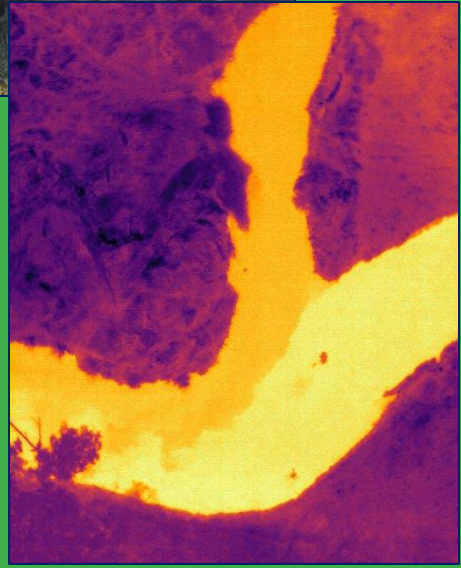
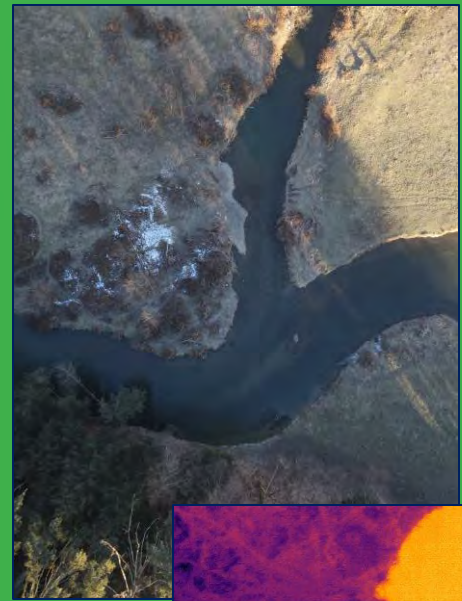


High Tech Applications, Low Tech Restoration, and Battenkill Updates

*Jacob Fetterman
NY Project Coordinator
Trout Unlimited*

April 15, 2024
www.tu.org/



Small Unmanned Aircraft Systems (Drones) as a Survey and Monitoring Aid

- *Project photos*
- *Site mapping to supplement survey and design*
- *Thermal imaging to guide restoration*

Low-tech Restoration – Gasher Brook Project

- *Post-Assisted Log Structures and Conifers for Habitat, Roughening, and Sediment Retention*

Battenkill Updates

- *Entering 5th year of Battenkill HRI*
- *3 projects slated for the NY portion in 2024*

Drones as a Survey and Monitoring Aid



Drones as a Survey and Monitoring Aid



Drones as a Survey and Monitoring Aid



Mapped flight missions allow replication of aerial images throughout the life of a project



