

Scott Watershed Informational Forum (SWIF) Field Tour 2022



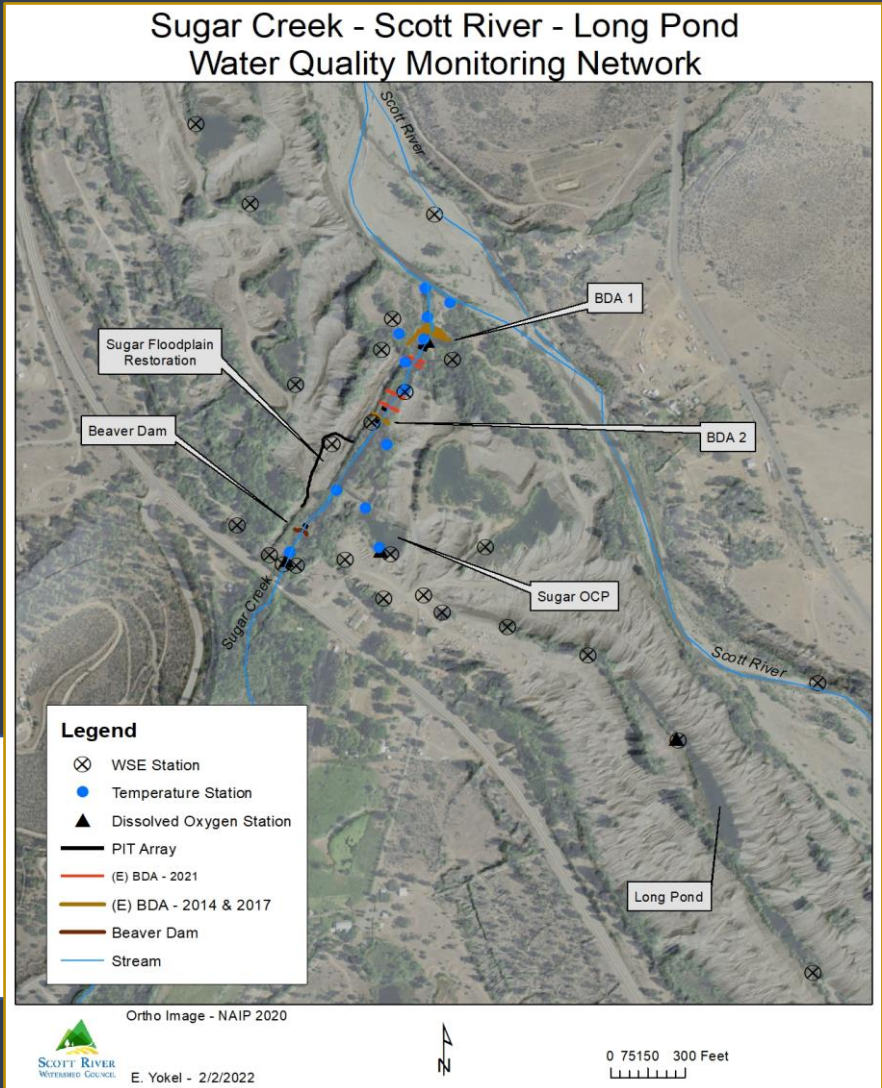


Sugar Creek Restoration Complex

In 2014, SRWC along with its project partners constructed California's first permitted series of Beaver Dam Analogues (BDAs). Today's tour is about this journey of how our work and understanding has evolved and how a culmination of different techniques now work in concert to help provide critical slow water habitat for Coho Salmon.



- Beaver Dam Analogues (BDAs) Construction
 - 2014, 2017, 2021
- Beaver Dam Analogues (BDAs) Maintenance
 - 2015, 2016, 2017, 2018, 2019, 2020, 2021
- Existing pond connected to Sugar Creek (Siskiyou RCD project)
 - 2015
- Constructed floodplain
 - 2020
- Riparian Planting
 - 2017, 2018, 2020, 2022
- Monitoring 2014-2022
 - Fish Utilization
 - Surface Water Elevations
 - Water Quality
 - Beaver Utilization
 - Food Web
 - Geomorphic Change
 - Discharge (streamflow)



Historic Orthoimagery

1955

1965

1955 Image - DDC 13P-146

1965 Image - DDC 5FF-7

E. Yokel - 2/14/2020

0 150 300 600 Feet

Discharge Measurement Summary

Site name	Sugar RKM1.0		
Site number	DM		
Operator name	Sugar RKM1_0_20210630.ft		
Comment	Gauge Height start 1.17ft /end 1.16ft		
Start time	6/30/2021 11:42 AM	Sensor type	Top Setting
End time	6/30/2021 12:33 PM	Handheld serial number	FT2H2034003
Start location latitude	41.32829	Probe serial number	FT2P2034026
Start location longitude	-122.82204	Probe firmware	1.30
Calculations engine	FlowTracker2	Handheld software	1.7
# Stations	32	Avg interval (s)	40
Total width (ft)	16.30	Total area (ft ²)	9.42
Mean SNR (dB)	15	Wetted Perimeter (ft)	16.54
Mean temp (°C)	20.33	Mean depth (ft)	0.58
		Mean velocity (ft/s)	0.08
		Max depth (ft)	0.88
		Max velocity (ft/s)	0.17

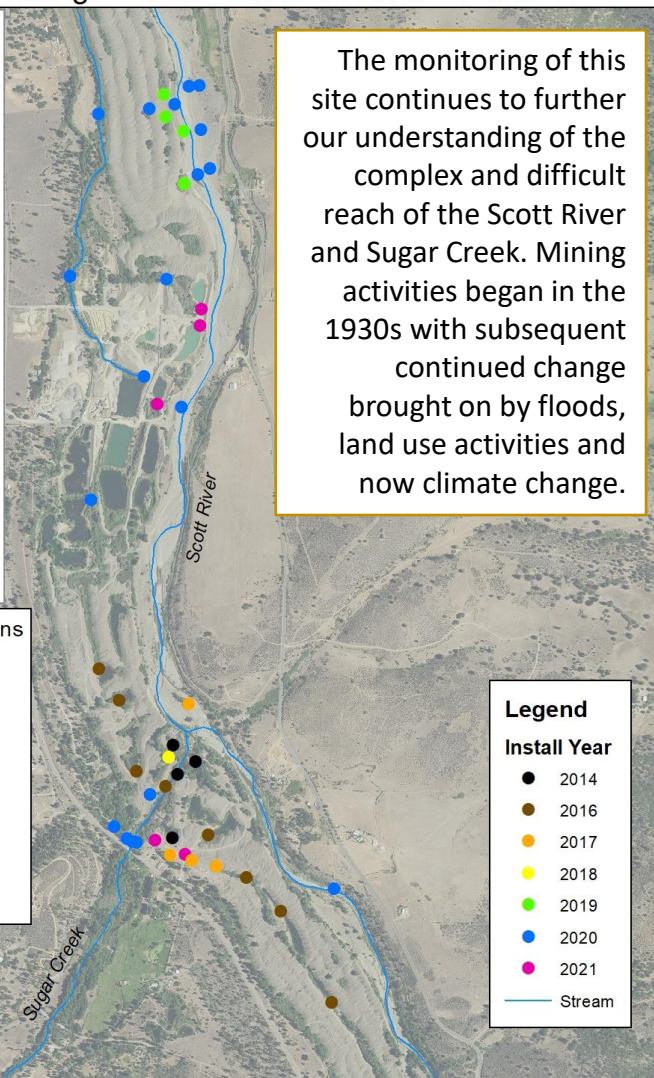


Scott River Tailings - Water Surface Elevation Station

Sugar Creek BDA Pond 1
Water Surface Elevation - WY2014 - WY2021



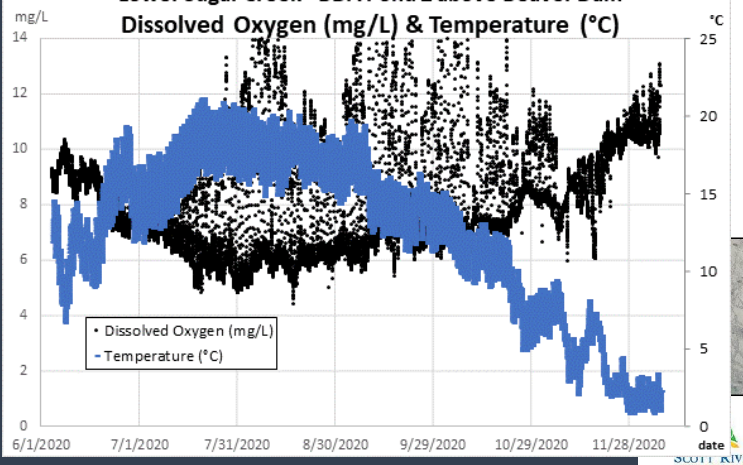
The monitoring of this site continues to further our understanding of the complex and difficult reach of the Scott River and Sugar Creek. Mining activities began in the 1930s with subsequent continued change brought on by floods, land use activities and now climate change.



