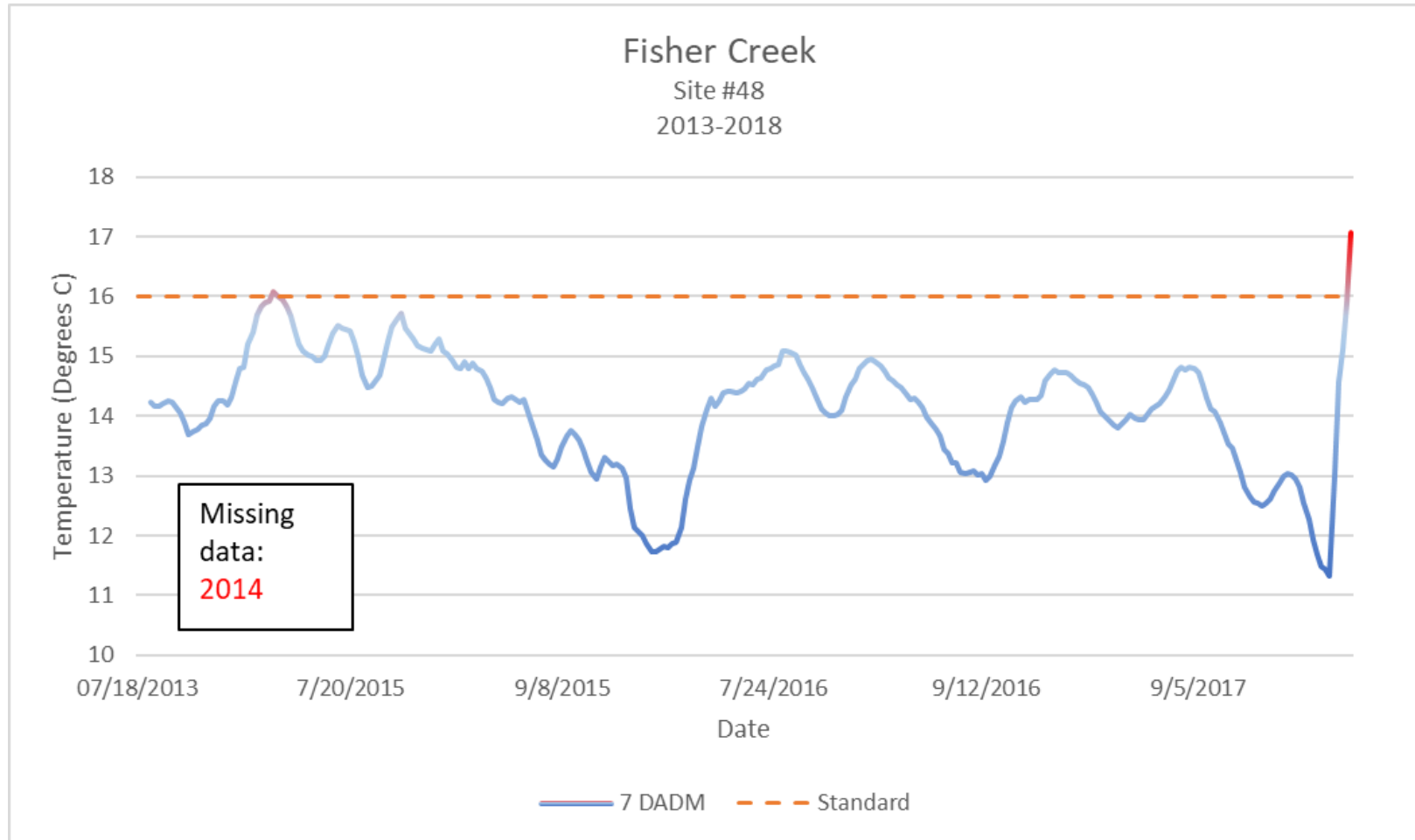


Exceeded temperature standards 364 days (86% of dataset)

