2025 SRF Coho Confab

Working with Natural Disturbances to Restore Instream and Upslope Habitats in the Western Klamath Mountains

Will Harling, Restoration Director, Mid Klamath Watershed Council

2019 SRF Coho Confab

2025 Salmon River Spring Chinook Dives


XCEL
XCEL

A pulse disturbance is a short-term, acute event that causes a sudden change in an ecosystem, while a press disturbance is a prolonged or continuous disruption that can lead to lasting changes. Essentially, pulse disturbances are like a single, sharp impact, while press disturbances are a sustained pressure.

Examples of Press Disturbances in the Klamath:

- Dams
- Roads and road crossings/bridges
- Mining and tailings
- Floodplain development. Levees.
- Water diversions
- Fire exclusion
- Fire suppression: Retardants. Streamside clearcutting. NEPA free zone
- Removing wood from streams, ditching streams
- Ag runoff/waste discharge/toxics
- Non-native organisms in the system: shad, invasive plants
- Deforestation
- Climate change

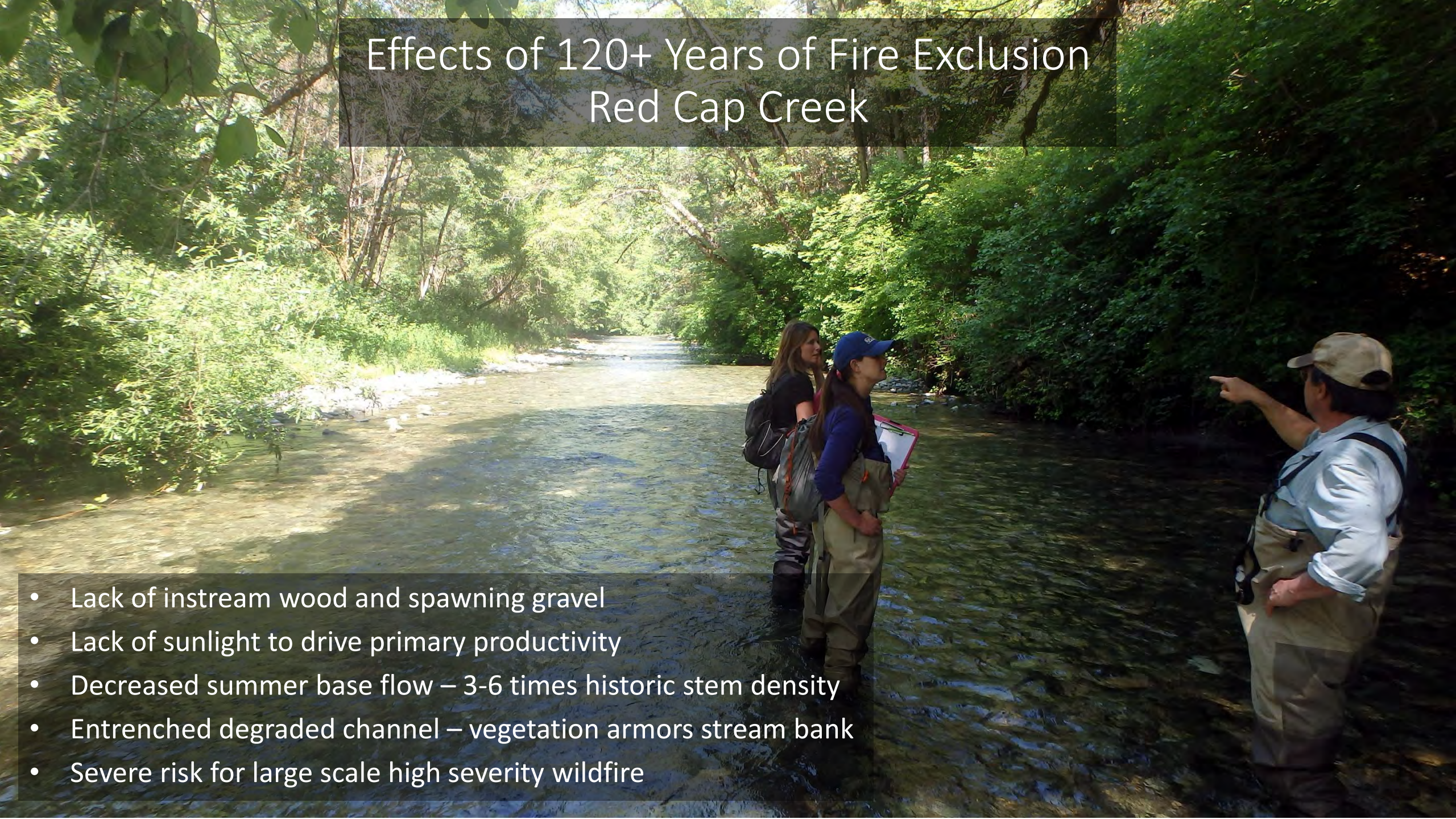
Examples of Pulse Disturbances in the Klamath:

- Fires
  - Wildfires
  - Prescribed Fires
  - Cultural Fires
- Floods
  - Summer Thunderstorms
  - Winter Floods
- Wind Storms
- Snow and Rain Events
- Landslides
- Earthquakes
- What else?

Press and Pulse Disturbances in the Klamath

Photo: Maddy Rifka Brunt

Effects of 120+ Years of Fire Exclusion
Red Cap Creek



- Lack of instream wood and spawning gravel
- Lack of sunlight to drive primary productivity
- Decreased summer base flow – 3-6 times historic stem density
- Entrenched degraded channel – vegetation armors stream bank
- Severe risk for large scale high severity wildfire

Elk Creek During the 2014 Happy Camp Complex Fire

Somes Bar Integrated Fire Management Project

Rogers RX Burn (130 Acres): June 22-28, 2023

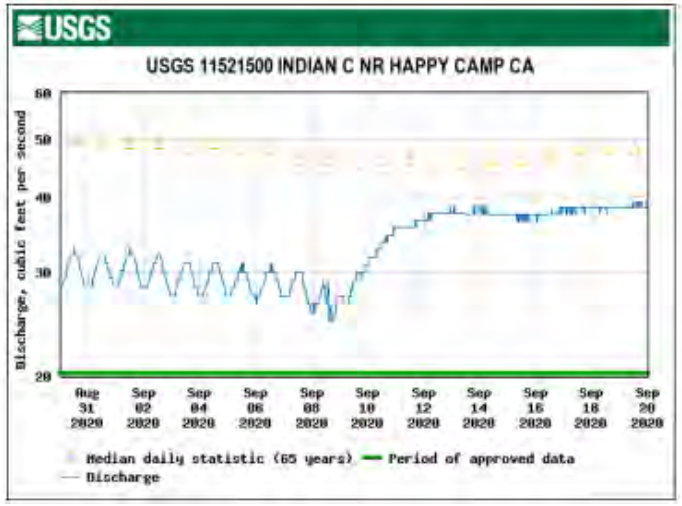
Sept, 8, 2020
Slater Fire – Happy Camp

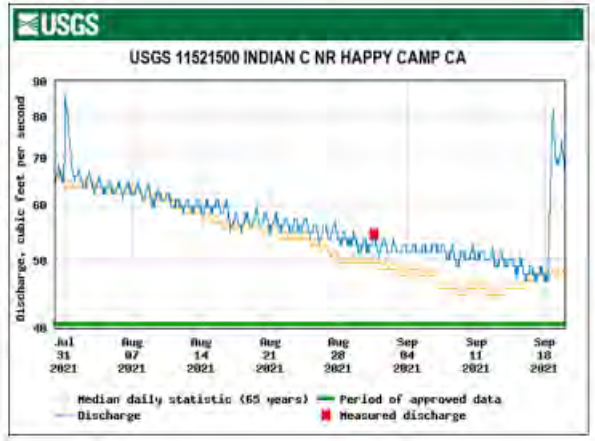
2020 Slater Fire Footprint

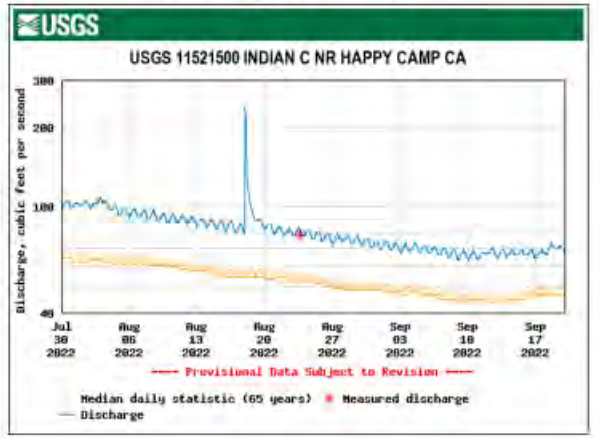
Slater Fire Burned 95% of Indian Creek Watershed- Resulted in 42% Increase Summer Base Flows