Drones as a Survey and Monitoring Aid

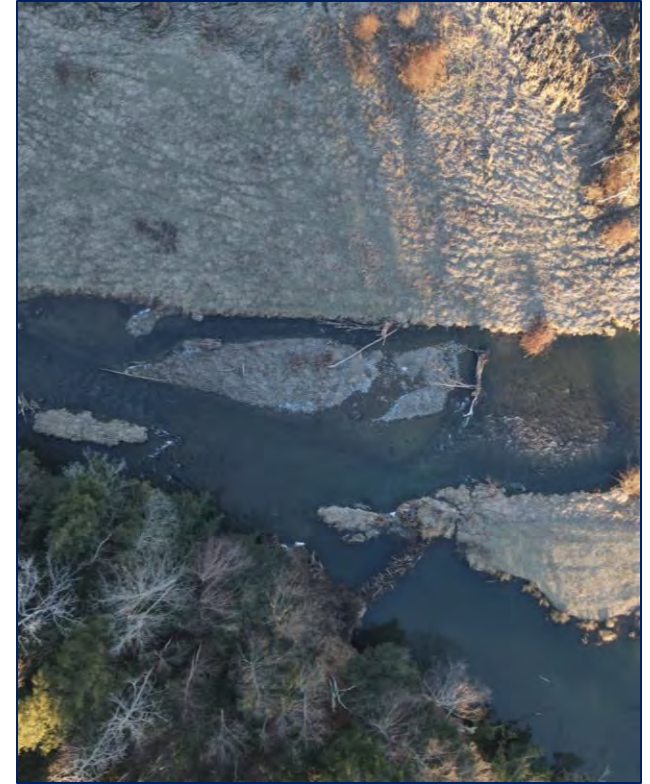
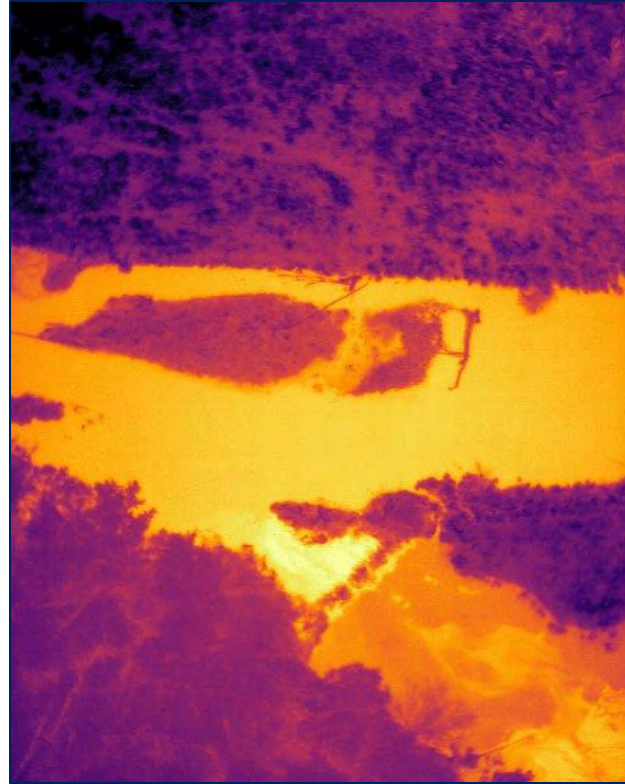
Orthomosaic images can be utilized by engineers during the design process

- Updated aerial imagery
- Better image quality
- Tie directly in with survey data



Drones as a Survey and Monitoring Aid

Thermal imaging may be utilized to monitor streams and support project prioritization



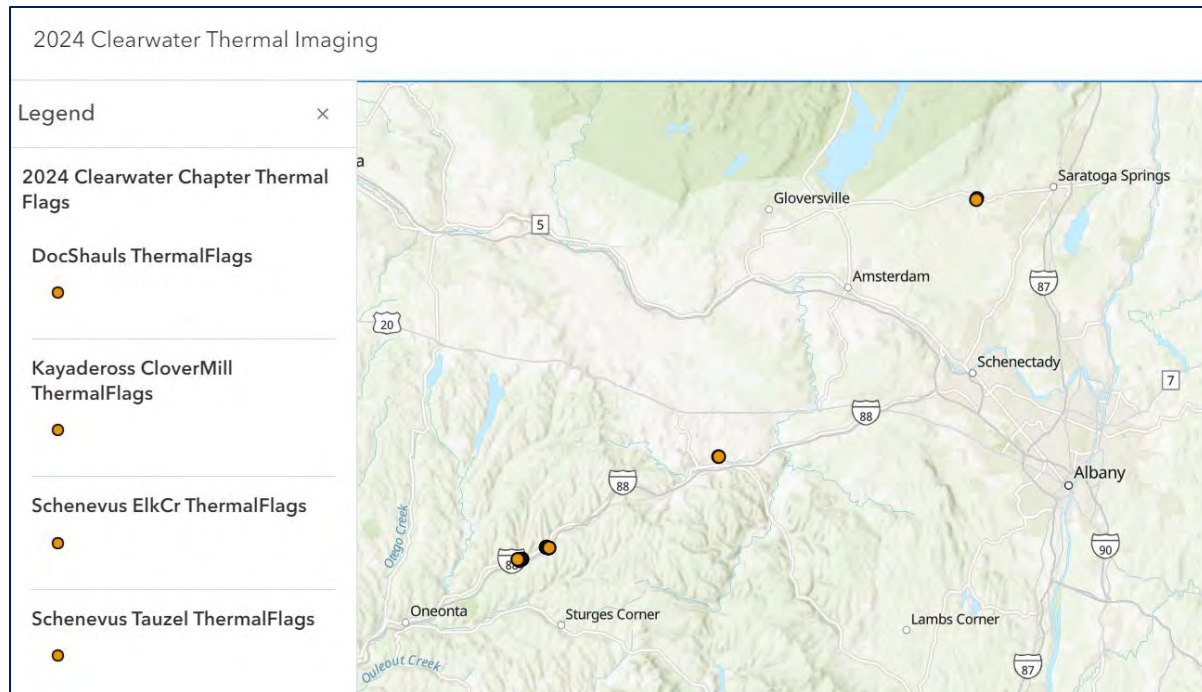
Drones as a Survey and Monitoring Aid



Winter of 2024 -

Clearwater requested sites

- Kayaderos @ Clover Mill
- Doc Schauls Spring Creek
- Schenevus @ Elk Creek
- Schenevus @ Tauzel Farm