Fisher Creek

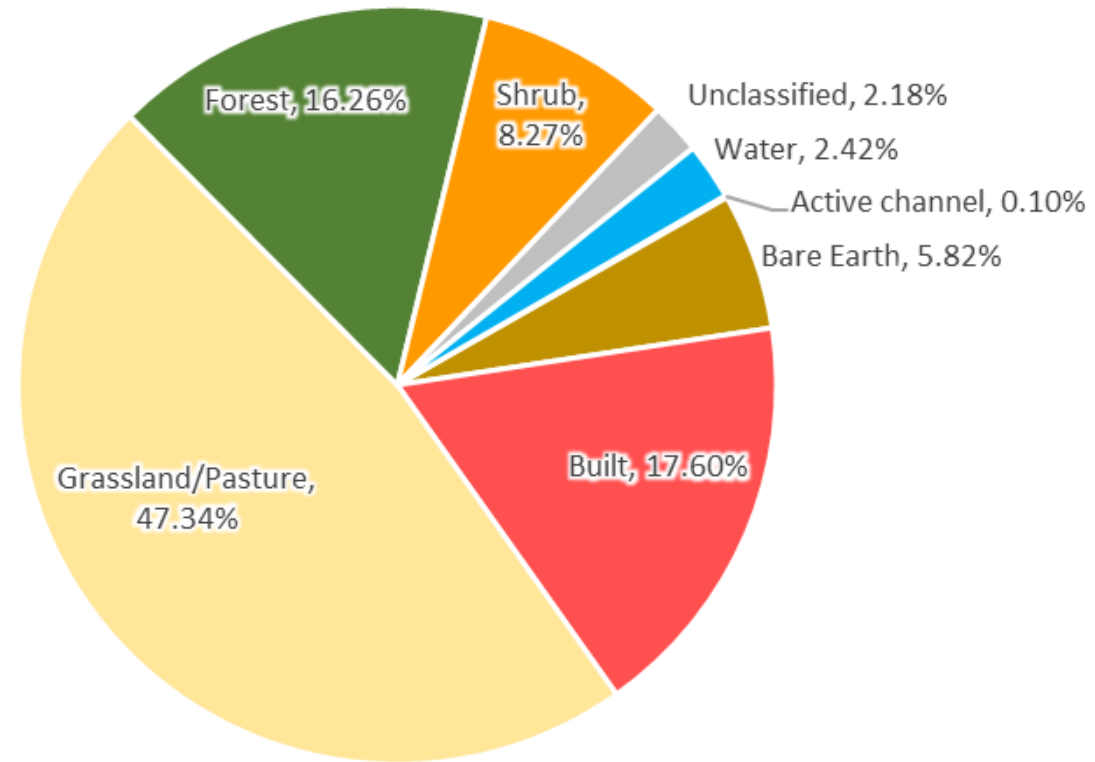


Fisher Creek



Exceeded temperature standards 9 days (3% of dataset)

Fisher-Carpenter Creek Riparian Cover Acres 0 - 40m



Plantings in the TMDL areas

Reach	Loss		Gains		Total Gains	Total
Reach Name	Acres of Anthropogenic Loss	Primary Change Agent of Natural Loss	Acres of Gains (Riparian Plantings - Database)	Acres of Gains (CREP Database)	Acres of Gains (SWC Database + CREP)	Total Change
Hansen Creek	0.3	Tree Removal	87.9	18.9	106.8	106.6
Fisher Carpenter	7.0	Development	12.9	20.8	33.8	26.8
EF Nookachamps	0.0	Tree Removal	0.0	10.1	10.1	10.1
WF Nookachamps	3.9	Tree Removal	0.3	0.0	0.3	-3.6



Additional information

Reach	% Forest	% Shrub	% Altered	Change (Acres)
Hansen Creek	61%	12%	26%	108.6

Reach	% Forest	% Shrub	% Altered	Change (Acres)
WF Nookachamps	47%	13%	39%	-3.6

Reach	% Forest	% Shrub	% Altered	Change (Acres)
EF Nookachamps	55%	11%	27%	10.1

Reach	% Forest	% Shrub	% Altered	Change (Acres)
Fisher Carpenter	17%	8%	73%	26.8

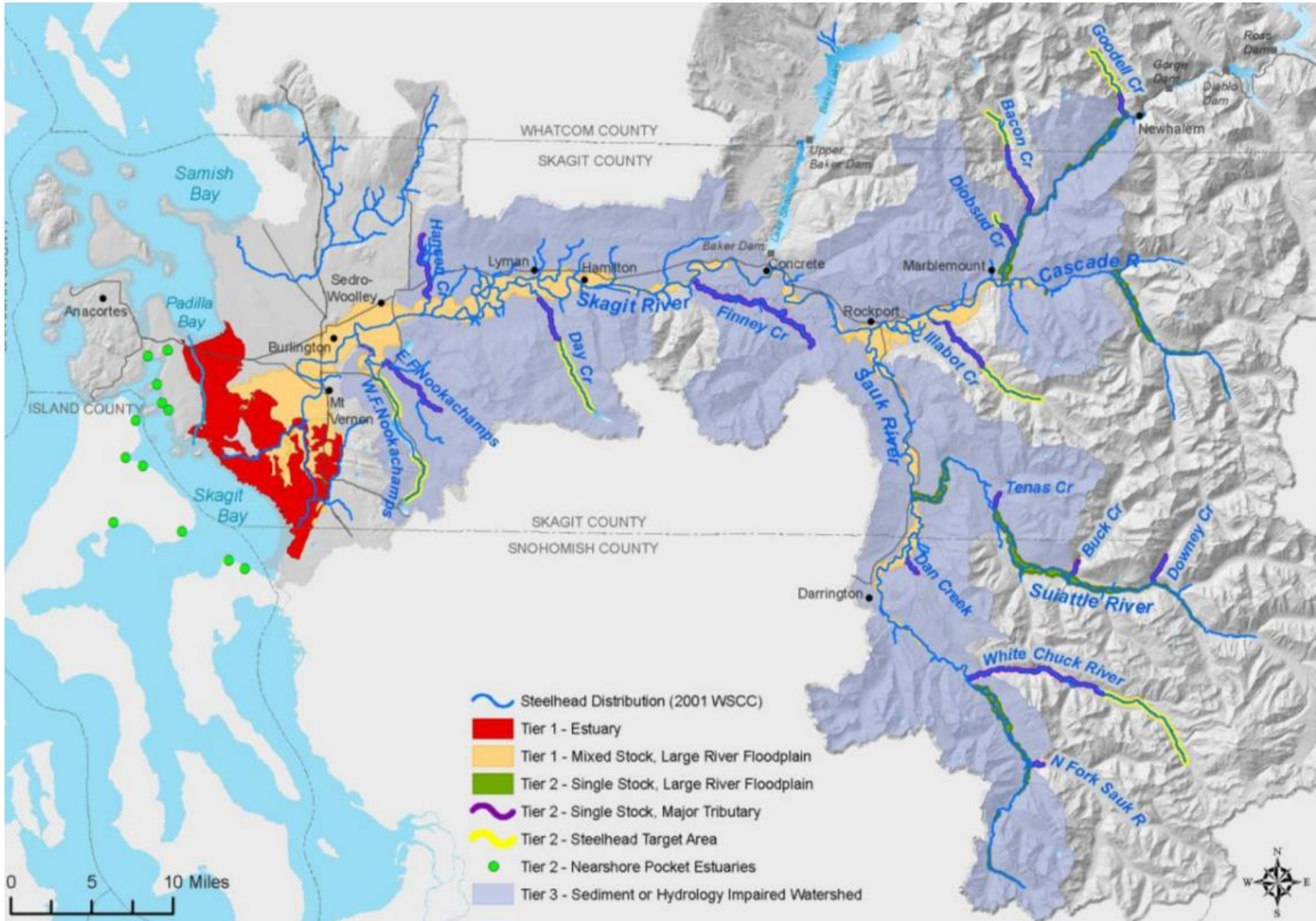
Skagit Watershed Council Riparian Assessment, 2017