Higher summer base flows during historic drought conditions in 2021

Summer Base Flows are still well above Median daily with another year of drought-2022







Graphs: Toz Soto, Karuk Fisheries Dept.

California Vegetation Burn Severity Data Online Viewer

Use the filter tool below to search for a fire by name, year, size, or cause. Use the slider to view burn severity data. For further information, reference the user guide, the metadata, and the FAQs.

California Fire Perimeters

Fire Name contains

Complex Name contains

Year is any of

0 Selected

Acres Burned is greater than

Cause of Fire includes

0 Selected

Composite Burn Index (CBI)

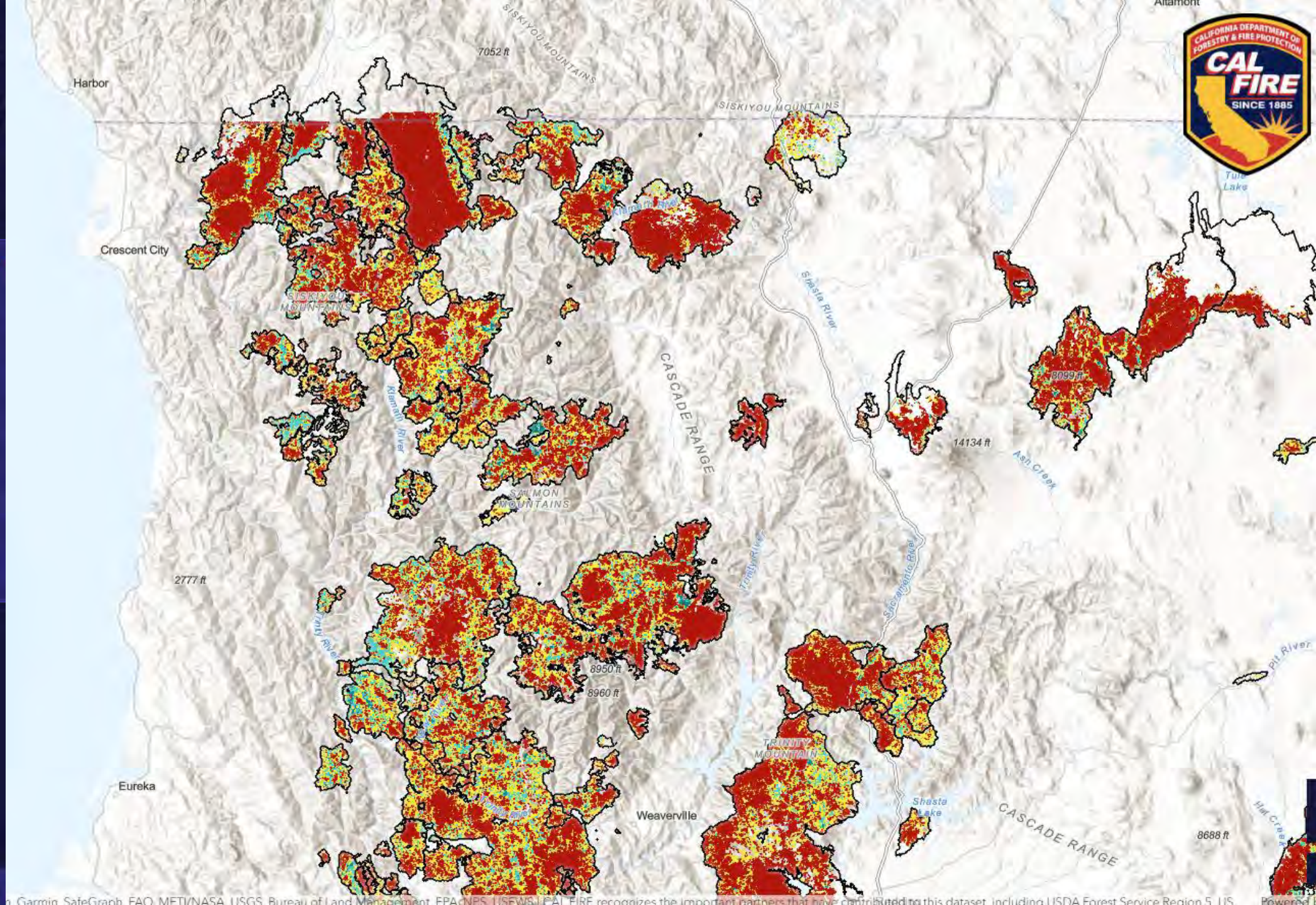
- Unchanged (0 - 0.1)
- Low Severity (0.1 - 1.25)
- Moderate Severity (1.25 - 2.25)
- High Severity (2.25 - 3)