Number of WSE Stations Installed by Year

2014	- 4
2016	- 8
2017	- 4
2018	- 1
2019	- 4
2020	- 19
2021	- 5
Total	- 45

Lower Sugar Creek - BDA Pond 2 above Beaver Dam
Dissolved Oxygen (mg/L) & Temperature (°C)



Ortho Imagery - NAIP 2020

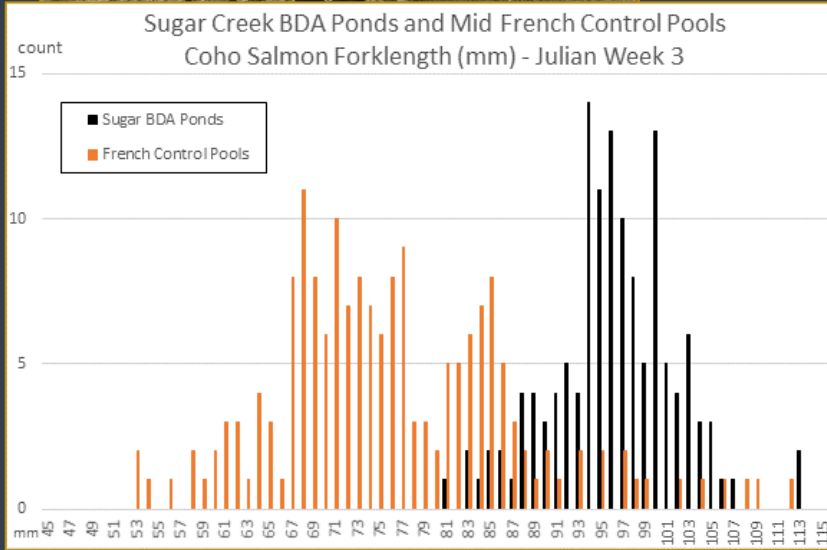
E. Yokel - 12/6/2021

0 600 1,200 2,400 Feet

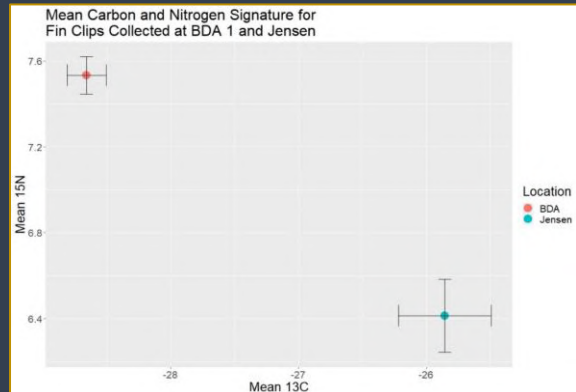
Sugar Creek Restoration Complex



Date	Species	Sample Location	PIT Code	FL	WT	Mark	Recap	Comment
7/21/2021	Coho	Sugar BDA Pond 1	989001039966589	77	5	Y		Relocated to Sugar OCP
1/18/2022	Coho	Sugar BDA Pond 2 - Beaver Dam Pond	989001039966589	92	7.8		Y	
7/8/2021	Coho	Sugar BDA Pond 1	989001039966667	76	5.4	Y		Relocated to SugarBeaver Dam Pond
1/18/2022	Coho	Sugar BDA Pond 2 - Beaver Dam Pond	989001039966667	104	10.9		Y	
7/8/2021	Coho	Sugar BDA Pond 1	989001039966650	74	4.8	Y		Relocated to SugarBeaver Dam Pond
1/18/2022	Coho	Sugar BDA Pond 2 - Beaver Dam Pond	989001039966650	98	8.3		Y	
7/8/2021	Coho	Sugar BDA Pond 1	989001039966585	70	4.1	Y		Relocated to SugarBeaver Dam Pond
1/18/2022	Coho	Sugar BDA Pond 2 - Beaver Dam Pond	989001039966585	99	9		Y	
7/21/2021	Coho	Sugar BDA Pond 1	989001039966239	77	5	Y		Relocated to Sugar OCP
1/18/2022	Coho	Sugar BDA Pond 2	989001039966239	98	9.2		Y	
7/8/2021	Coho	Sugar BDA Pond 1	989001039966301	70	3.9	Y		Relocated to Sugar OCP
1/18/2022	Coho	Sugar BDA Pond 2	989001039966301	91	7.6		Y	
7/21/2021	Coho	Sugar BDA Pond 1	989001039966646	73	4.5	Y		Relocated to Sugar OCP
1/18/2022	Coho	Sugar BDA Pond 2	989001039966646	92	8		Y	
7/8/2021	Coho	Sugar BDA Pond 1	989001039966304	70	4.2	Y		Relocated to Sugar OCP
1/18/2022	Coho	Sugar BDA Pond 2	989001039966304	102	9.9		Y	



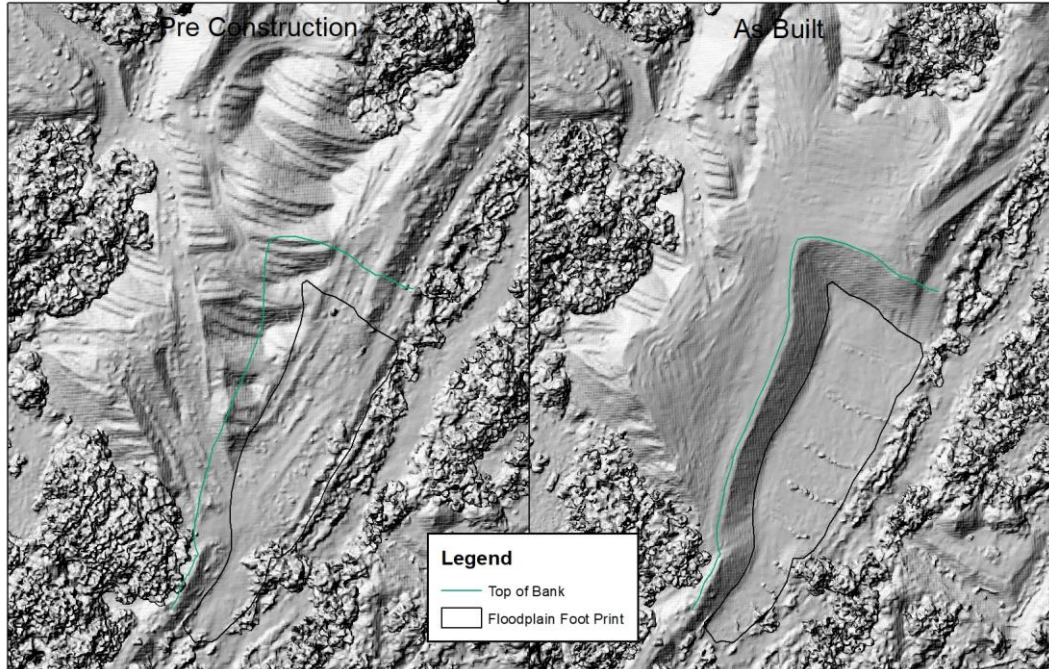
Carbon isotope signatures (a measure of the relative number of “heavy” to “light” pieces of carbon atoms in a tissue) typically don’t change much between producers (plants, algae, etc.) and consumers (aquatic bugs, fish). So, they can be a good indicator of what producers a consumer is relying on. For fish, this can tell us what plants or algae the insects they’re eating feed on. On Sugar Creek, the carbon signatures are different enough between the BDA habitat and Control Reach for Coho (Figure 1) that this may indicate that fish are relying on different aquatic insects and therefore different producers in these two habitats.



A plot showing the mean carbon and nitrogen isotope signatures for fin clips collected in BDA 1 and Control reaches of Sugar Creek. Units are $\delta^{13}C$ (‰) and $\delta^{15}N$ (‰).