Salmon recovery rankings efforts

- Tributary Assessment for Potential Chinook Salmon Rearing Habitat and Recommendations for Prioritizing Habitat Protection and Restoration - SWC, 2015
 - Multiple methods used to assess restoration value
 - Comparing all three methods, **Nookachamps** (6) and **Hansen** (15) were within the top 15



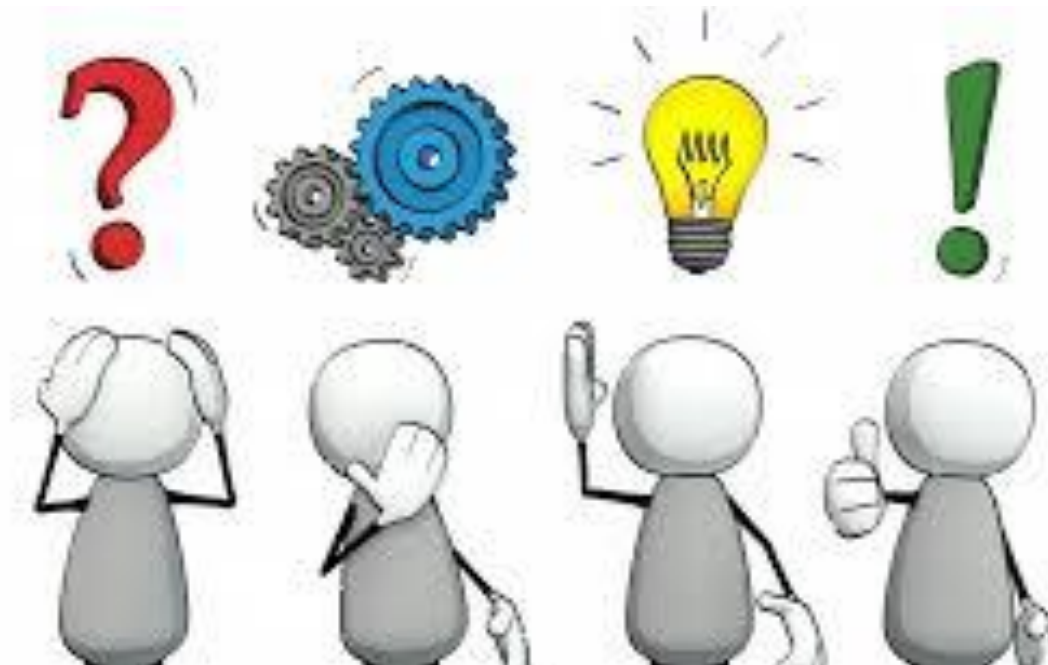


SWC 2015 Interim Steelhead Strategy Target Areas. Maps developed by Skagit River System Cooperative.



Additional thoughts?

- Other important considerations



Poll Activity

- Text to: 22333
- Conference ID: scottb657
- PollsEverywhere states they will not track your data or phone number. All answers are anonymous.



Priority watershed

- Hansen and Red - A
- Nookachamps and Otter Pond Creek – B
- East Fork Nookachamps and Turner Creek – C
- Carpenter and Fisher Creek – D
- None, Watershed wide focus – E
- Other - F



Results

- The results will be sent to the group.
- This is not a binding decision at this time.
- We will revisit the areas at our next meeting



Results

- Any additional thoughts or comments
- Steps for the other watersheds?