CBI Key | CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

0 to 200

Turn On/Off Slider



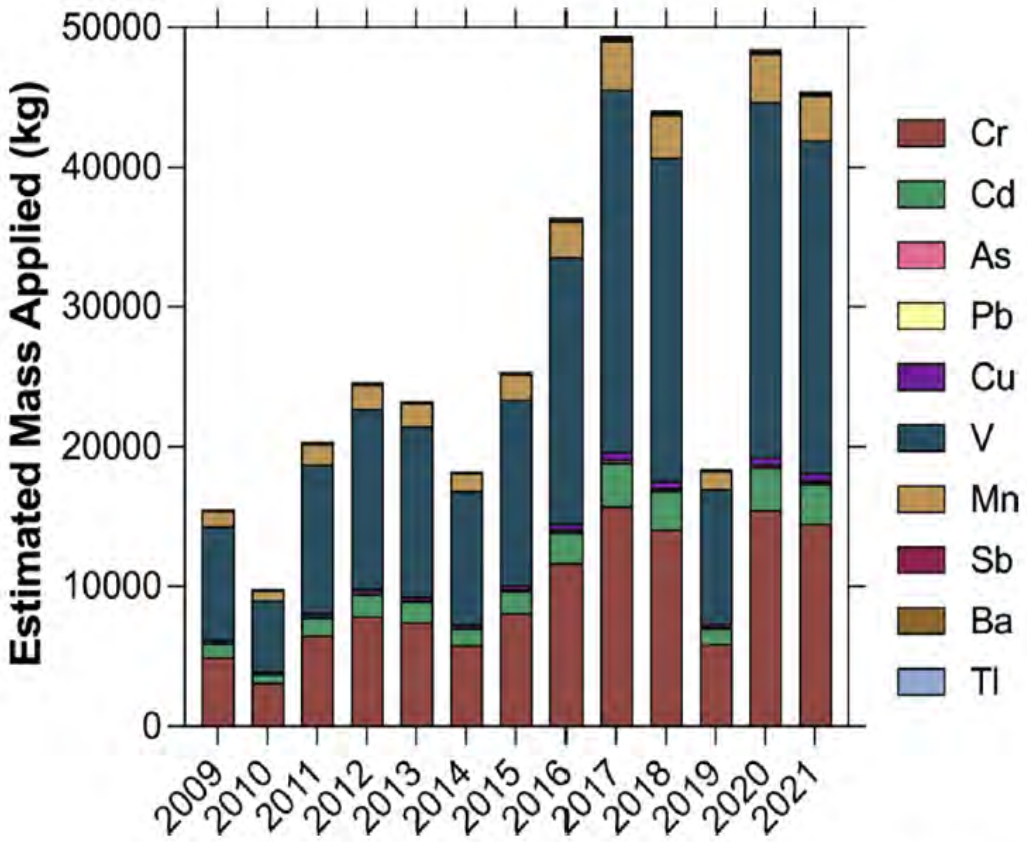
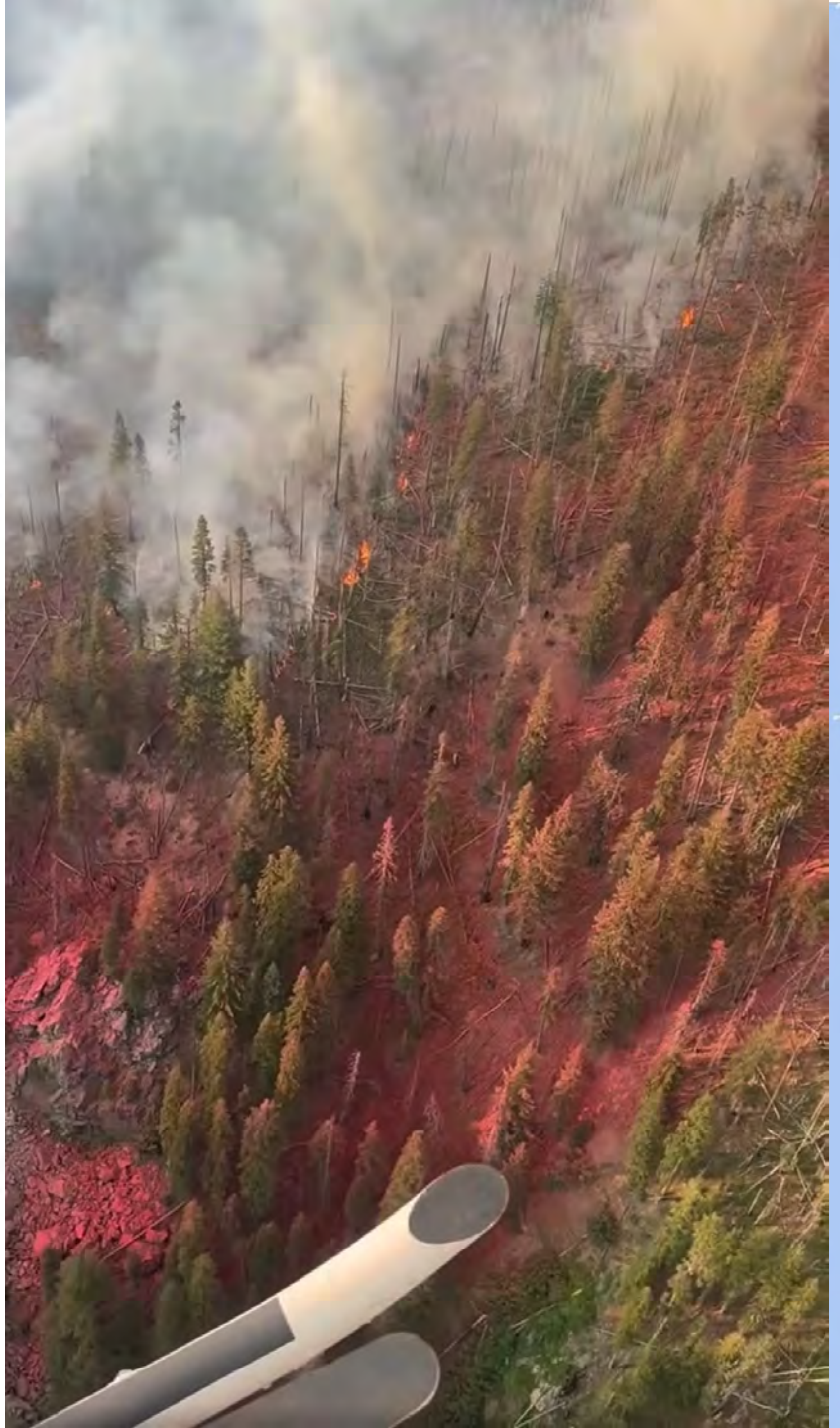
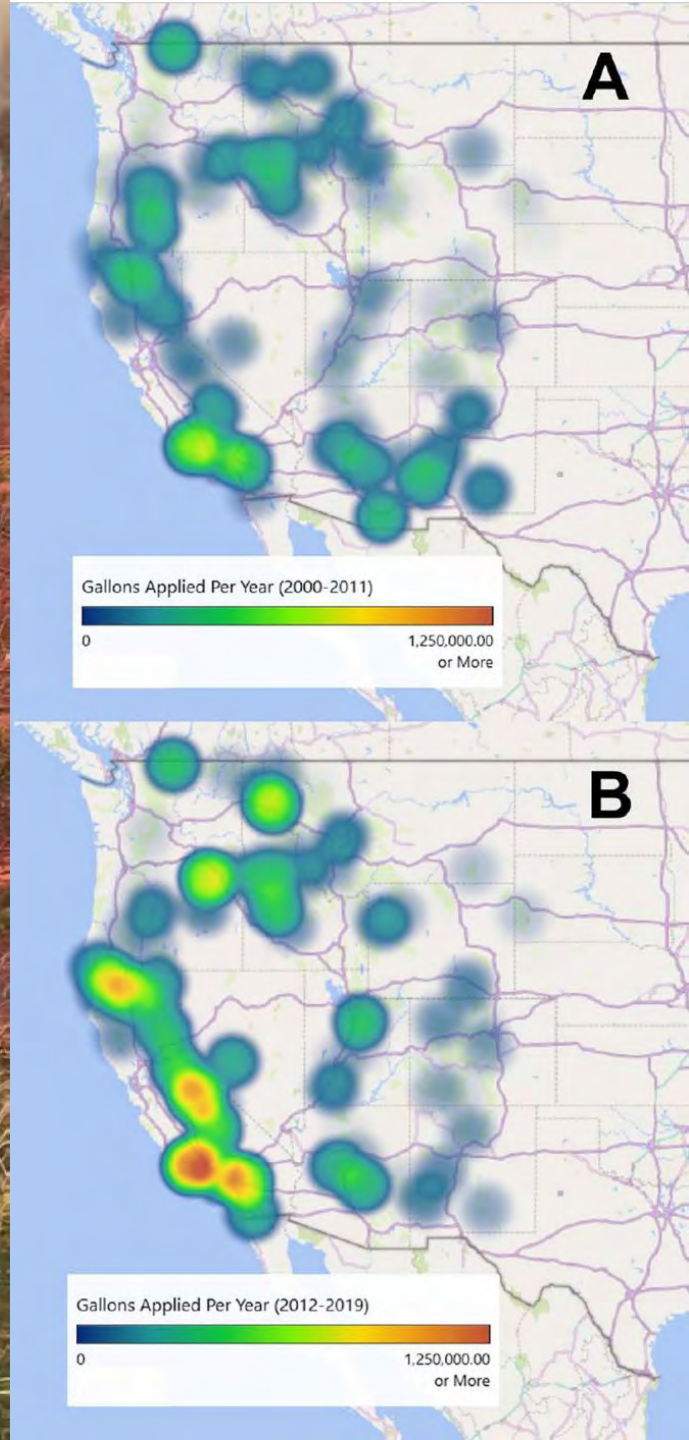


Figure 2. Estimated mass of ten metals applied to public and private lands in the United States between 2009 and 2021 via fire retardant drops (application data from ref 4). Estimates produced by multiplying dropped mass by measured metal concentrations, assuming all drops were Phos-Chek LC-95W, the colorless version of the only approved product for aerial use until Dec. 2022.