Sugar Creek Floodplain Restoration - Hillshade Models
Photogrammetry



Sugar Creek Floodplain Restoration - Pre and Post Construction Ortho Photos

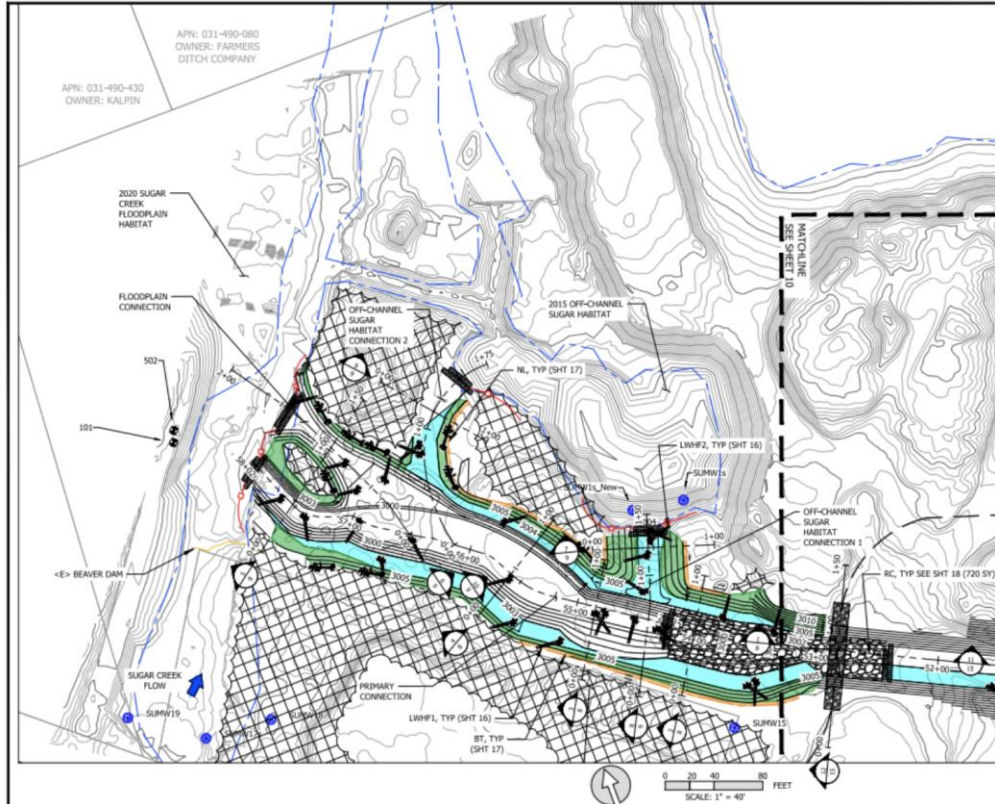


NORTH RIVERS
CONSTRUCTION

Long Pond Habitat Enhancement Design Project



The Long Pond Habitat Enhancement Design Project will establish connection to Sugar Creek and further enhance the complex mosaic of existing and restored aquatic and riparian habitat in the area. Stillwater Sciences is supporting SRWC with science-based engineering analysis and design development as part of the Project.



HABITAT FEATURE SCHEDULE			
TYPE	NORTHING	EASTING	KEY ELEVATION
LWHF1	237221.53	6335308.66	3005.00
LWHF1	2372247.64	6335274.49	3005.00
LWHF1	237213.33	6335222.89	3004.00
LWHF1	2372291.46	6335212.55	3004.00
LWHF1	2372260.59	6335196.90	2999.00
LWHF1	2372273.49	6335130.36	3005.00
LWHF1	2372302.29	6335101.07	3004.00
LWHF1	2372336.26	6335110.66	2999.00
LWHF1	2372379.05	6335138.53	3004.00
LWHF1	2372380.64	6335024.42	3004.00
LWHF1	2372418.91	6335014.21	2999.00
LWHF1	2372449.53	6335021.11	3000.00
LWHF1	2372473.50	6335019.85	3000.00
LWHF1	2372533.06	6335013.03	3000.00
LWHF1	2372386.46	6335056.15	2999.00
LWHF1	2372436.27	6334978.43	2999.00
LWHF1	2372454.25	6335056.97	3000.00
LWHF1	2372465.69	6334960.34	2999.00
LWHF2	2372176.41	6335272.22	3005.00
LWHF2	2372246.37	6335215.87	2999.00
LWHF2	2372324.55	6335244.69	3004.00
LWHF2	2372275.57	6335175.65	2999.00
LWHF2	2372462.19	6335082.02	3004.00
NL	2372332.09	6335185.66	3008.00
NL	2372380.82	6335014.92	3005.75
NL	2372429.67	6335104.09	3005.25
NL	2372462.74	6335112.38	3005.00
NL	2372399.79	6334978.26	3007.00
NL	2372473.99	6335056.67	3004.00
NL	2372489.91	6335041.24	3004.00
NL	2372462.56	6335009.39	3004.00
NL	2372516.70	6335025.33	3003.00

CUT AND FILL SUMMARY			
SITE	CUT (CU YD)	FILL (CU YD)	BALANCE (CU YD)
LONG POND PRIMARY CONNECTION WITH OFF-CHANNEL SUGAR HABITAT CONNECTIONS 1 & 2, AND FLOODPLAIN CONNECTION	7,950	50	7,900
FILL AREA 1*	0	39,500	-39,500
TOTAL	7,950	39,450	-31,500

* SITE LOCATED ON SHEET 12, INCLUDES APPROXIMATELY 2,150 CU YD FILL FROM HABITAT FEATURE AND PLANTING ZONE SOIL AMENDMENT OVER EXCAVATION.

GENERAL NOTES

- CONTRACTOR SHALL LIMIT EARTHWORK TO PERMANENT AND TEMPORARY FEATURES SHOWN ON THE PLANS AND PER DIRECTION OF CAR.
- DISTURBANCE OUTSIDE THE WORK SHOWN SHALL BE MINIMIZED.
- THE FILL AREA SHALL BE STABILIZED, WITH A MINIMIZED FOOTPRINT AND MATCHED EXISTING GRADES, TOP ELEVATION OF FILL AREA NOT TO EXCEED HIGHEST EXISTING GRADE TIE-IN PER DIRECTION OF CAR.
- NEGATIVE VALUES SHOWN IN CUT AND FILL SUMMARY TABLE DENOTE SITE FILL VOLUME DEFICIT, NEGATIVE BALANCE VOLUMES INDICATE SITES REQUIRING MORE FILL VOLUME THAN CUT VOLUME PER PLAN VIEW SHOWN ON SHEET.
- IF BEDROCK IS ENCOUNTERED ABOVE PROPOSED GRADE SHOWN, CONTRACT TO ADJUST PROPOSED GRADE ELEVATION TO MATCH EXISTING BEDROCK ELEVATION AND PER DIRECTION OF CAR.
- ESTABLISH PLANTING ZONES FOLLOWING APPROVAL BY CAR AND ENGINEER OF PROPOSED GRADE, SEE SHEETS 19 AND 20, AND SPECIAL PROVISIONS FOR PLANTING ZONE LAYOUT AND DETAILS.