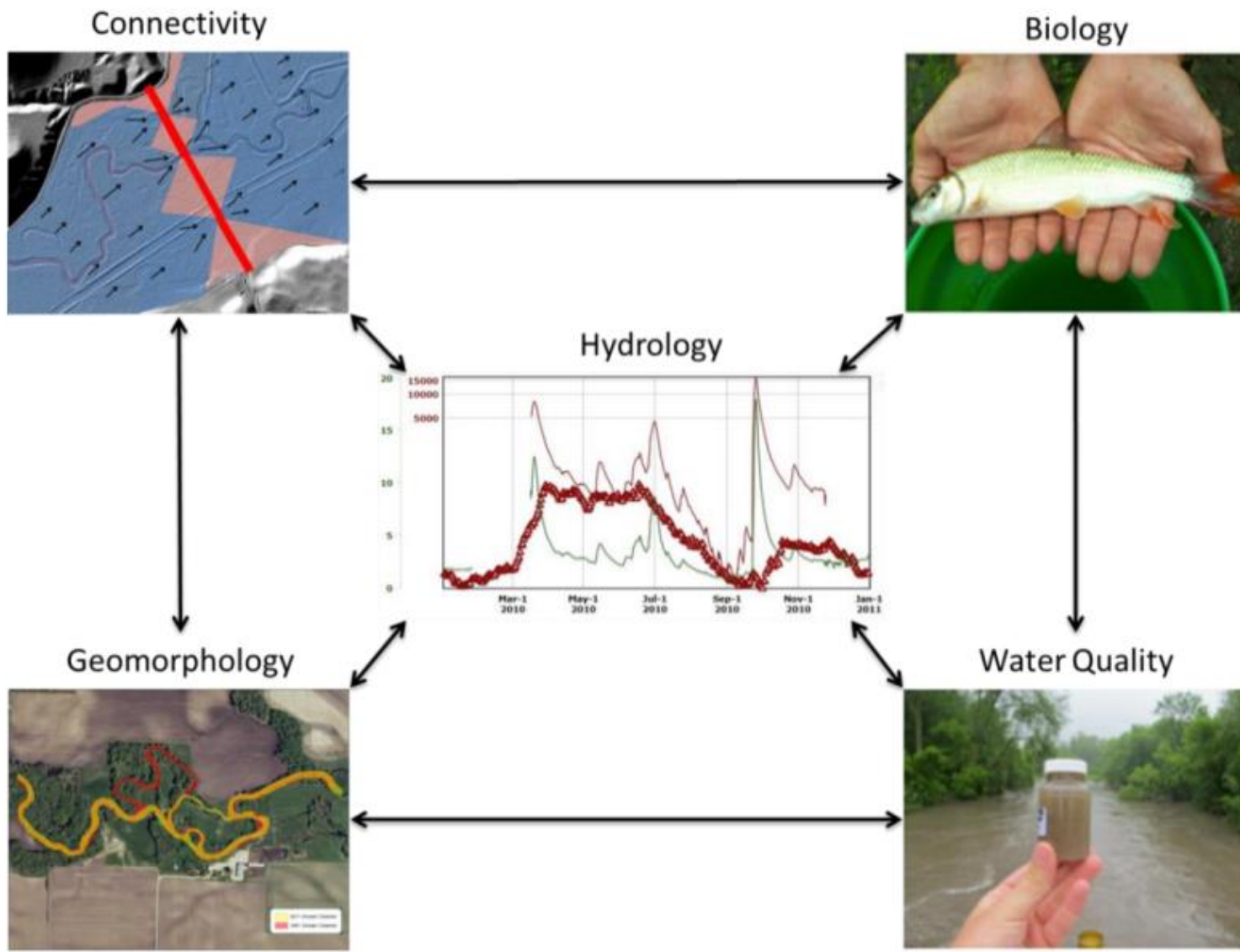




A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds (Roni, Philip, et al, 2002)

- The hierarchical strategy we present is based on three elements:
 - (1) principles of watershed processes,
 - (2) protecting existing high-quality habitats, and
 - (3) current knowledge of the effectiveness of specific techniques.
- Initially, efforts should focus on protecting areas with intact processes and high-quality habitat.
- Following a watershed assessment, we recommend that restoration focus on reconnecting isolated high-quality fish habitats, such as instream or off-channel habitats made inaccessible by culverts or other artificial obstructions.
- Once the connectivity of habitats within a basin has been restored, efforts should focus on restoring hydrologic, geologic (sediment delivery and routing), and riparian processes through road decommissioning and maintenance, exclusion of livestock, and restoration of riparian areas.
- Instream habitat enhancement (e.g., additions of wood, boulders, or nutrients) should be employed after restoring natural processes or where short-term improvements in habitat are needed (e.g., habitat for endangered species).