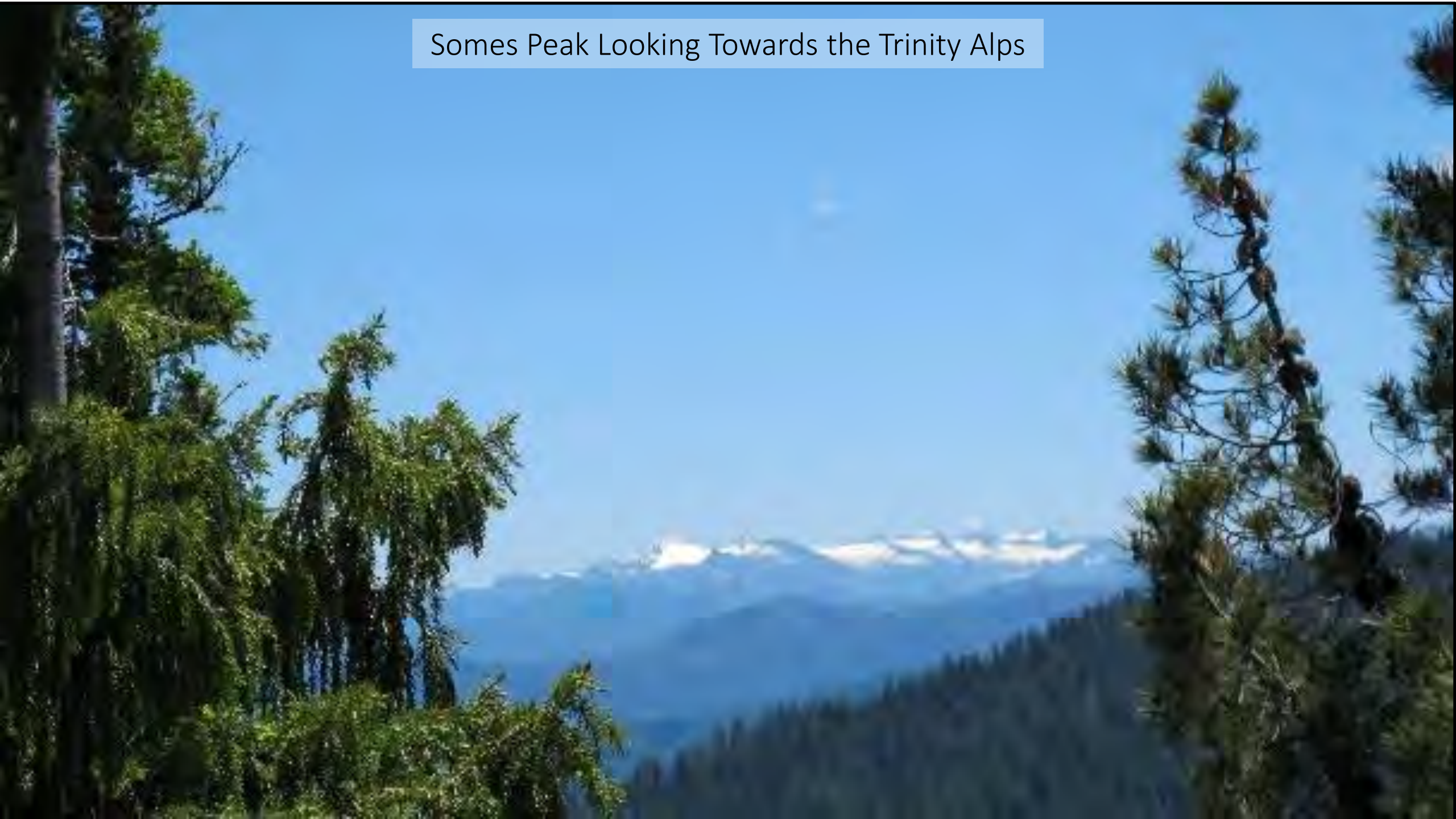
Excerpts from "Metals in Wildfire Suppressants" - citation: Environ Sci Technol Lett. 2024 Oct 30;11(11):1247–1253. doi: 10.1021/acs.estlett.4c00727





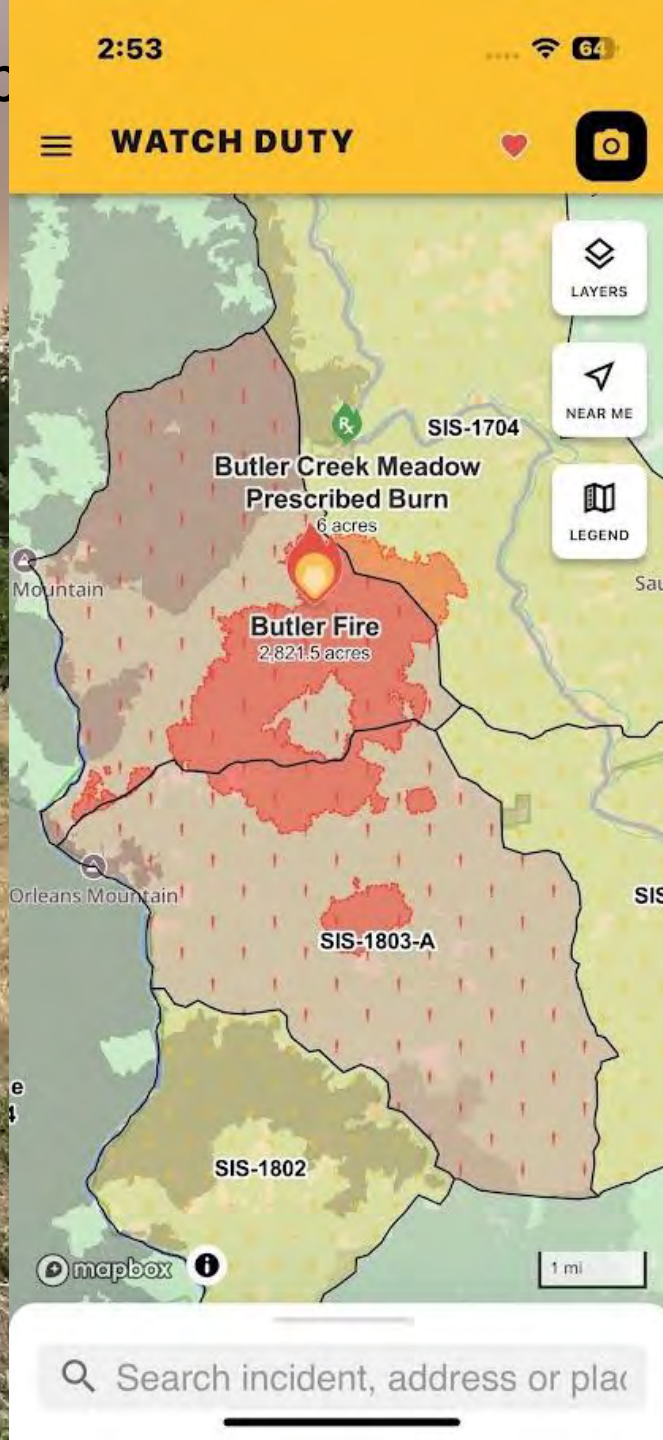
Ikxariatuyiiship – Offield Mountain – 1890's