LONG POND HABITAT ENHANCEMENT PROJECT - 100% DESIGN

SISKIYOU COUNTY, CA

Stillwater Sciences
180 C STREET SUITE 4
HEALY, CA 96131
TEL (970) 853-9697

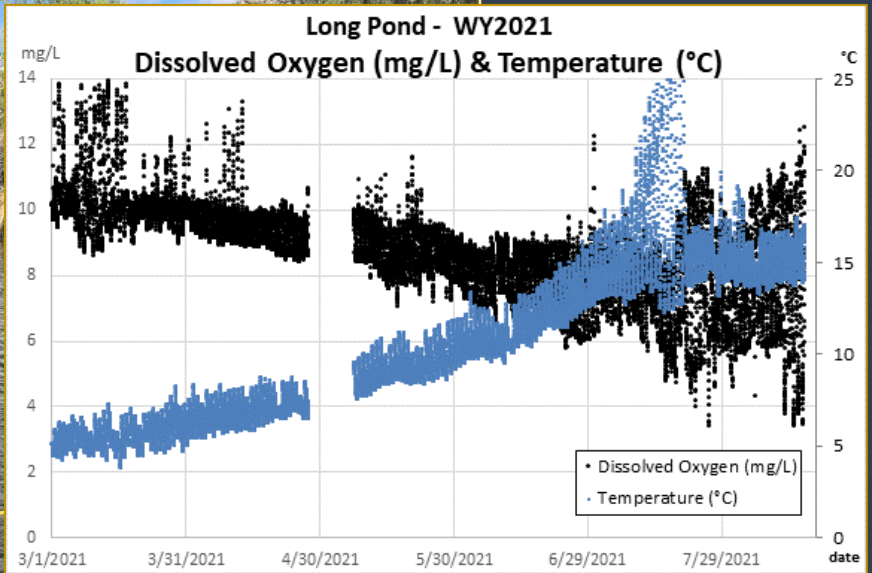
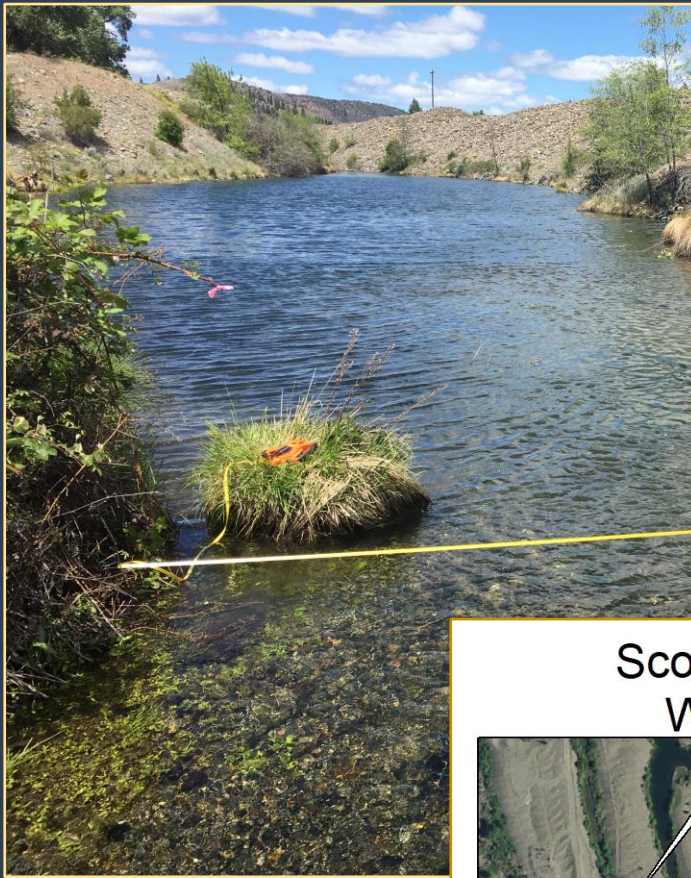
SCOTT RIVER WATERSHED COUNCIL
SCOTT RIVER WATERSHED COUNCIL
514 N STATE HIGHWAY 3
P.O. BOX 355
ETNA, CA 96027
530-598-2733