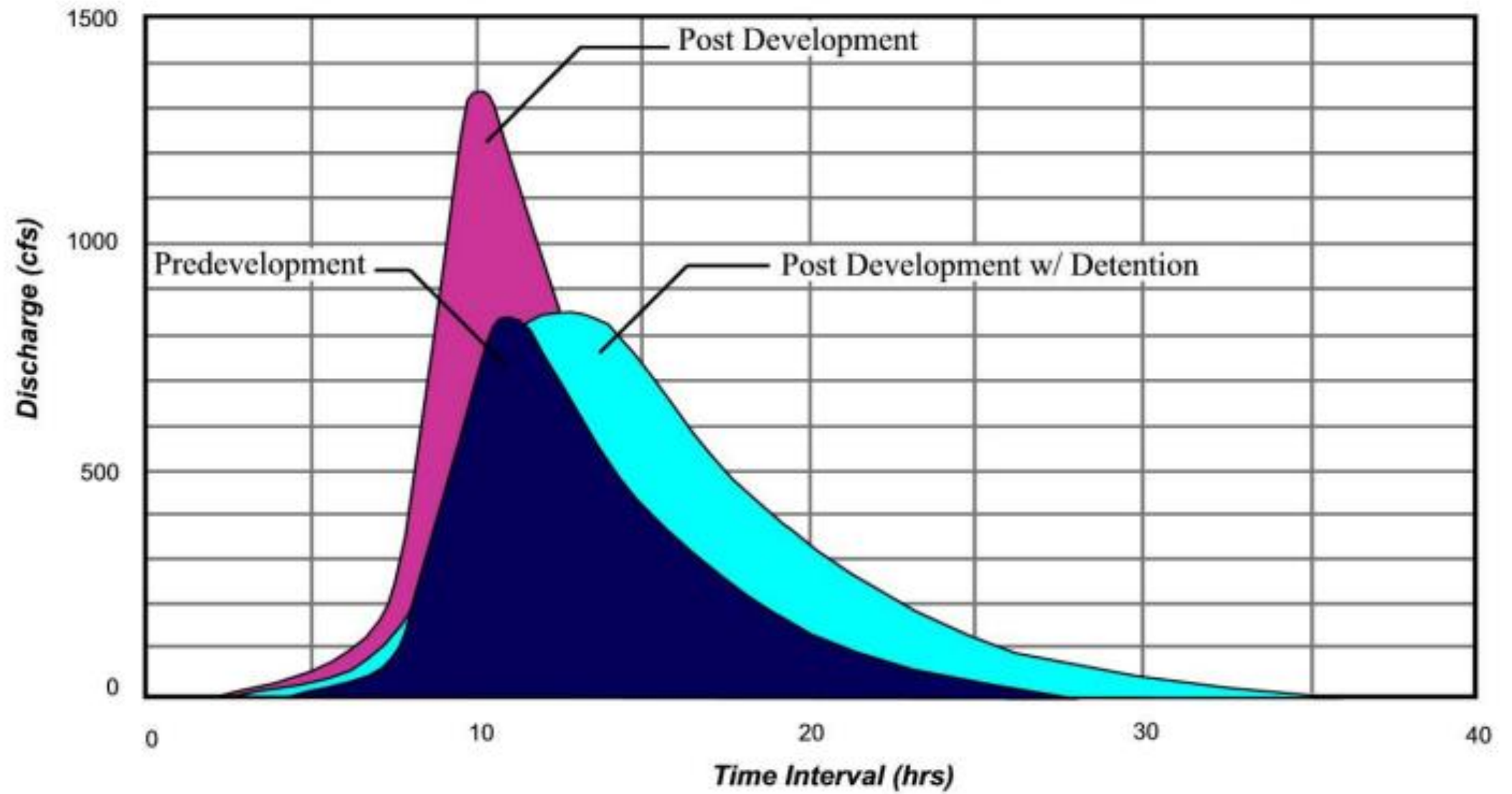


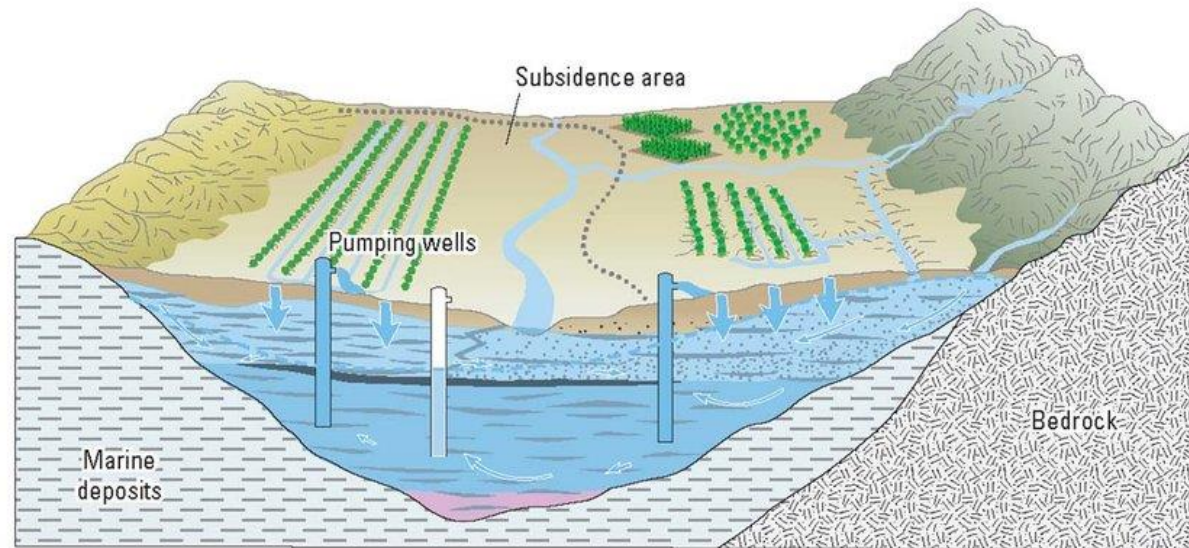
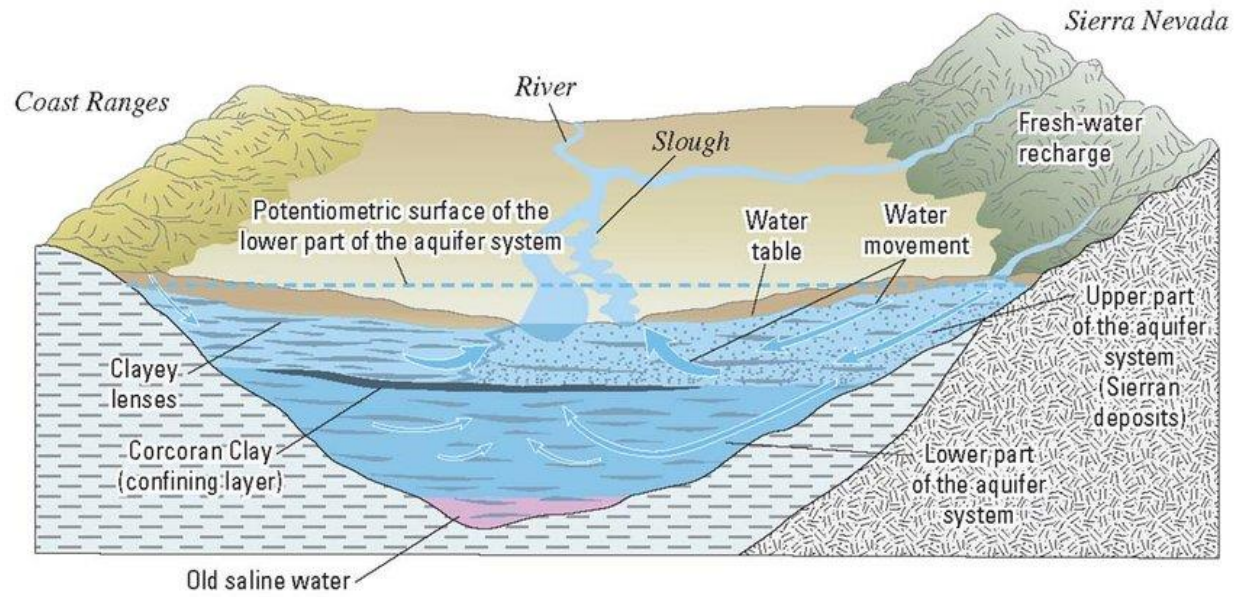