1944 Aerial Photo Near Happy Camp, CA


Somes Peak Looking Towards the Trinity Alps

July 8, 2025 – Butler Creek Prescrib

2025 Butler Fire




Wildfire
Prescribed Fire
Cultural Fire

Fire Progression

2023 SRF Lightning Complex
CA-SRF-000986

10/09/2023 Day

Marlow, Mosquito, Pearch, and Let er-Buck Fires

Date	Total Acres	Growth
20230817 @ 2049	0ac	+0ac
20230819 @ 1036	396ac	+396ac
20230820 @ 2023	3,039ac	+2,643ac
20230821 @ 2213	3,212ac	+173ac
20230822 @ 0644	3,459ac	+247ac
20230823 @ 2330	4,403ac	+944ac
20230824 @ 2200	5,258ac	+855ac
20230826 @ 2203	6,095ac	+837ac
20230827 @ 2146	8,208ac	+2,113ac
20230828 @ 2150	9,239ac	+1,031ac
20230829 @ 0720	10,774ac	+1,535ac
20230830 @ 0847	12,310ac	+1,536ac
20230831 @ 1151	13,992ac	+1,682ac
20230901 @ 0725	14,138ac	+146ac
20230903 @ 2053	14,427ac	+289ac
20230904 @ 1916	15,103ac	+676ac
20230905 @ 2049	15,295ac	+192ac
20230907 @ 2023	15,339ac	+44ac
20230908 @ 2023	15,676ac	+337ac
20230909 @ 2023	15,947ac	+271ac
20230910 @ 2023	16,399ac	+452ac
20230911 @ 2023	16,651ac	+252ac
20230912 @ 2023	17,263ac	+612ac
20230913 @ 2023	17,761ac	+498ac
20230914 @ 0904	18,740ac	+979ac
20230915 @ 1440	21,272ac	+2,532ac
20230916 @ 1732	23,419ac	+2,147ac
20230917 @ 1922	26,295ac	+2,876ac
20230918 @ 1353	28,725ac	+2,430ac
20230919 @ 2005	30,448ac	+1,723ac
20230920 @ 2130	32,926ac	+2,478ac
20230921 @ 2015	34,015ac	+1,089ac
20230922 @ 1630	37,294ac	+3,279ac
20230923 @ 1536	42,572ac	+5,278ac
20230926 @ 2043	46,960ac	+4,388ac
20230927 @ 1956	47,504ac	+544ac
20230928 @ 1300	47,563ac	+59ac
20230930 @ 1949	47,644ac	+81ac
20231001 @ 2133	47,658ac	+14ac
20231002 @ 2220	47,659ac	+1ac
20231005 @ 2041	47,856ac	+197ac
20231006 @ 2041	48,020ac	+164ac
20231007 @ 2011	48,186ac	+166ac
20231008 @ 2000	48,458ac	+272ac

0 1 2 3 4
Miles

N W E S

Acres from Infrared and GPS
NAD 1983 UTM Zone 10N

Marlow
1,997 acres

Siskiyou Wilderness

Blue Creek
1 acre

Mosquito
34,188 acres

Six Rivers National Forest

Iron
20 acres

Monument
2 acres

Let er-Buck
96 acres

Merrill
2 acres

Marble Mountain Wilderness

Hancock
1,728 acres

Klamath National Forest

Pearch
12,152 acres

Bigfoot
1 acre

Creek
8 acres

Flat
2 acres

Pony Peak
Cottage Grove
Klamath National Forest
6965 ft
Blue Creek
4860 ft
Trail Mountain
4912 ft
Bluff Creek
Somes Bar
Steinacher Ridge
6820 ft
96
Black Mountain
Orleans
Orleans Mountain
Yellow Jacket Ridge
Forks of Salmon

PBR nerds arguing about fossil fuel use

Will Harling's carbon footprint for restoring 10,000 acres

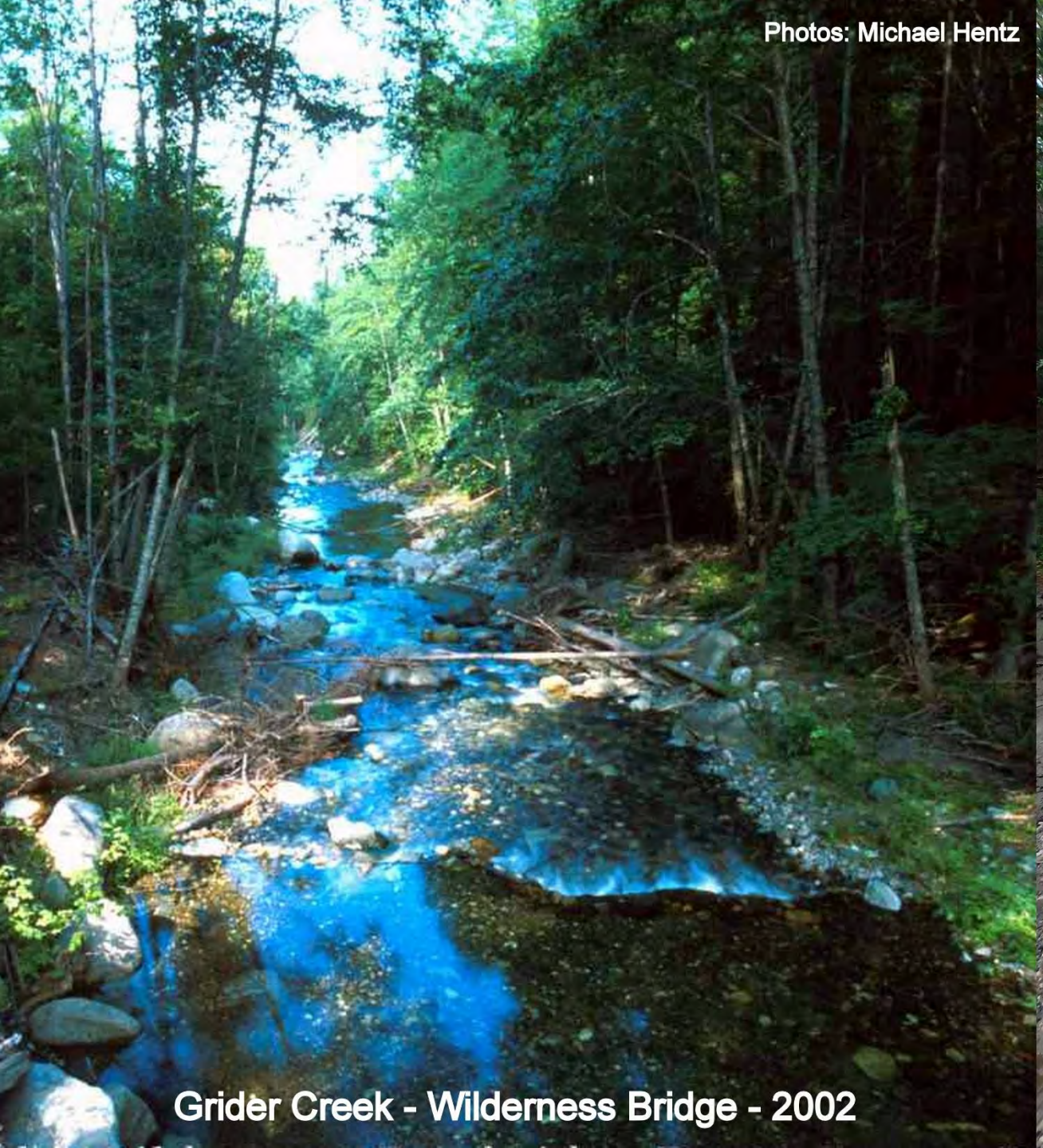
Courtesy Kevin Swift – Swiftwater Design