PROJECT NUMBER: 904.00
SCALE: AS NOTED
DATE: 12/3/21

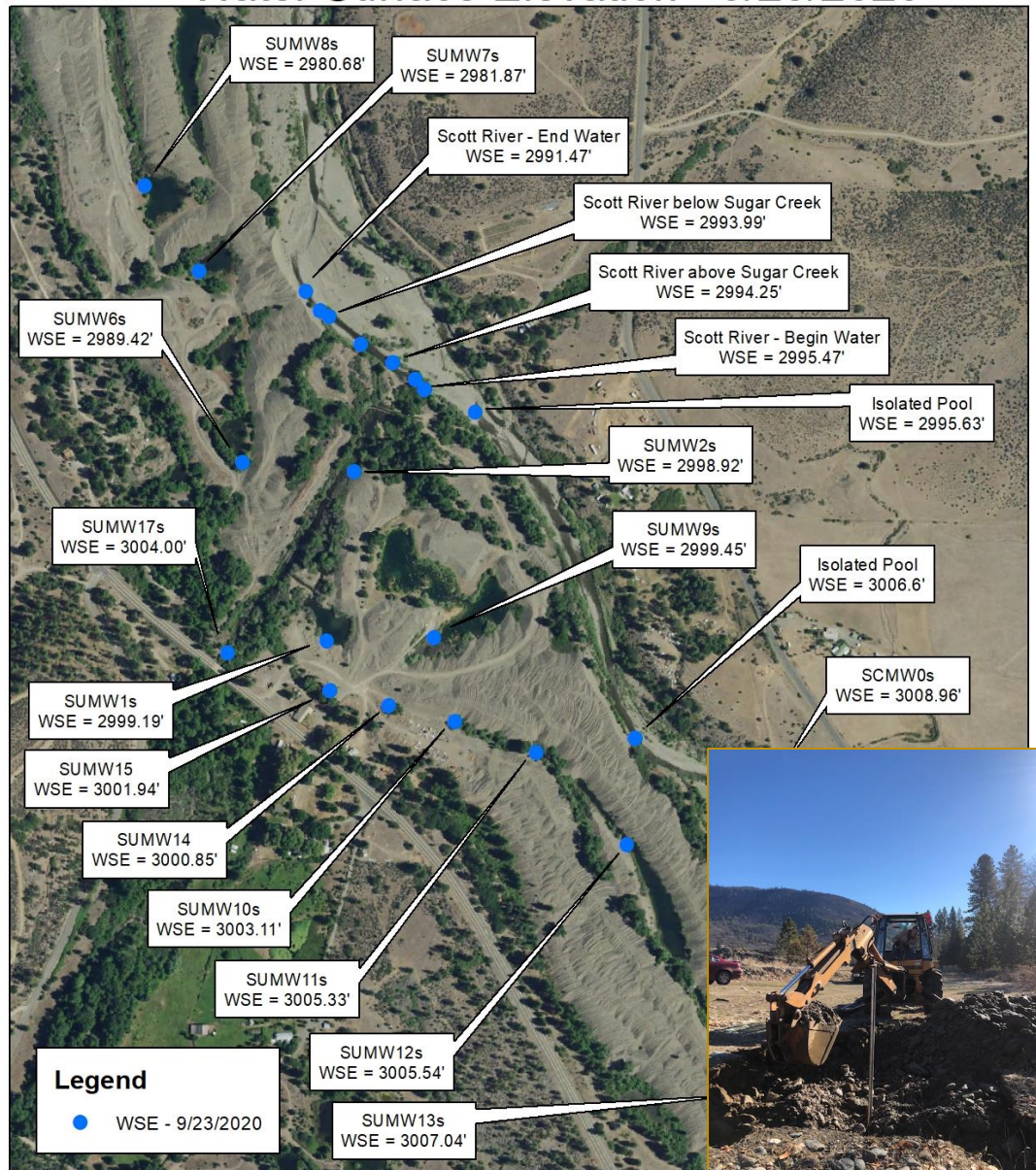
DESIGN: JS/RWK
DRAWN: HLG/RWK
CHECKED: JS/JM
APPROVED: JS/JM

LONG POND REST. STA 51+00 TO 58+00 PLAN

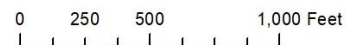
SHEET 7 OF 20



Scott River - Sugar Creek Tailings Reach Water Surface Elevation - 9/23/2020



Legend
 ● WSE - 9/23/2020

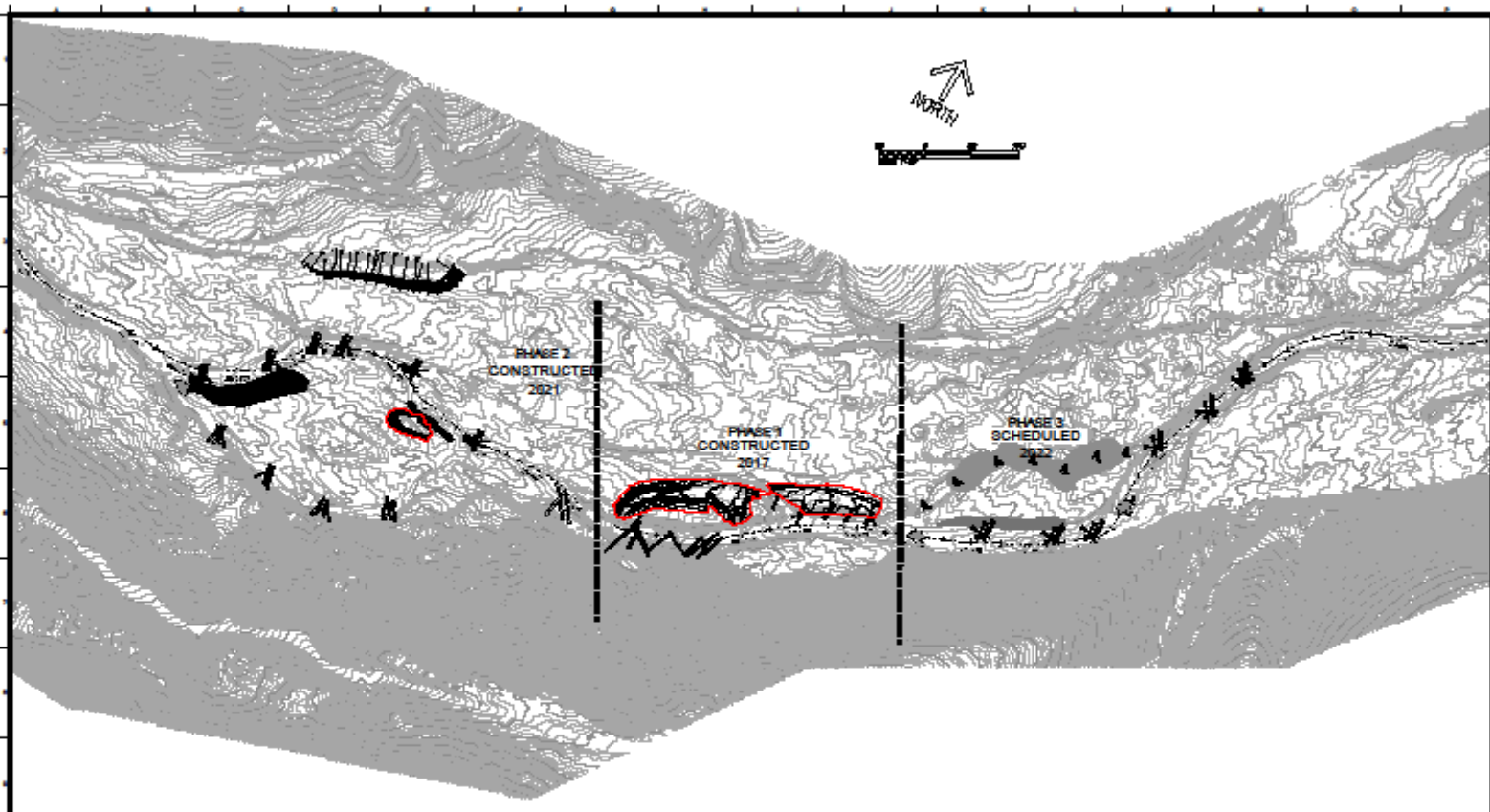


South Fork Floodplain Restoration

The South Fork Floodplain Restoration project is a multi-phased approach focused on restoring natural system function over an approximate 1-mile reach of the South Fork Scott River. California Trout and the Siskiyou RCD have partnered to develop this voluntary project with support from the U.S. Fish and Wildlife Service and multiple landowners.

Phase I implementation was completed in summer 2017 along 0.12 river miles of the project reach and includes 2 inset floodplains resulting in the removal of 1,900 yd³ of mining tailings, 3 chop-n-drop logjams, 5 large-wood habitat features, and side-channel excavation. Phase II was implemented in summer 2021 and includes 2 inset floodplains, 1 apex logjam, 6 large-wood structures, 5 chop-n-drop logjams, and 800 feet of side-channel enhancement. Phase III is fully funded and will include tailings excavation, side-channel enhancement, and large wood implementation. Construction is scheduled for early summer 2022.

Juvenile salmonid monitoring of the Phase I and II locations identified immediate use, with the vast majority of coho and steelhead trout being observed within constructed habitat. Likewise, improved floodplain function, riparian growth and surface water inundation is occurring throughout the inset areas.



California Trout
701 S. Mt. Shasta Blvd.
Mount Shasta, CA 96067
ph 530.908.3756

Cascade Stream Solutions
232 East Main, Suite 11
Medford, Oregon 97504
Phone (541) 874-0182

Category	Item	Date	By	Check
Design	Plan	14 January 2022		
	Station			
	Profile			
	Contract			
Construction	Contract			
	Permit Status			

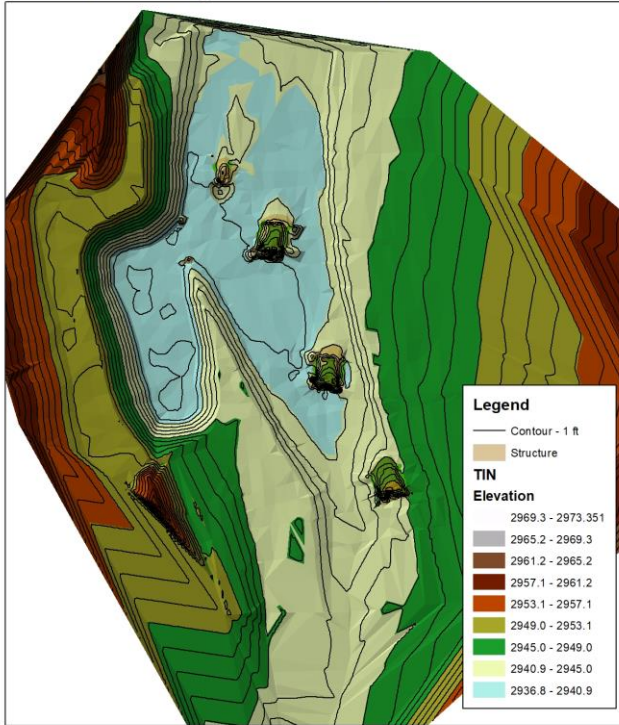
South Fork Scott River Habitat Enhancement Project - Phase II
Overview Plan

Sheet Number
1
Sheet 1 of 1

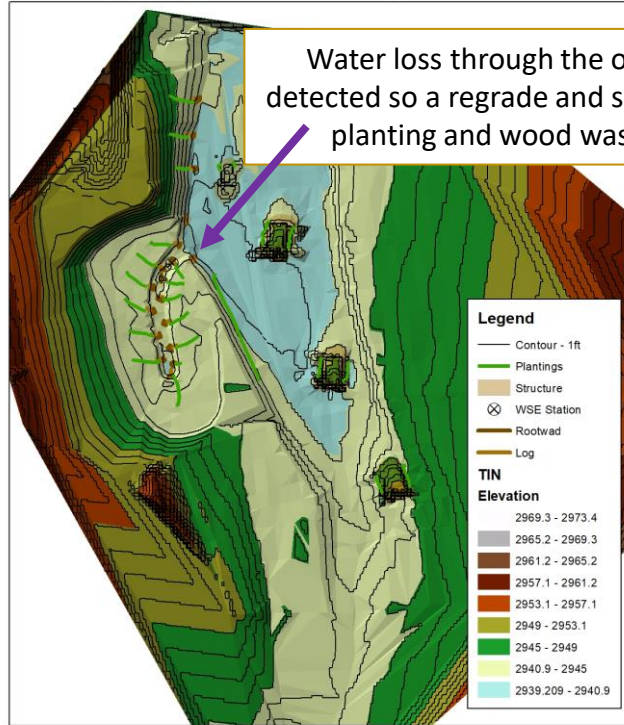
Scott River Habitat Enhancement & Restoration "Oasis" Project

Initial phase was done in 2020, including placement of large woody debris in the form of root wads, called engineered log jams (ELJs), riparian planting in the channel and created an off-channel alcove to create slow water habitat.

Scott River Tailings "Oasis" Restoration - 2020 - As Built



Scott River Tailings "Oasis" Alcove Regrade - 2021 - As Built

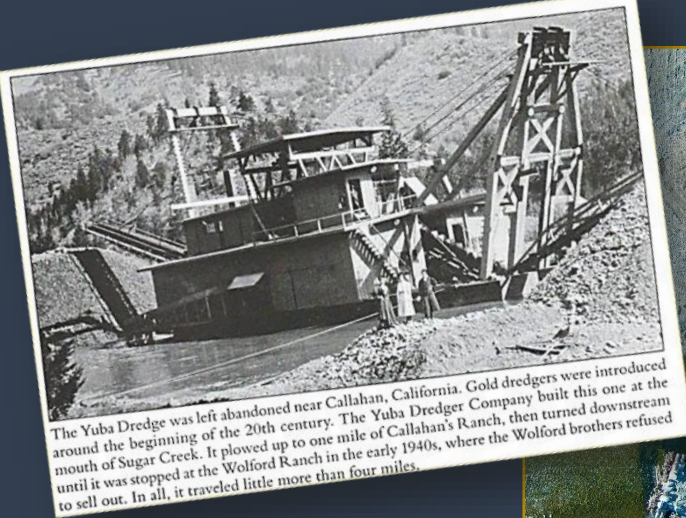


Water loss through the original alcove was detected so a regrade and sealing and additional planting and wood was added in 2021.



SCOTT RIVER WATERSHED COUNCIL E. Yokel - 11/4/2021

SCOTT RIVER WATERSHED COUNCIL E. Yokel - 11/4/2021



The Yuba Dredge was left abandoned near Callahan, California. Gold dredgers were introduced around the beginning of the 20th century. The Yuba Dredger Company built this one at the mouth of Sugar Creek. It plowed up to one mile of Callahan's Ranch, then turned downstream until it was stopped at the Wolford Ranch in the early 1940s, where the Wolford brothers refused to sell out. In all, it traveled little more than four miles.