Drones as a Survey and Monitoring Aid

Winter of 2024 -

Clearwater requested sites

- Kayaderos @ Clover Mill
- Doc Schauls Spring Creek
- Schenevus @ Elk Creek
- **Schenevus @ Tauzel Farm**

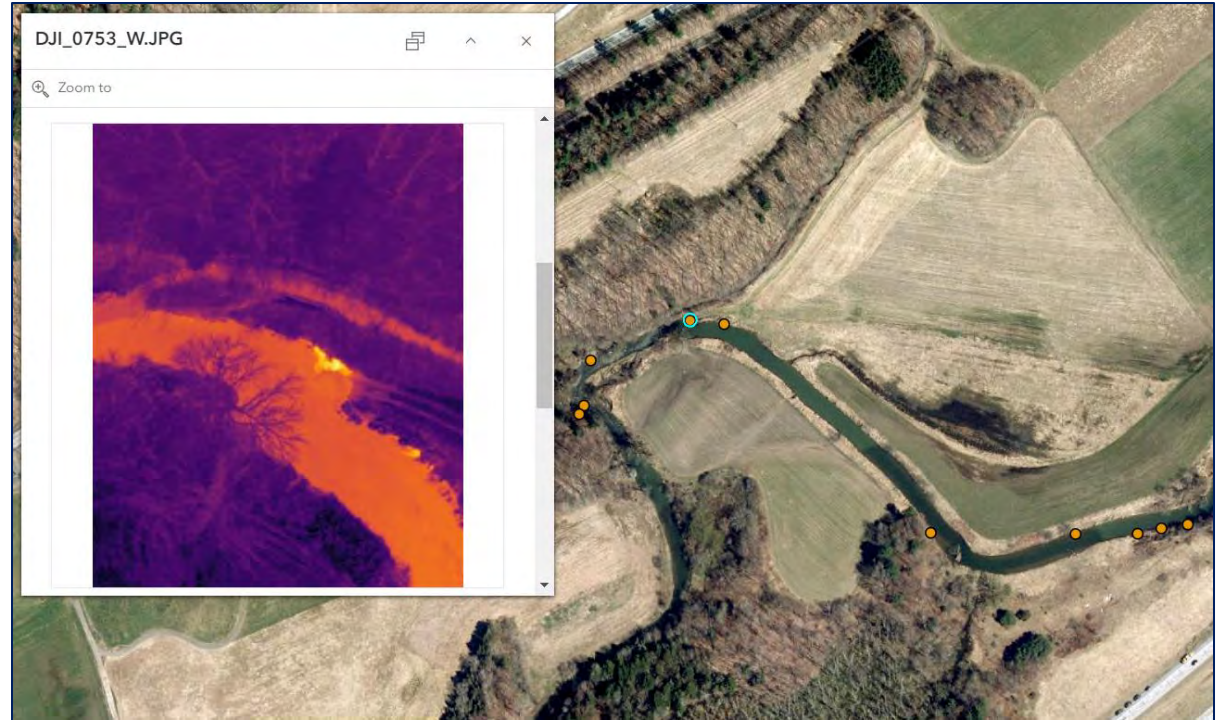


Drones as a Survey and Monitoring Aid

Winter of 2024 -

Clearwater requested sites

- Kayaderos @ Clover Mill
- Doc Schauls Spring Creek
- Schenevus @ Elk Creek
- **Schenevus @ Tauzel Farm**