Channel Morphology and Hydrology

- The rate and duration of how water moves through the watershed effects water quality and system stability.
- In general, water moves slower through a system pre-development/alteration.

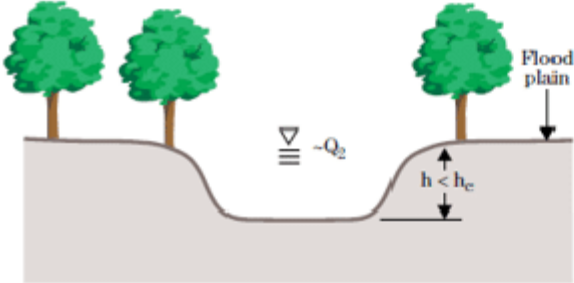




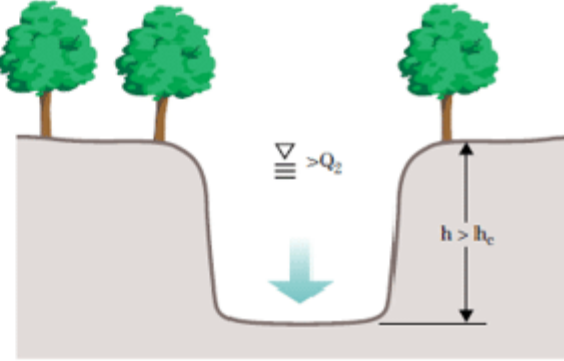


Channel evolution model

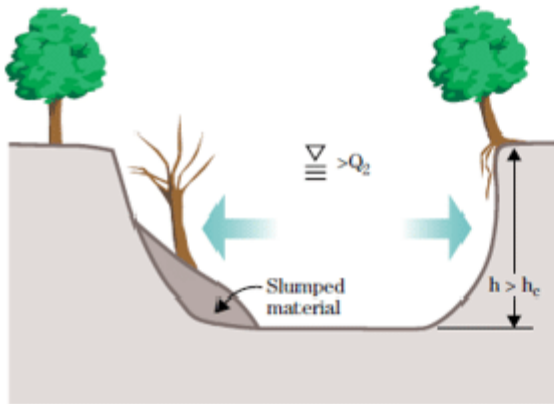
Stage 1: Stable



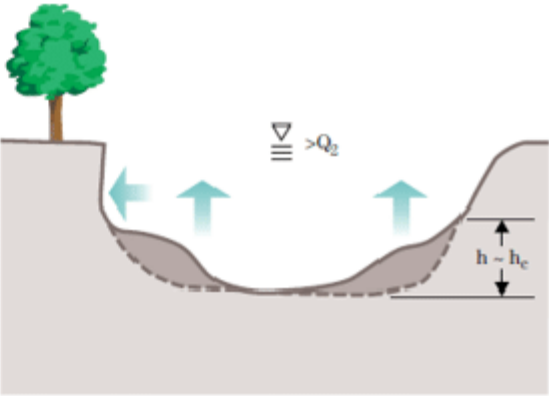
Stage 2: Incision



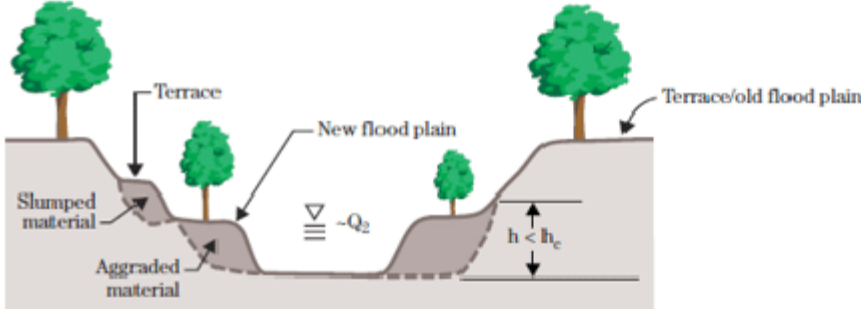
Stage 3: Widening



Stage 4: Deposition and Stabilization

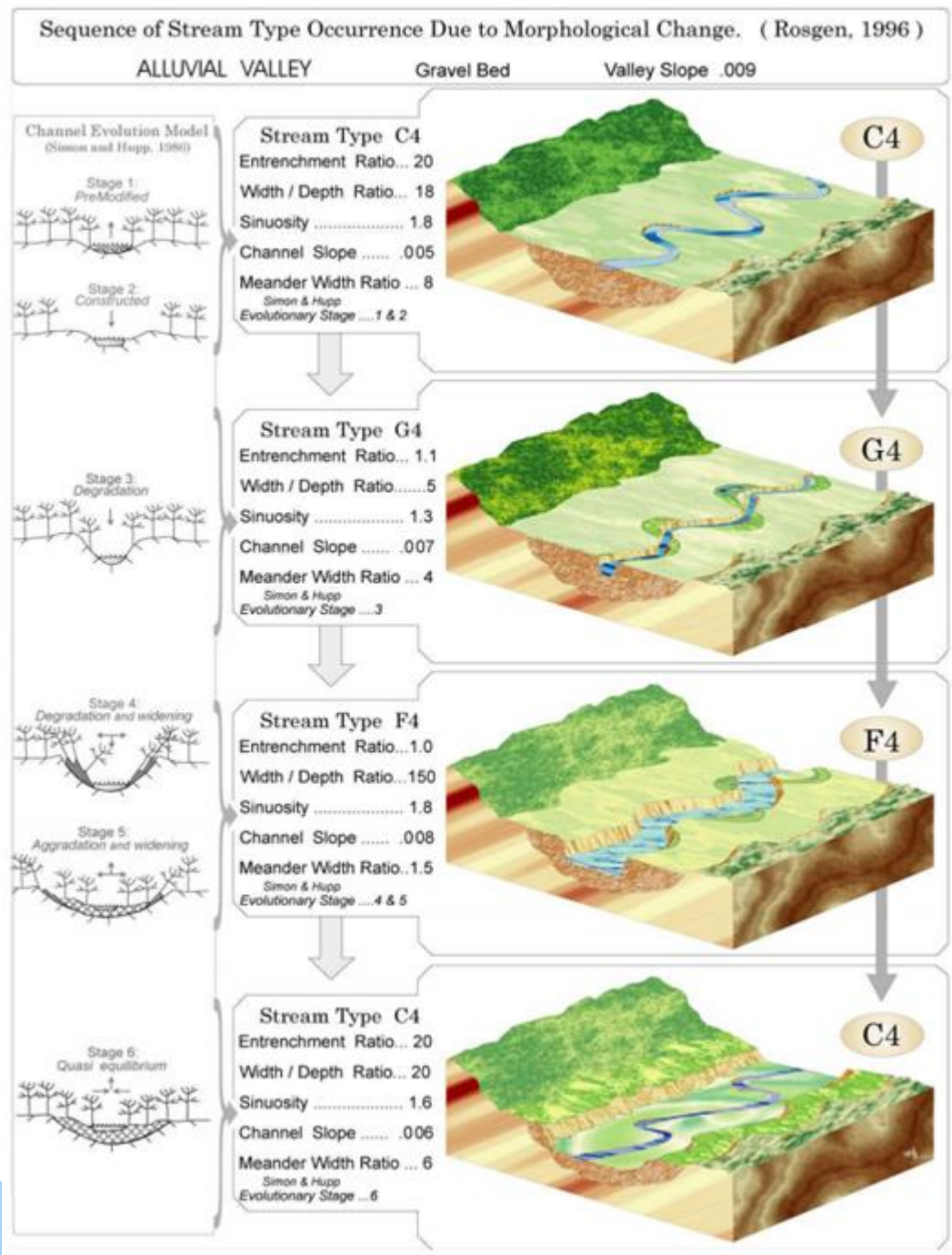


Stage 5: Quasi-Equilibrium Stable

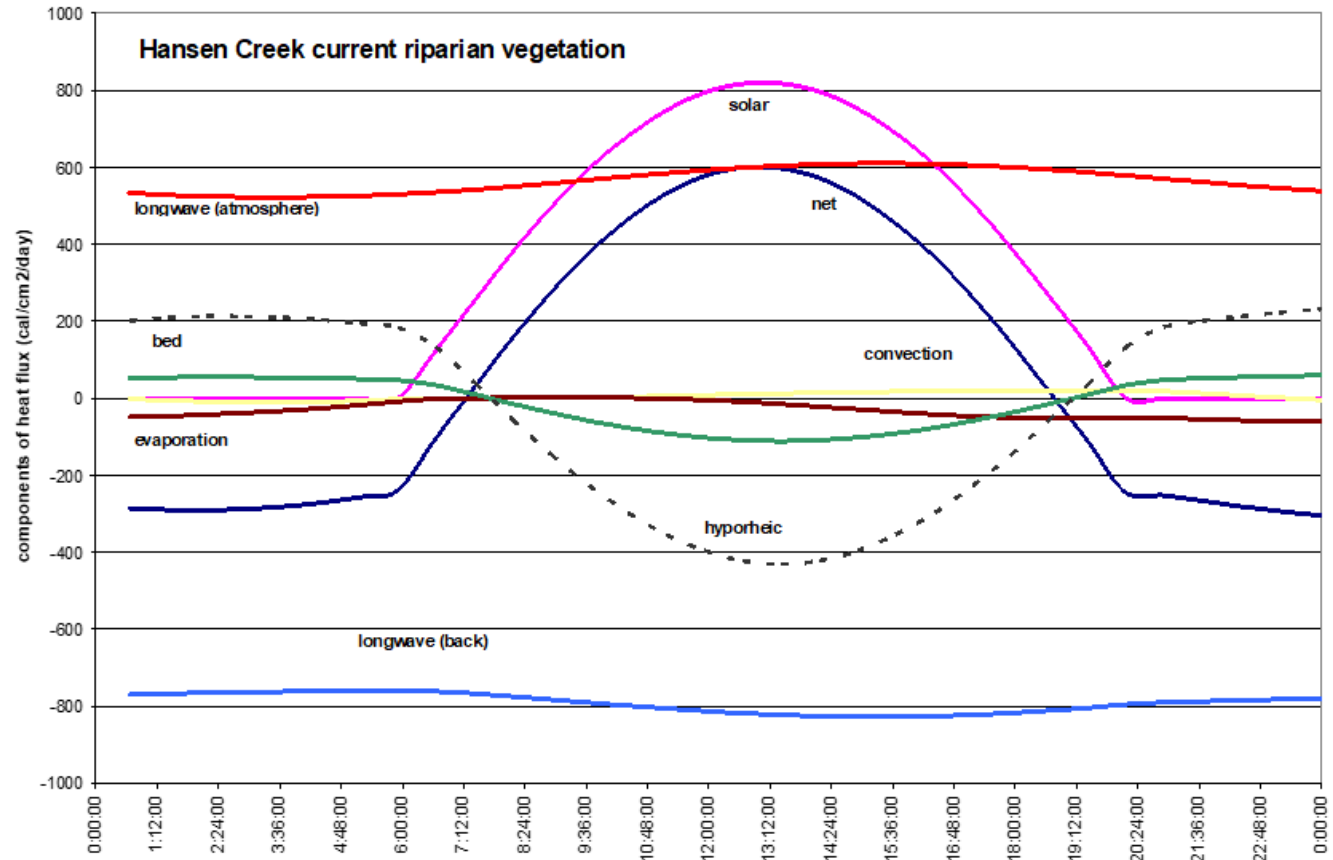


Channel evolution model

- Relationship of channel evolution model to stream types (Simon and Hupp, 1986)



Model elements



Goals and Standards

- Reaching and maintaining the WQ standards is the **minimum goal**.
- Modeling indicates that several reaches may reach temperatures cooler than the standard



Totals

WRIA 3 - Lower Skagit - Samish

Change Type	Land Cover/Change Agent	Time Period						Total Change (Acres)		Combined Total Change