All PIT Tags Detections from between 2/6/2020 – 1/25/2022

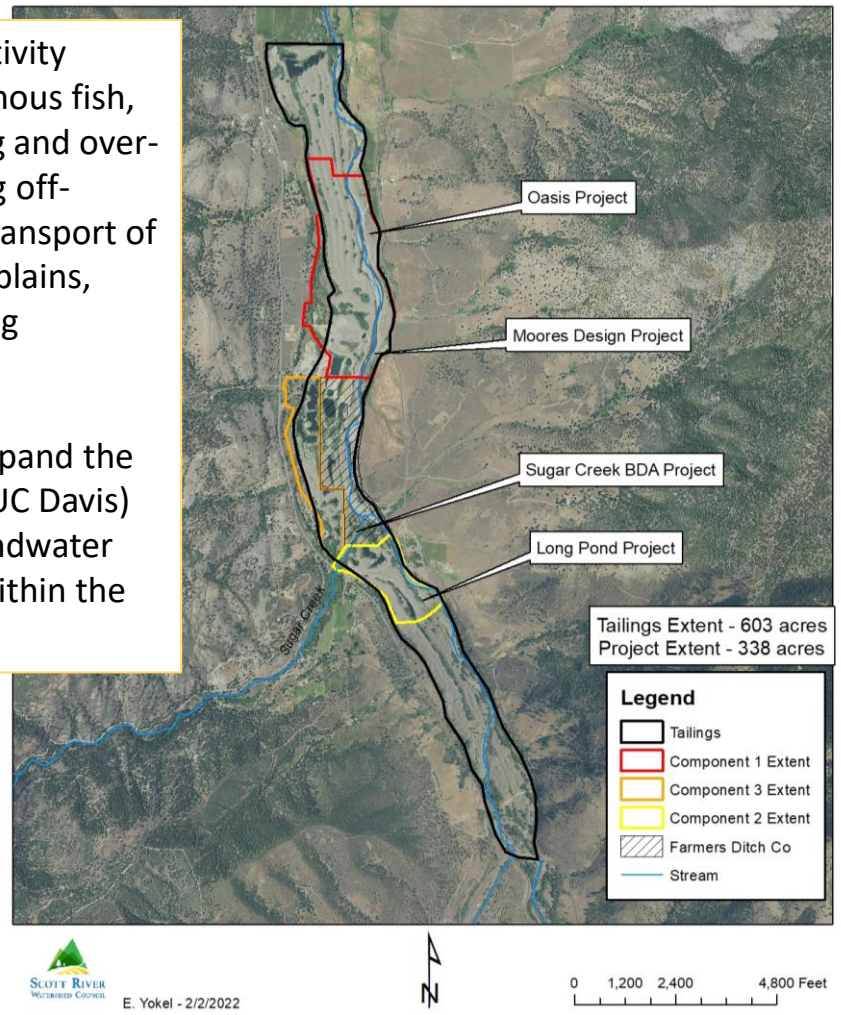
Array	Dates Detected		Unique Detects	
	First	Last	Adult Returns	Juvenile
Mainstem RKM 85.3	12/12/2021	1/2/2022	4	
Mainstem RKM 85.3	1/14/2021	5/30/2021		20
Alcove RKM 85.4	1/14/2021	5/30/2021		17
Alexander Pond RKM 85.7	1/14/2021	5/30/2021		2
Alexander Pond RKM 85.7	4/11/2020	6/2/2020		42



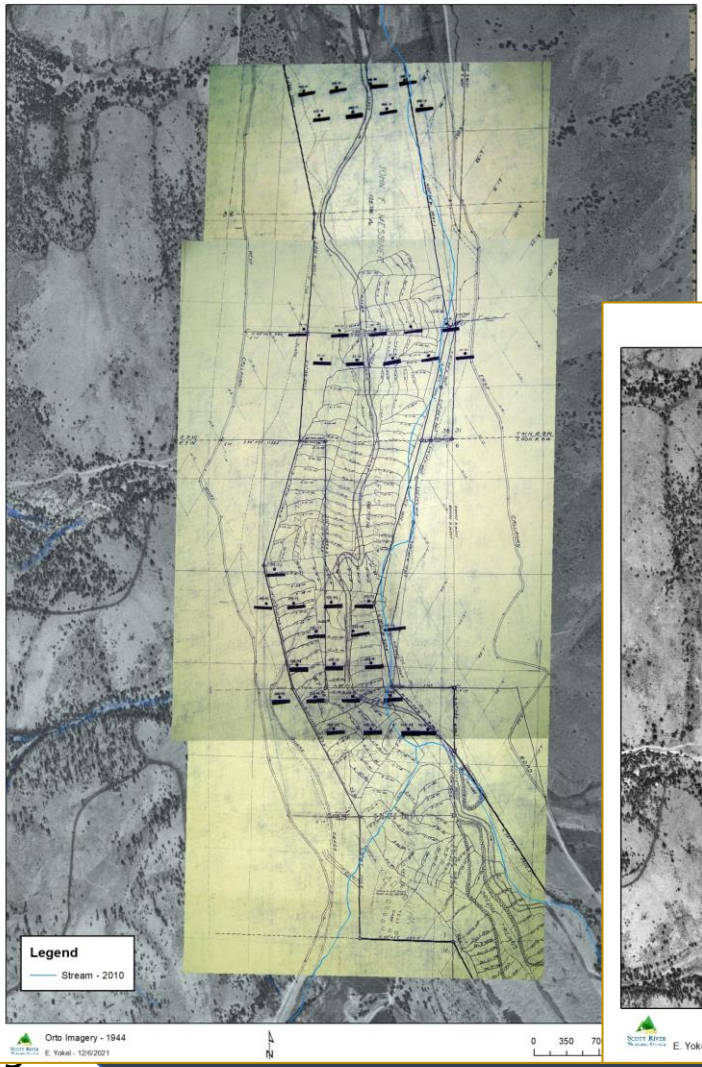
Scott River Tailings Streamflow and Ecological Benefit Restoration Planning Project

The goals of this project are to improve connectivity through 1.1 stream miles for migrating anadromous fish, offer slow, cold-water refugia for over-wintering and over-summering juvenile Coho Salmon by connecting off-channel habitat and to decrease downstream transport of sediment. Additionally, connect adjacent floodplains, creating seasonal wetland habitat and increasing groundwater recharge.

Project team is seeking additional funding to expand the scope and to incorporate Dr. Thomas Harter's (UC Davis) groundwater model to understanding the groundwater effects of restoration project or other actions within the Tailings reach.