Review data, determine initial sites for field verification

- Largest inputs to be reviewed first

For field verification, ensure you have GPS locations programmed

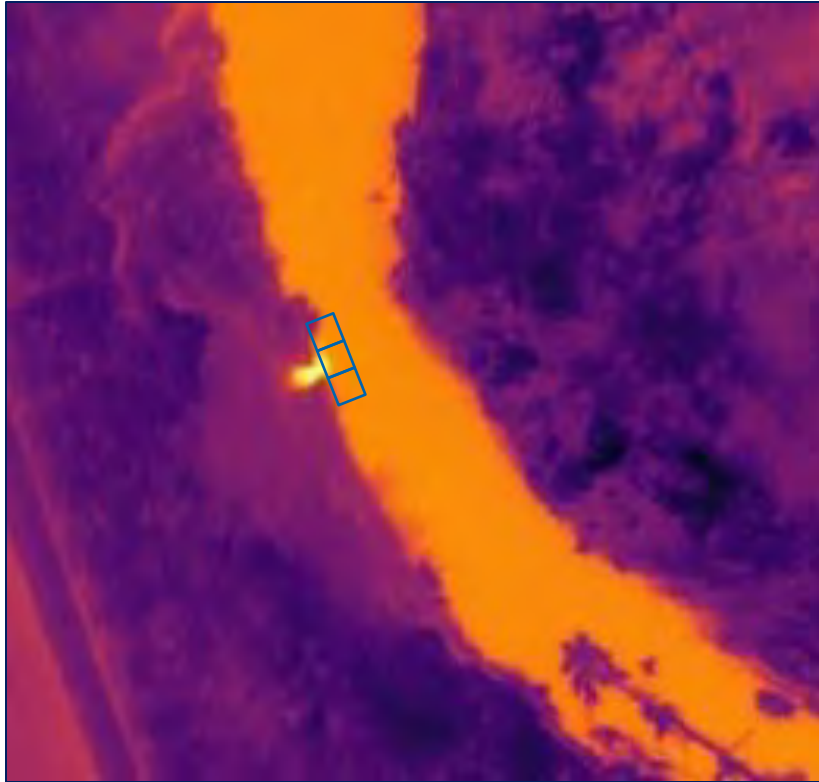
- Photos of orthoimagery with point locations will help in locating inputs