		2006-2009		2009-2011		2011-2013		connected	isolated	
		connected	isolated	connected	isolated	connected	isolated			
	Forest, >90% Tree Cover	86.1	4.6	17.7	0.8	28.3	4.6	132.2	10.0	142.2
Loss (Anthropogenic)	Development	0.3		0.1				0.4	0.0	0.4
	Tree Removal	6.6	1.8	3.6	0.7	5.2	0.3	15.5	2.9	18.4
	Forestry	0.1	2.8	9.6				9.8	2.8	12.6
Loss (Natural)	Other, Natural			0.0	0.1	0.3	4.2	0.3	4.3	4.6
	Stream	79.1		4.4		22.8		106.3	0.0	106.3
	Herbs and Shrubs	2.7	0.1	10.8	0.5	1.2	2.9	14.7	3.5	18.2
Loss (Anthropogenic)	Development	2.3	0.1	8.5	0.5	0.4	2.5	11.1	3.0	14.2
	Tree Removal			0.0				0.0	0.0	0.0
	Other, Non-Natural	0.4		2.3	0.0	0.9	0.3	3.6	0.3	3.9
	Retention Pond						0.2	0.0	0.2	0.2
	Grand Total	88.9	4.7	28.5	1.4	29.6	7.5	147.0	13.5	160.5
Gain	SWC Riparian Plantings							539.1	18.3	557.4
	CREP Riparian Plantings							147.1		147.1
	Grand Total (Riparian Plantings)									704.5
	Total Change (Acres) *does not include stream							498.7	4.8	544.0
	Percent Change (Total Gains - Total Losses)/Total Riparian Area (*not including active channel))									(+) 3.1%



Talking points

LIO

Fish Farm Flood – Establishing an ag area/Ag production district (APD)

Temp goals considering other plans/efforts – Culvert/access issues, targeting implementation.

Look at the old TMDL implementation actions



TMDL recommendations and goals

- Incentive programs in the form of:
 - The Conservation Reserve and Enhancement Program (CREP), administered by Skagit Conservation District, which compensates farmers that put land into buffers.
 - A proposed Skagit County program of financial incentives for landowners that independently install and maintain riparian buffers adequate to shade the stream.
- An outreach and technical assistance program using Basin Stewards hired to work one-on-one to educate and support landowners to improve the health of riparian land and creeks.
- A communications program in which landowners that do not protect creeks would be sent a letter by Ecology explaining the need for creek protection and outlining the options available for protecting the creek. Ecology is requesting the assistance of Skagit County GIS services in identifying parcels needing shade protection.