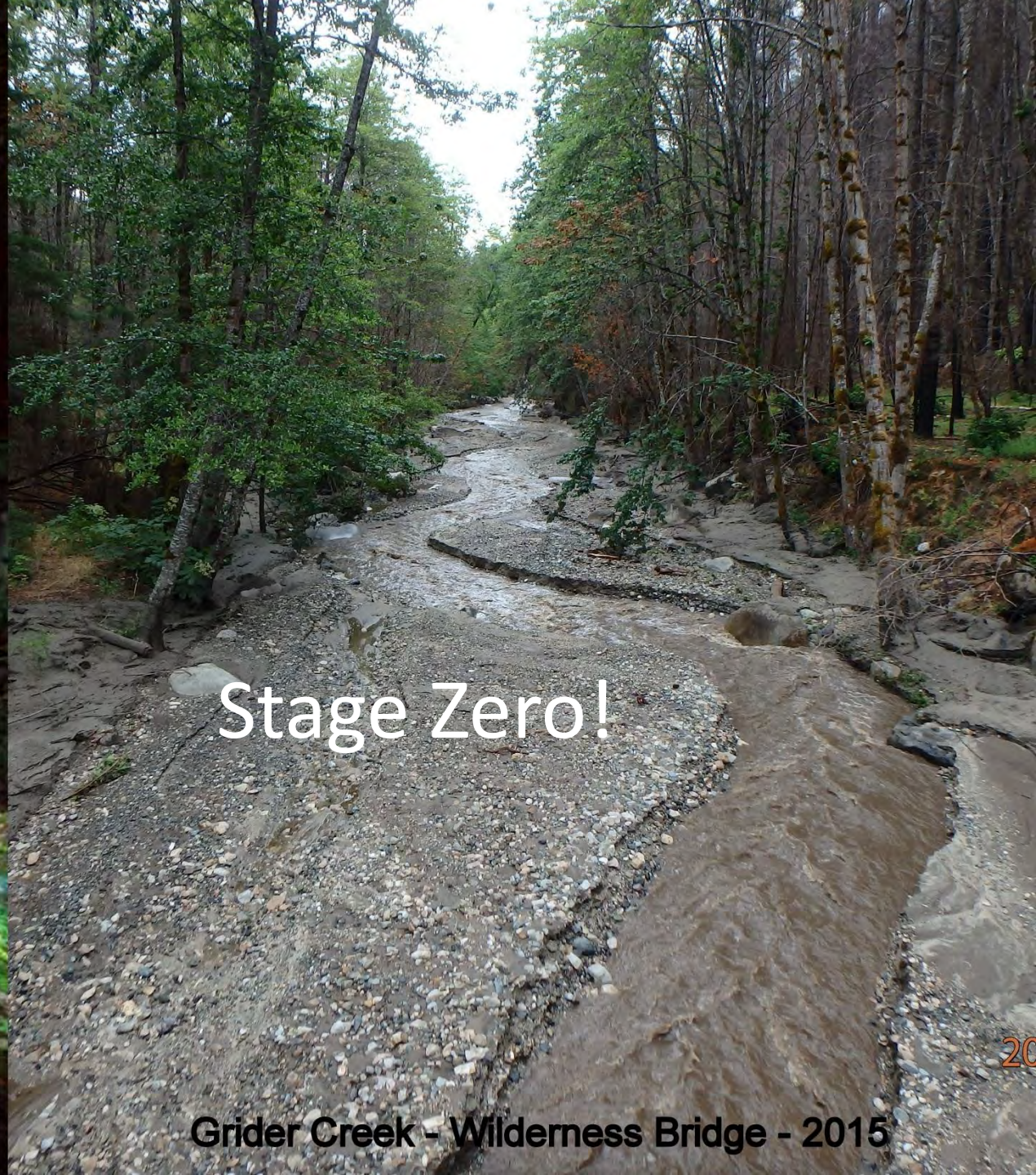
Grider Creek at Pacific Crest Trailhead

Feb 2015

July 2015

Photos: Mark Motyka


Photos: Michael Hentz
Grider Creek - Wilderness Bridge - 2002


Stage Zero!
Grider Creek - Wilderness Bridge - 2015

1964 Flood – North Fork Salmon River

Photo: Rick Wann

Removing Flood Sediment Below Highway 96 Bridge at Seiad Creek After 2006 Flood Event

Seiad Valley


Seiad Valley
1944

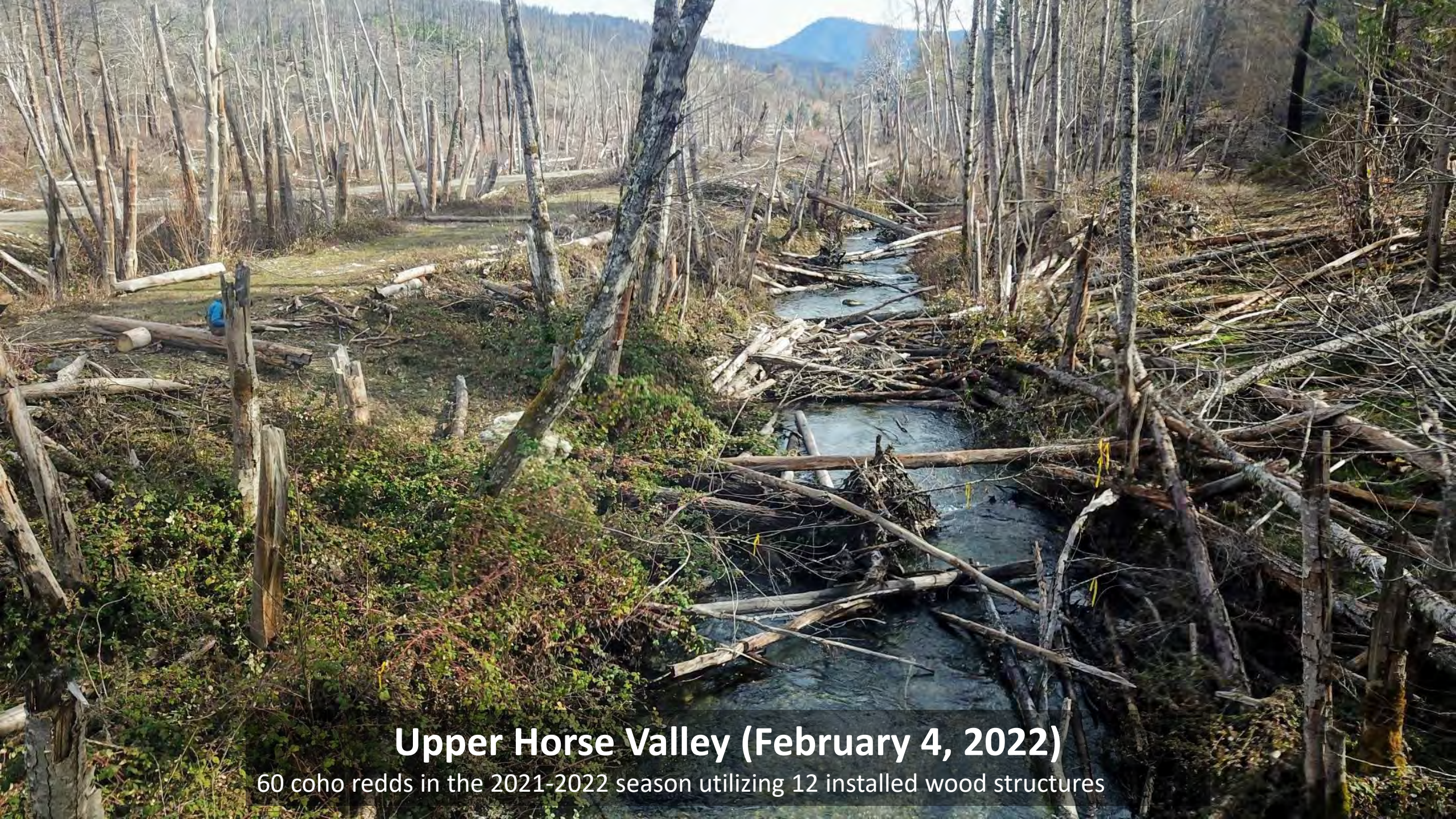
Seiad Valley

1964 - Before Flood


Stender Off-Channel Pond on Seiad Creek
2012: Post-Debris Flow

2016 C


Fish Gulch
Chop & Drop
Lawrence Ponds
Goodman Pond
Klamath River Hwy
Bar
Hors eek Rd
Google Earth
© 2018 Google
96
Graphic: Mitzi Wickman
2000 ft