Qualitative – are there trout visible associated with the thermal input?

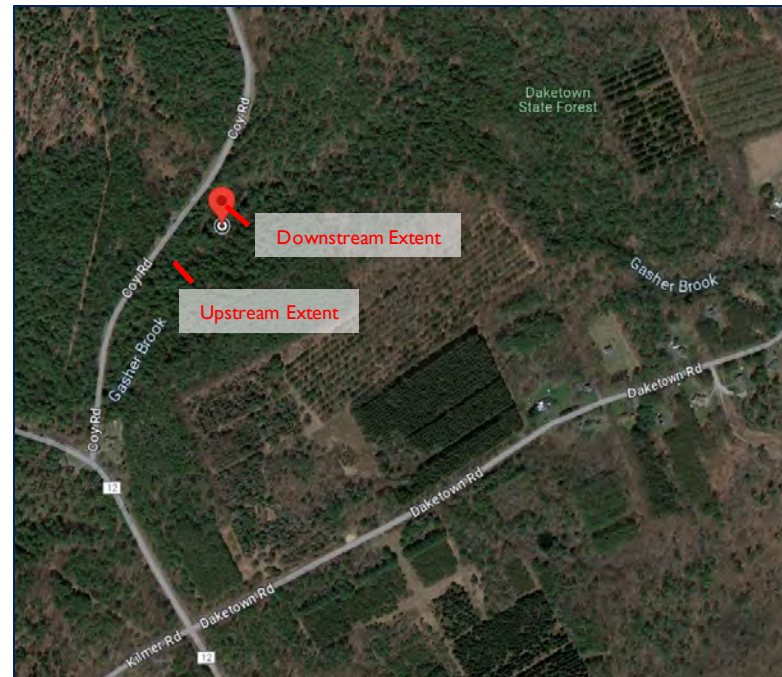
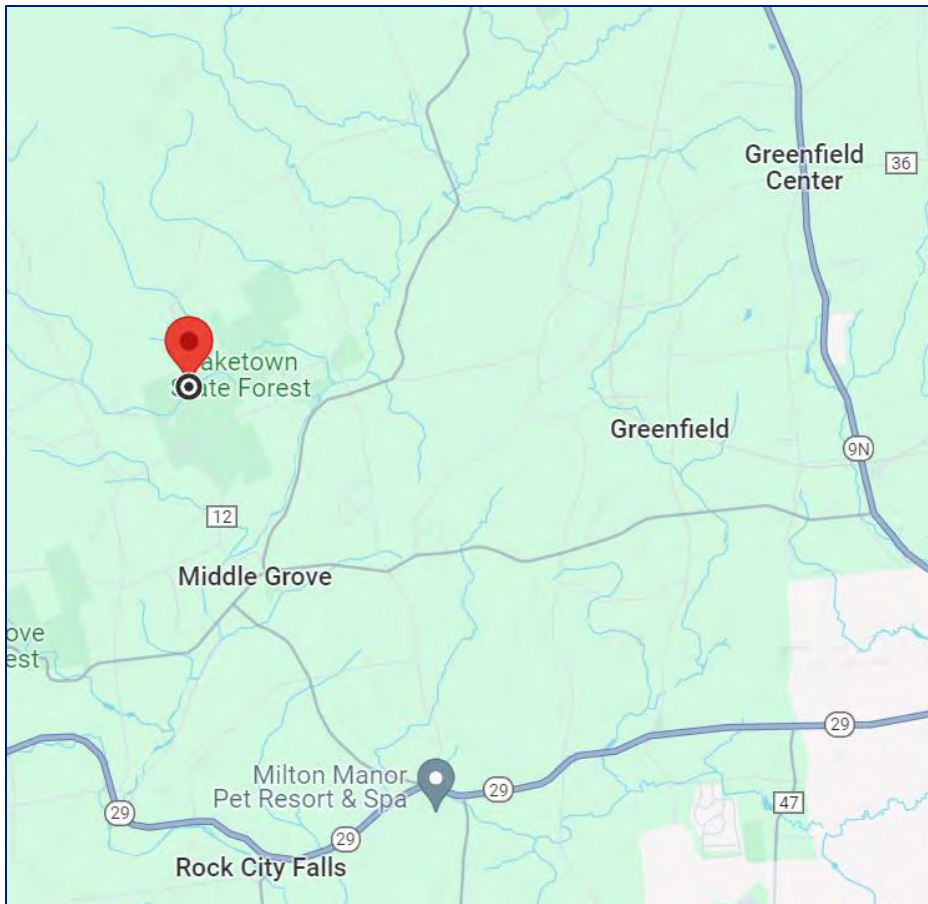
Quantitative – is the water colder associated with the thermal input and to what degree?