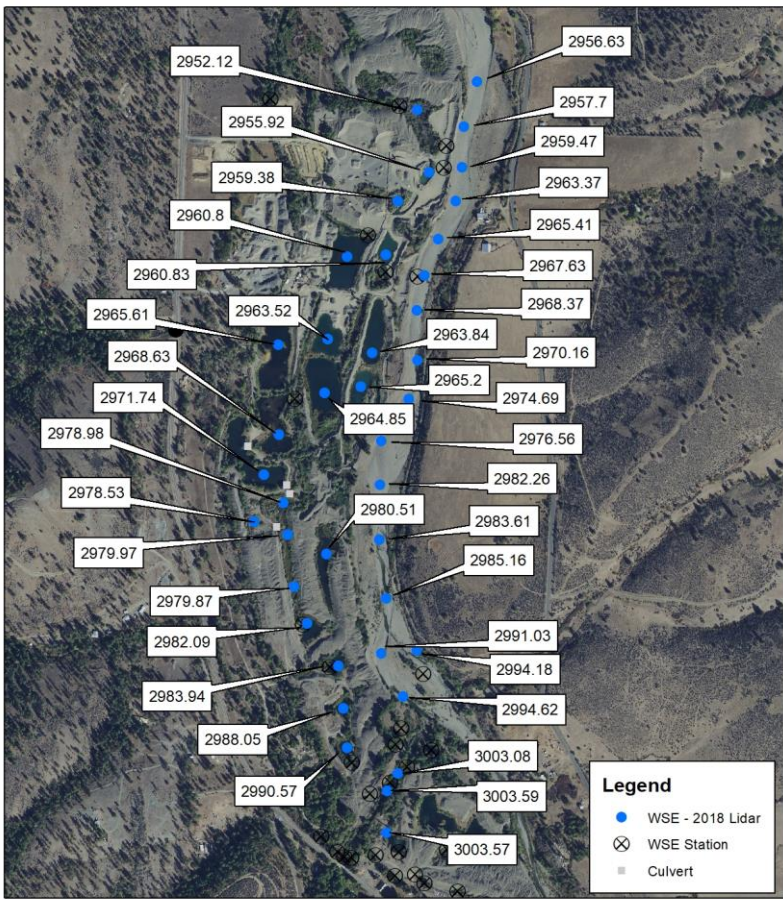
Scott River Tailings - Dredger Logs



Scott River Tailings - Historic Ortho Images



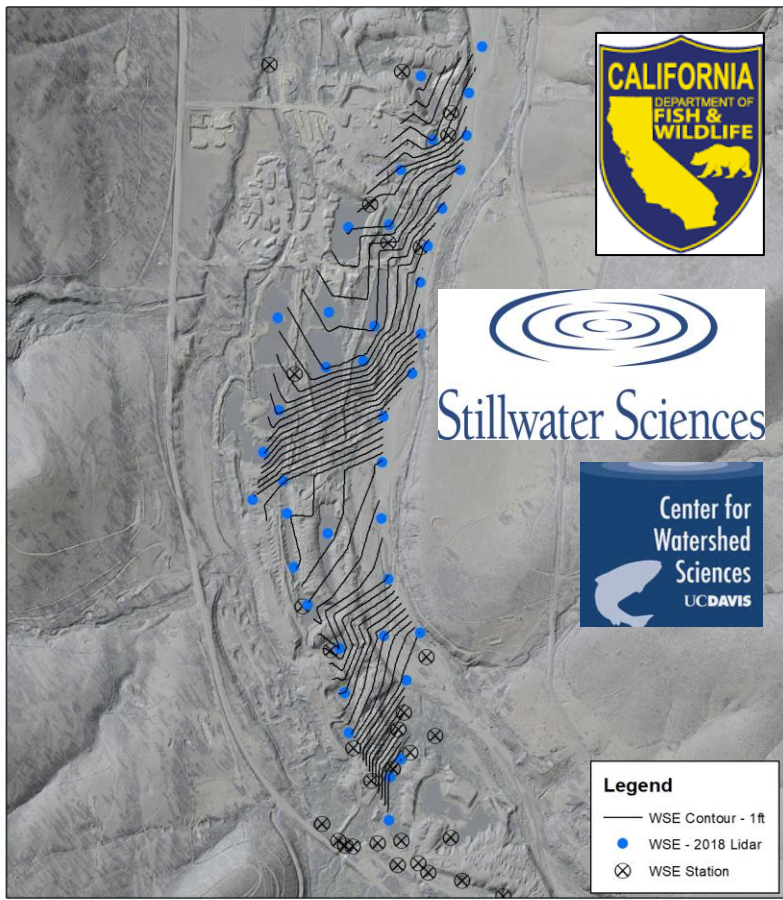
Water Surface Elevation - 2018 Lidar DEM - March 30, 2018



Orthoimagery - 2018 NAIP
 SCOTT RIVER WATERSHED CENTER
 E. Yokel - 2/8/2022

0 375 750 1,500 Feet

Water Surface Elevation Contours - 2018 Lidar DEM - March 30, 2018



Orthoimagery - 2018 NAIP
 Hillshade - 2018 Lidar DEM
 SCOTT RIVER WATERSHED CENTER
 E. Yokel - 2/8/2022

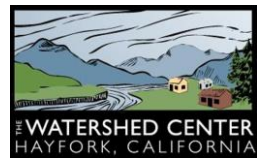
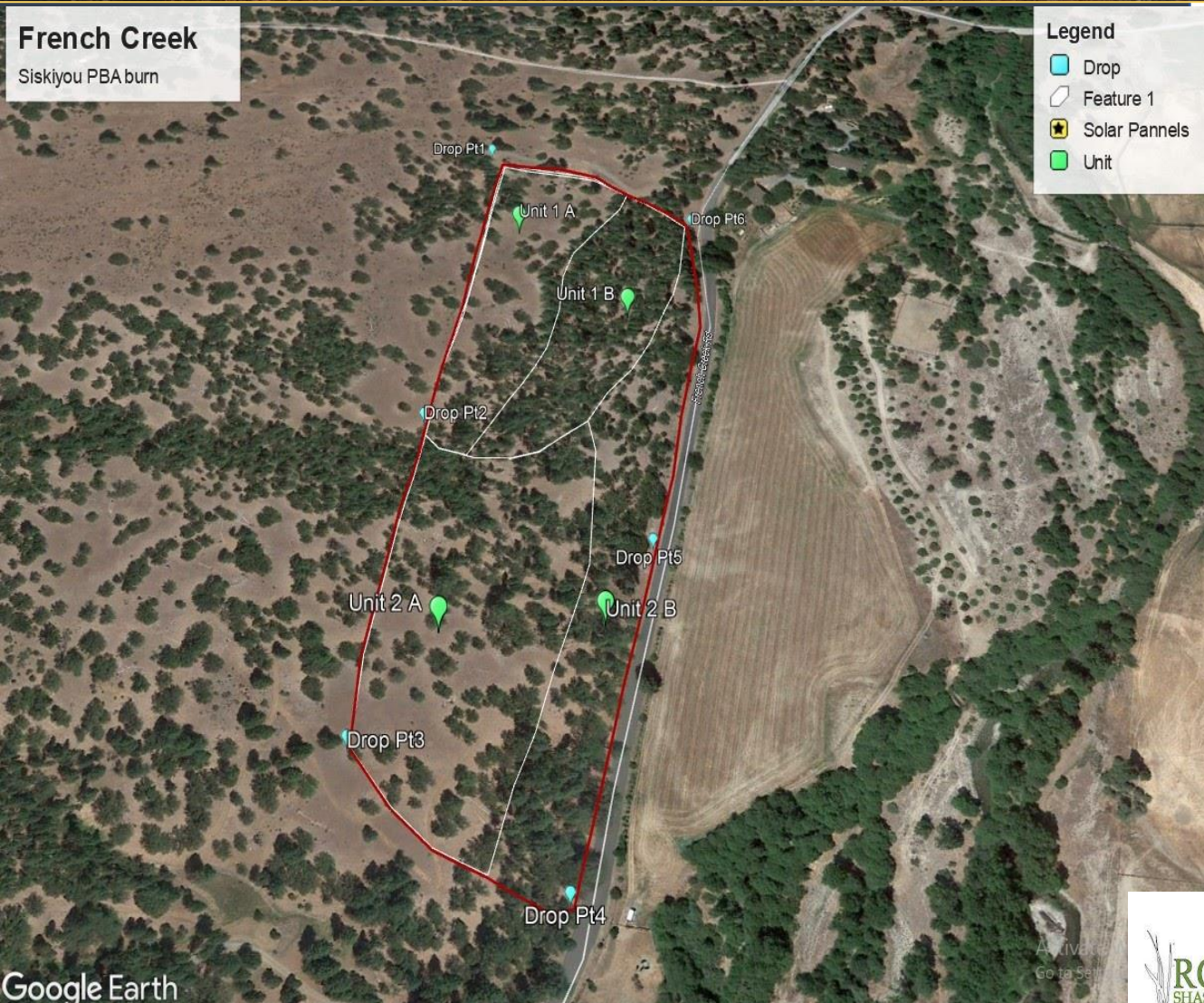
0 375 750 1,500 Feet



French Creek Prescribed Burn



French Creek
Siskiyou PBA burn



Google Earth



Innovative Soil Carbon Amendment Demonstration Using Locally Produced Biochar in Hay, Pasture, and Rangeland Production Systems



NORTH COAST RESOURCE PARTNERSHIP



The project will address the following research and outreach components to better understand how the use of biochar in our local agricultural setting may benefit growers:

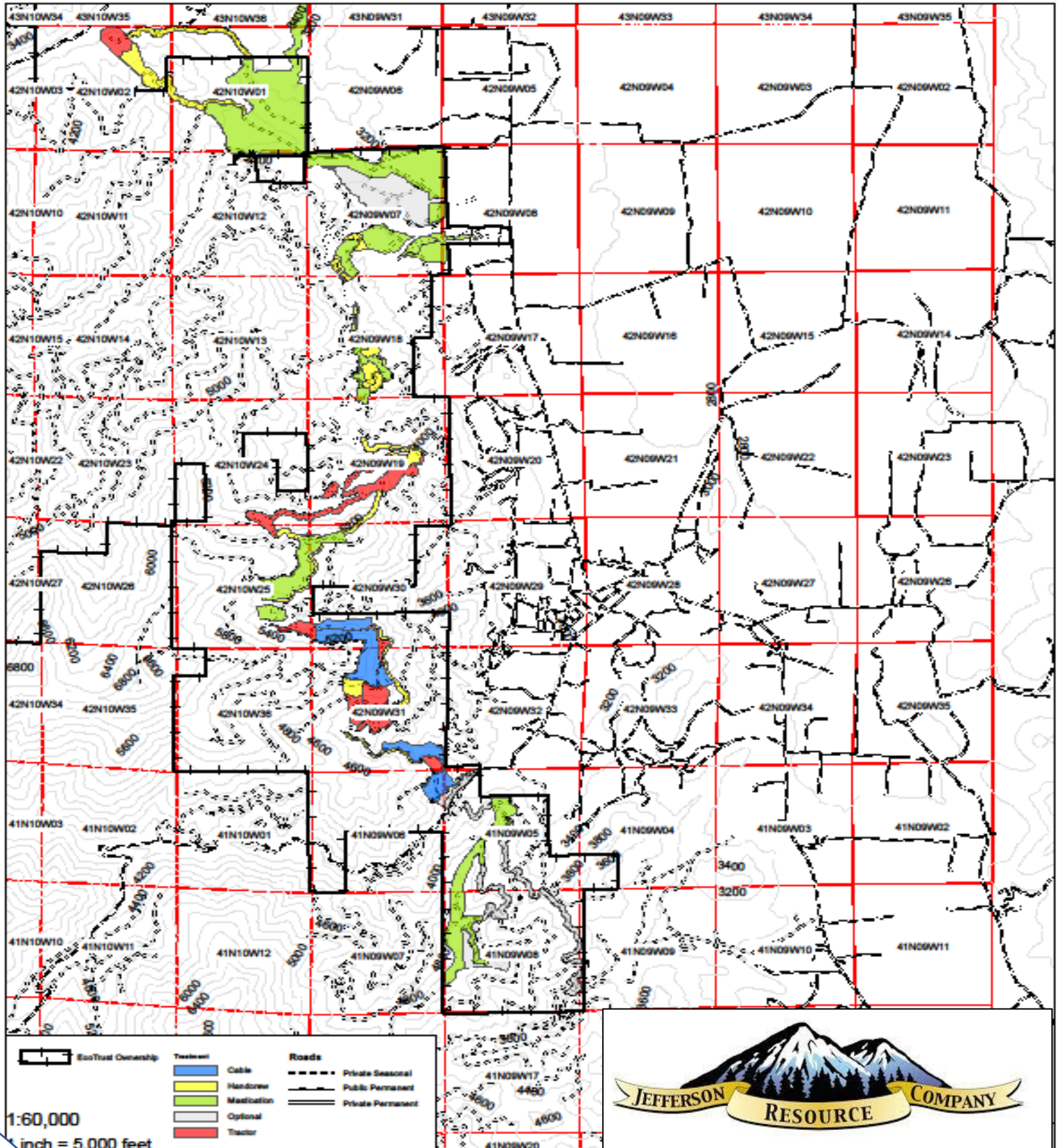
- Estimate carbon storage and increases in organic matter
- Potential to improve plant productivity and plant available water
- Calculate overall carbon footprint of biochar production and application
- Develop cost/benefit analysis for application costs
- Share research results and information to the public through field day, website resources, factsheet and professional presentation at a conference.



Scott Valley/Etna Fuel Reduction & Forest Resiliency Project

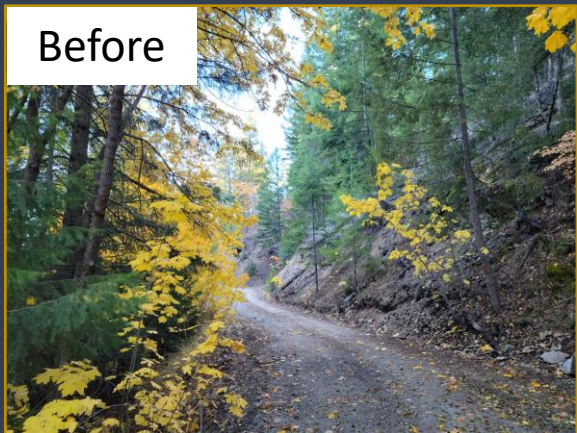
USGS Quads: Etna, Greenview
 Contour Interval: 40'
 Produced by: JRC GIS Dept.

Scott Valley/Etna Fuel Reduction and Forest Resiliency Project

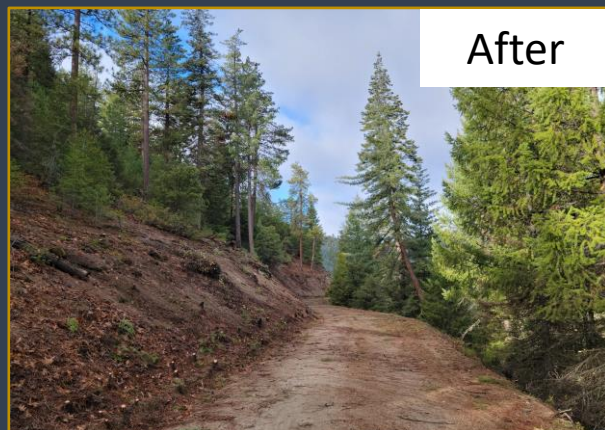
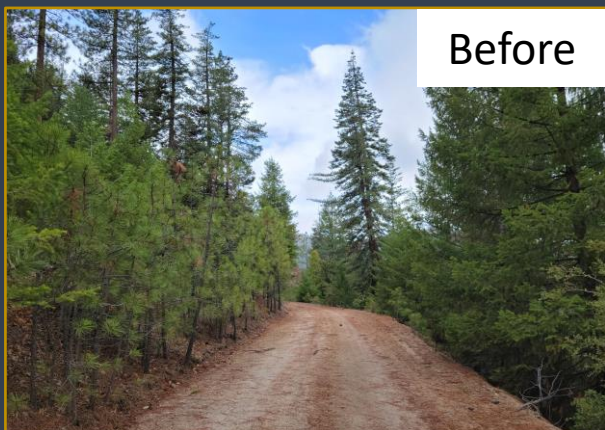


A fuel break along a 1200 acre stretching from Kidder Creek Orchard Camp to Ruffy Gap, southwest of Etna. Additional fuel reduction work around the Quartz Valley Indian Reservation is being done.

In 2014, the Log Fire burned approximately 1,600 acres of EFM land and in 2017 fire struck again, burning an additional 150 acres. Of those acres, 1,100 were considered to be high severity. This project reforested 1123 acres



EFM owns 36,685 acres of Scott Valley, including 274 miles of streams that feed the Scott River.



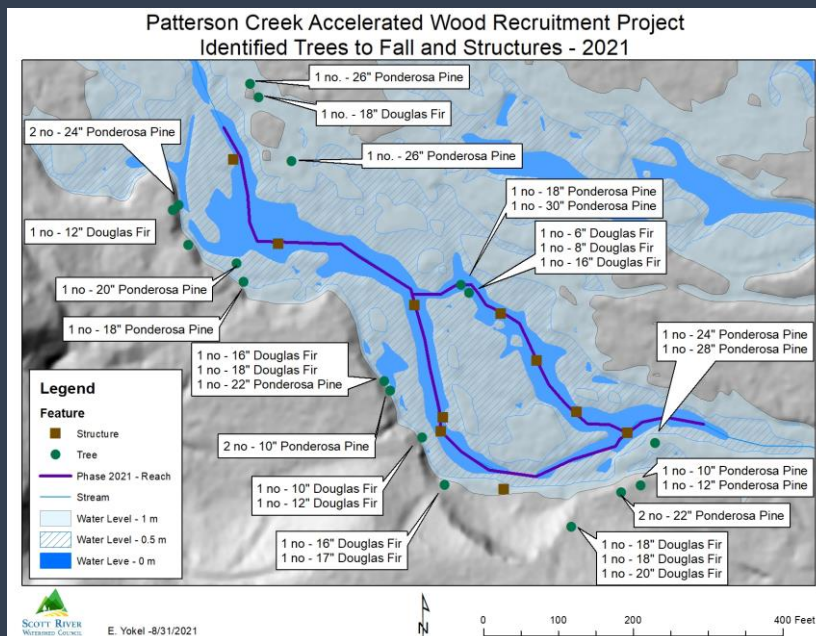
For over a decade, EFM has been developing climate-smart approaches to natural forest management that are the key to unlocking value in a carbon-constrained future. Their expertise in conservation finance to develop mutually beneficial public-private projects, and draw from the relationships with forest product companies, public agencies, non-profits and tribes to develop compelling investment opportunities.

EFM also supports instream work and has several wood loading projects in different tributaries to the Scott River, such as Sugar Creek and Patterson Creek.

As an example, Patterson Creek Wood Loading Project uses wood to slow water in order to provide high quality rearing habitat for both over summering and overwintering juvenile Coho Salmon.

This project has been implemented in three phases, starting in 2018 and the final phase is scheduled for the fall of 2022.

More information on this project, please visit www.scottriver.org/pc-wood-recruitment



Giving Thanks

Today's tour is meant to highlight the importance of how working together can create change and make the Scott Valley a little better for both the human and wild communities.

All the projects on this tour are on private lands. None of this would be possible without the incredible collaboration, coordination and partnerships of so many individuals, organizations and agencies.

Hats off to everyone involved. Here is to 2022!