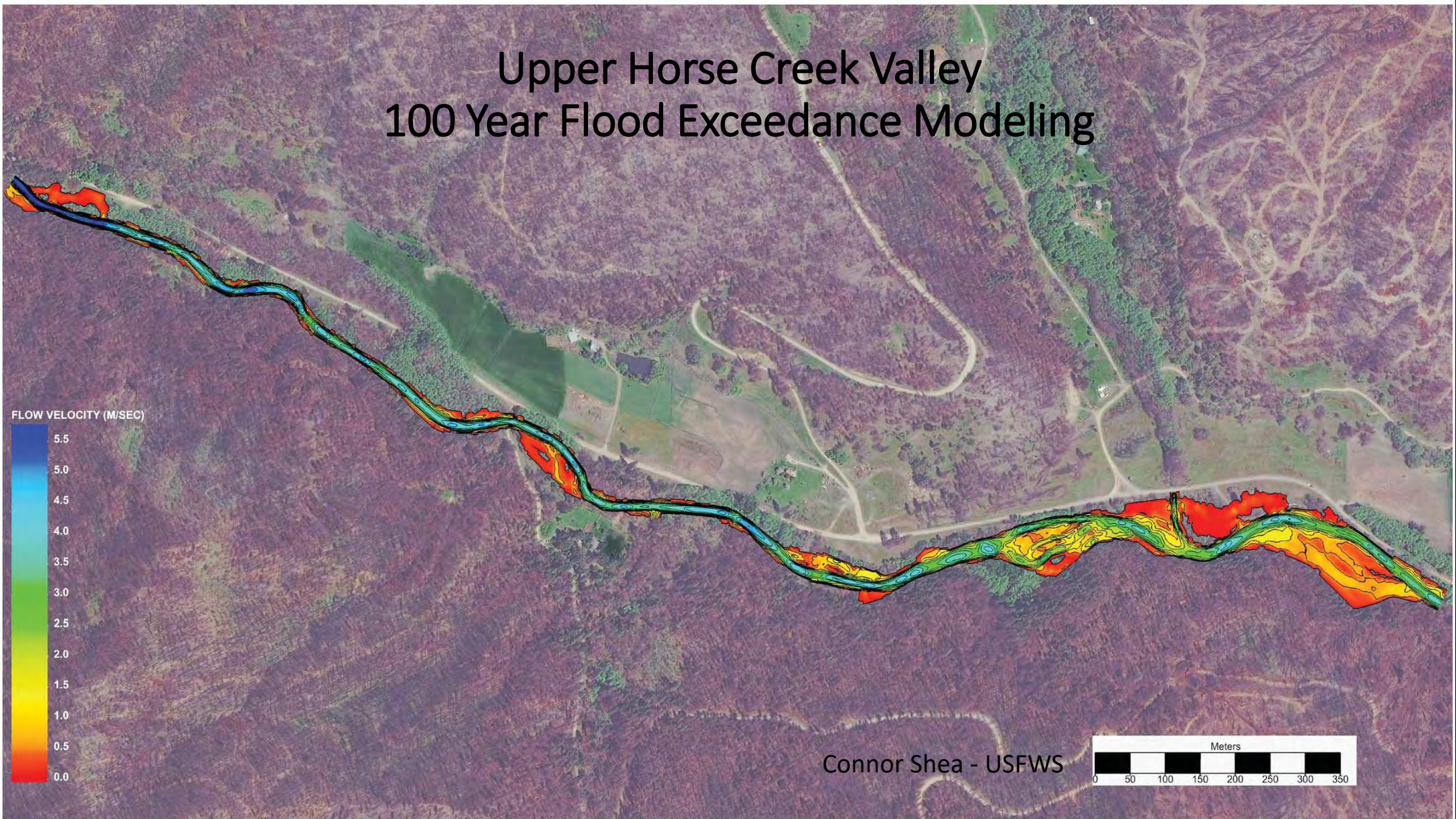


Upper Horse Valley (February 4, 2022)

60 coho redds in the 2021-2022 season utilizing 12 installed wood structures


Sec 6
Sec 5
Sec 4
Sec 7
Sec 8
Sec 9
Middle Creek
Horse Creek
Flat
Twit Flat
Buckhorn
Ditch
House
S.89°47'E
N.89°44'W
N.89°48'W
N.89°45'E
N.89°39'W
S89°32'W
632.70
645.67
644.94
78.80
79.96
80.15
631.58
640
640
79.10
80.39
79.83
38.12
38.35
37.85
37.75
37.65
37.67
37.82
37.97
80
160