- Record temperatures on an approximately 1-foot grid from the input until an ambient temperature is reached in all directions away from the input

Quantitative Measurement



Gasher Brook – Daketown State Forest Habitat Improvement Project, Saratoga County, NY



Address: Daketown State Forest, Coy Rd, Greenfield Center, NY 12833

Location Description: 0.16 miles NNE of Coy Rd / Lake Desolation Rd intersection.

HUC12: 020200030403

Latitude/Longitude: 43.107479, -73.926518

Gasher Brook – Daketown State Forest Habitat Improvement Project

Saratoga County, NY



Project Goals:

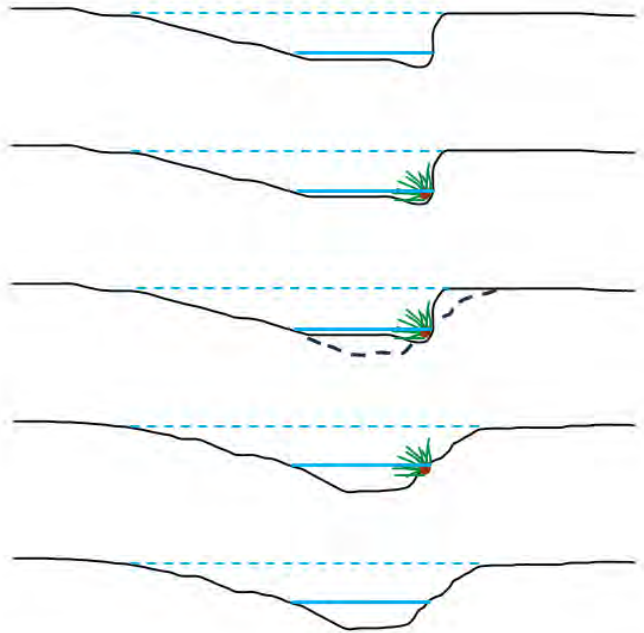
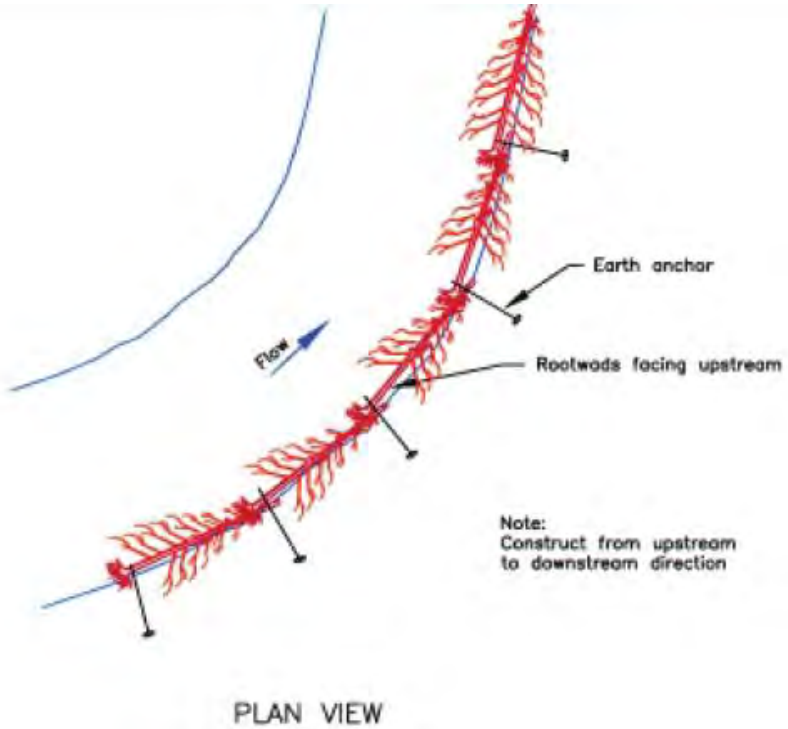
- Improve stream stability and in-stream habitat for wild and native trout throughout ~100 meters of Gasher Brook.
- Increase lateral connectivity, so flood energy may be dissipated rather than focused on vulnerable banks.
- Retain fine sediment with conifers on the low-energy side of the stream.
- Conduct biological, habitat, and geomorphic monitoring to ensure project effectiveness and establish viability of future expansion.
- Minimize project footprint, maintain mature vegetation.

Tasks	In Progress	Complete
Final DEC Approval and Permitting	X	
Pre-Restoration Monitoring <ul style="list-style-type: none"> • Large Woody Debris Index • Geomorphic Assessment • Fish Population Survey 		X
Deliver Materials to the Site		
Complete All In-Stream Work		
Post-Restoration Monitoring <ul style="list-style-type: none"> • Large Woody Debris Index • Geomorphic Assessment • Fish Population Survey 		
Evaluate and Establish Next Steps		



Gasher Brook - Class C(T) tributary to Kayaderoseras Creek. The project reach is within the Daketown State Forest, where there are known wild populations of brook and brown trout.

Gasher Brook – Daketown State Forest Habitat Improvement Project Saratoga County, NY



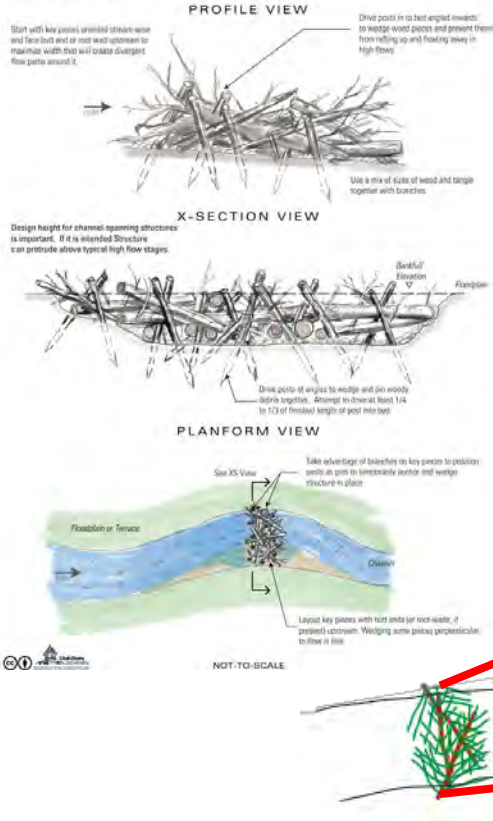
Washington Department of Fish and Wildlife, 2002

Proposed Conditions – Conifer Bank Roughening

Gasher Brook – Daketown State Forest Habitat Improvement Project Saratoga County, NY

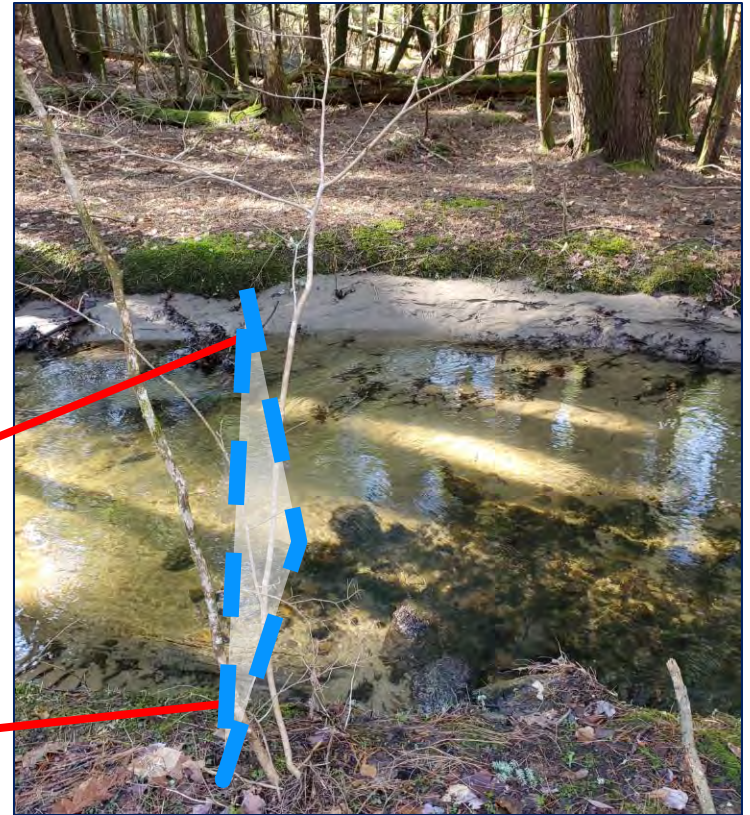


Channel Spanning PALS



Raise grade ~4" in transition between two bends

- Retain fine sediment upstream
- Increase floodplain connectivity by decreasing incision
- Improve upstream pool depth
- Organic material for aquatic organisms



Proposed Conditions – (Low Profile) Channel Spanning Post-Assisted Log Structure

Gasher Brook – Daketown State Forest Habitat Improvement Project Saratoga County, NY



USED CHRISTMAS TREES OR CONIFER TOPS

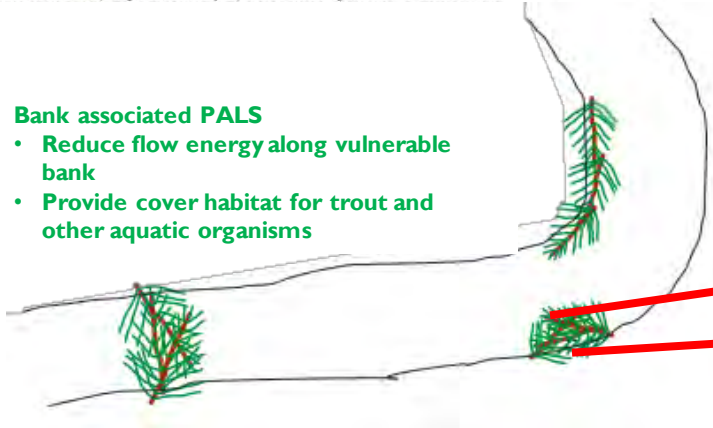
Use top of a conifer or disused Christmas tree as key piece and position with butt end facing upstream.



Figure 27 – Ideas for material substitutions with small root-wads and discarded/recycled Christmas trees or tops off of conifers. Smaller PALS like these can also be helpful to start with in streams and rivers with higher flow, to build something small and get it anchored, and then start piling on more material and pining it as necessary to produce something like found in the schematics.

Bank associated PALS

- Reduce flow energy along vulnerable bank
- Provide cover habitat for trout and other aquatic organisms



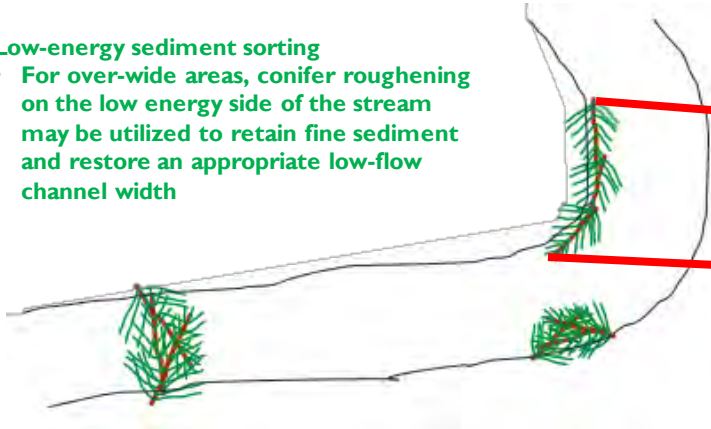
Proposed Conditions – (Low Profile) Channel Spanning Post-Assisted Log Structure

Gasher Brook – Daketown State Forest Habitat Improvement Project Saratoga County, NY



Low-energy sediment sorting

- For over-wide areas, conifer roughening on the low energy side of the stream may be utilized to retain fine sediment and restore an appropriate low-flow channel width



Proposed Conditions – (Low Profile) Channel Spanning Post-Assisted Log Structure

Battenkill Updates

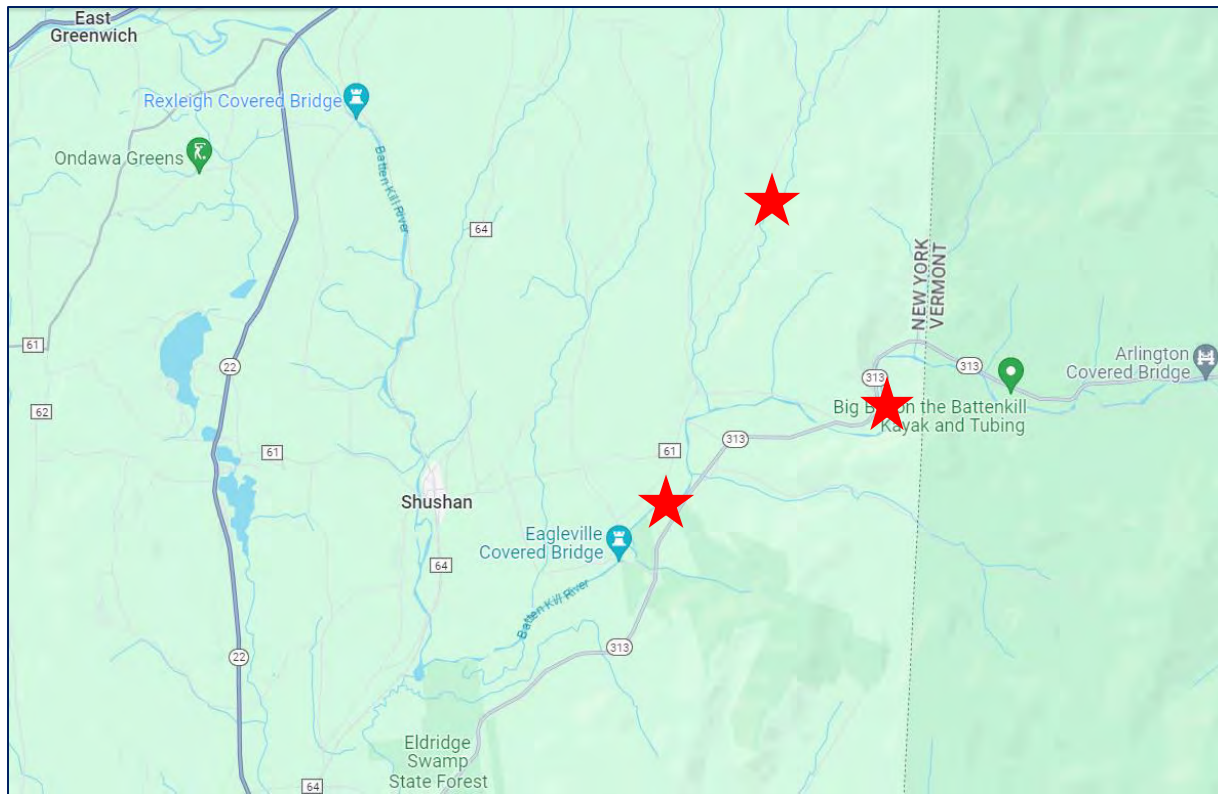


Entering 5th Year!

3 Projects Planned in NY for 2024

- Camden Creek – Pollak Property
- Roadside Park – Habitat Enhancement
- Extension of 2022 Eagleville Project

[Google Earth Project](#)





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[@tubattenkillhri](#)

[@tu_northeast](#)