Upper Horse Creek Valley
100 Year Flood Exceedance Modeling



Connor Shea - USFWS

4227 ft

Middle Creek

Middle Creek Rd

Hase Creek

FISH GULCH

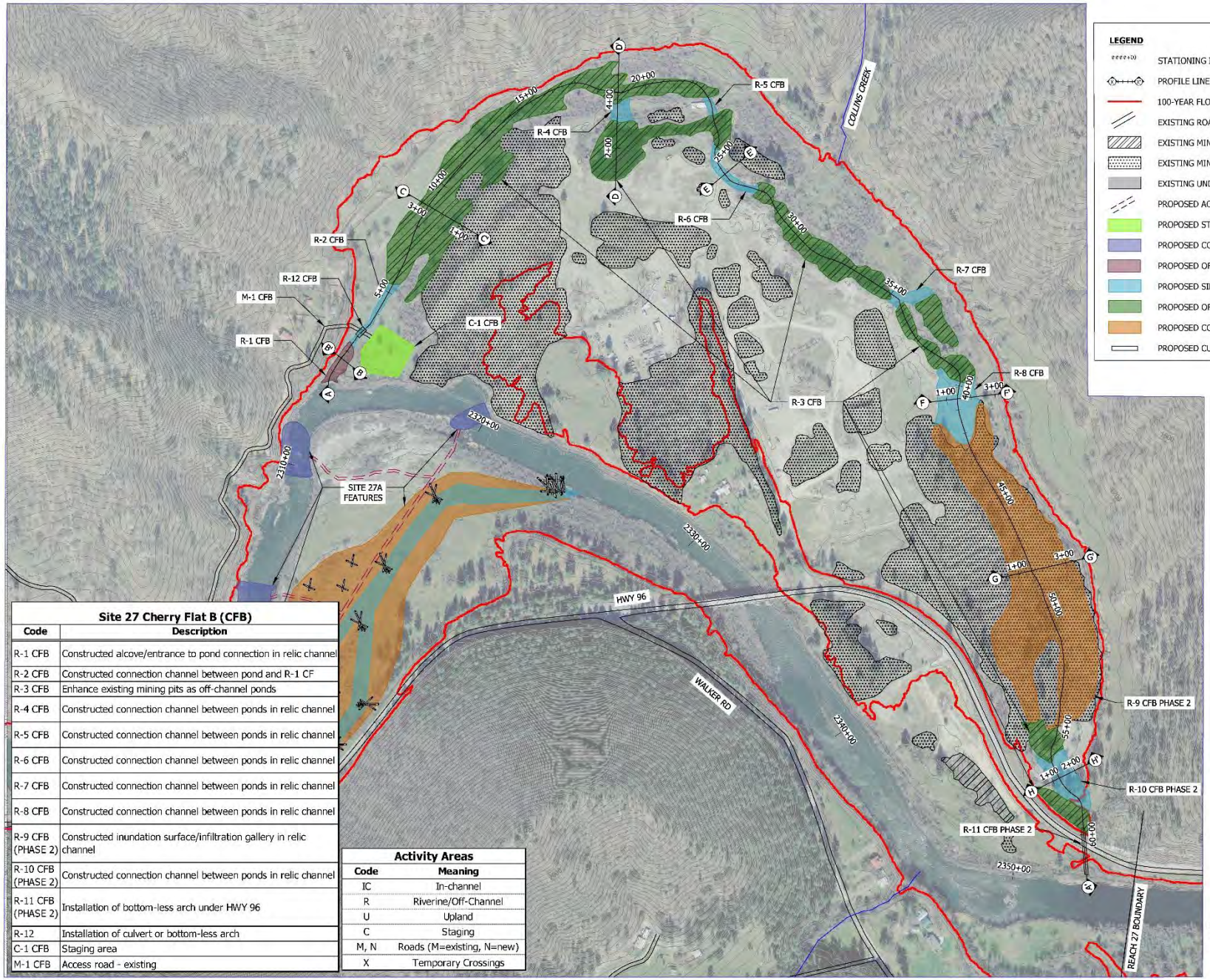
Bar Rd

Lower Beaver Creek Aquatic Habitat Restoration Project

Red Bank Habitat Enhancement Project

Salmon River Restoration Council


Cherry Flat
1944
Gold Dredge



Site 27 Cherry Flat B (CFB)

Code	Description
R-1 CFB	Constructed alcove/entrance to pond connection in relic channel
R-2 CFB	Constructed connection channel between pond and R-1 CF
R-3 CFB	Enhance existing mining pits as off-channel ponds
R-4 CFB	Constructed connection channel between ponds in relic channel
R-5 CFB	Constructed connection channel between ponds in relic channel
R-6 CFB	Constructed connection channel between ponds in relic channel
R-7 CFB	Constructed connection channel between ponds in relic channel
R-8 CFB	Constructed connection channel between ponds in relic channel
R-9 CFB (PHASE 2)	Constructed inundation surface/infiltration gallery in relic channel
R-10 CFB (PHASE 2)	Constructed connection channel between ponds in relic channel
R-11 CFB (PHASE 2)	Installation of bottom-less arch under HWY 96
R-12	Installation of culvert or bottom-less arch
C-1 CFB	Staging area
M-1 CFB	Access road - existing

Activity Areas

Code	Meaning
IC	In-channel
R	Riverine/Off-Channel
U	Upland
C	Staging
M, N	Roads (M=existing, N=new)
X	Temporary Crossings

MID-KLAMATH FLOODPLAIN HABITAT ENHANCEMENT PROJECT

SISKIYOU COUNTY, CA

Stillwater Sciences
850 G ST, SUITE K
ARCATA, CA 95521
P: (707) 822-9607

SCALE: AS NOTED
DATE: 1/29/19

DESIGN: JS
DRAWN: RT
CHECKED: JM
APPROVED: ----

SITE 27B - UPPER CHERRY FLAT (CFB)

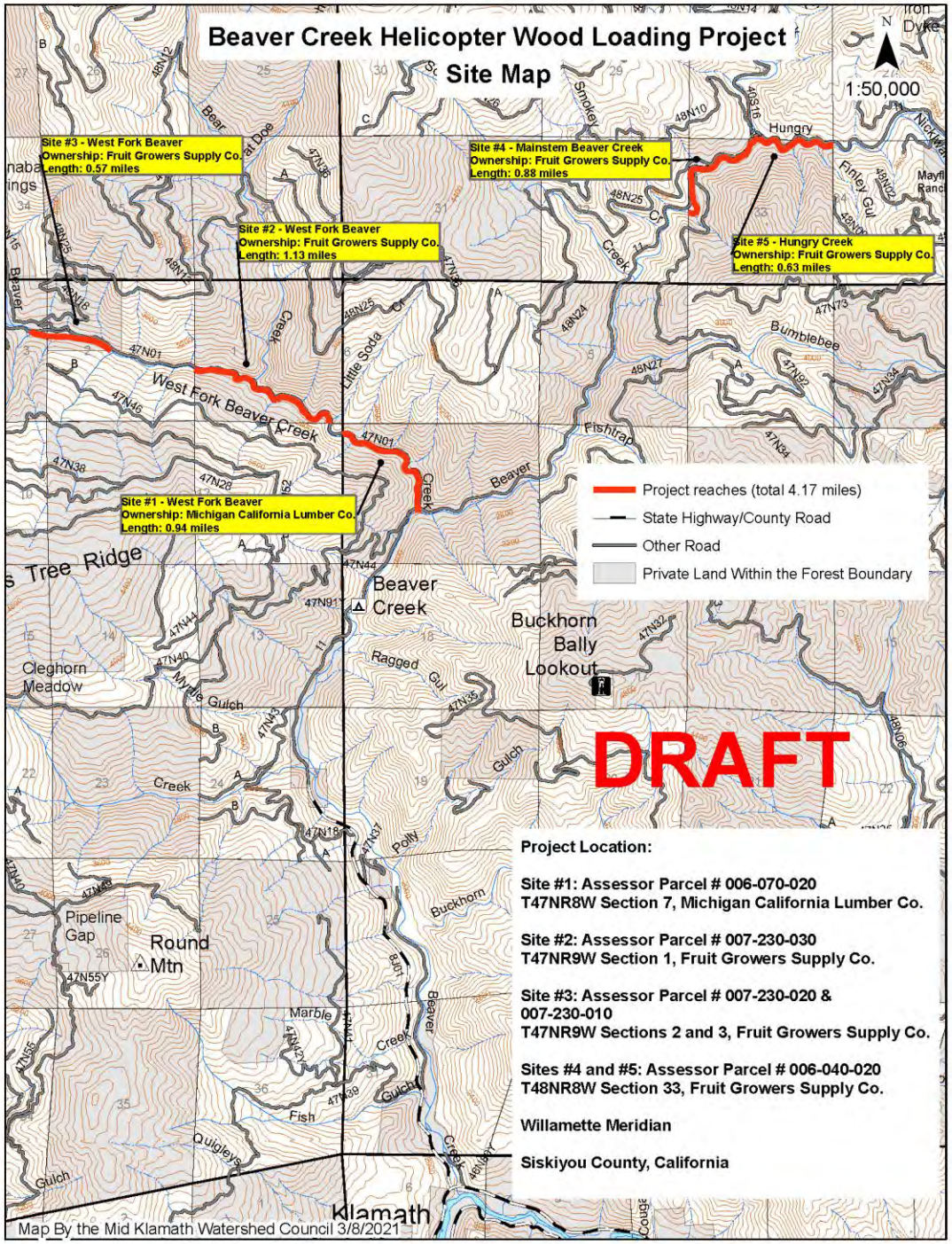
PLAN VIEW

Sugar Creek Groundwater Fed Coho Spawning Channel

Scott River Watershed Council – 24 coho redds winter of 2024/2025

Indian Creek at Baker Gulch/Grey Eagle Mine

Superfund Site


Beaver Creek Helicopter Wood Loading Project
Site Map
1:50,000
Site #3 - West Fork Beaver
Ownership: Fruit Growers Supply Co.
Length: 0.57 miles
Site #4 - Mainstem Beaver Creek
Ownership: Fruit Growers Supply Co.
Length: 0.88 miles
Site #2 - West Fork Beaver
Ownership: Fruit Growers Supply Co.
Length: 1.13 miles
Site #5 - Hungry Creek
Ownership: Fruit Growers Supply Co.
Length: 0.63 miles
Site #1 - West Fork Beaver
Ownership: Michigan California Lumber Co.
Length: 0.94 miles
Project reaches (total 4.17 miles)
State Highway/County Road
Other Road
Private Land Within the Forest Boundary
DRAFT
Project Location:
Site #1: Assessor Parcel # 006-070-020
T47NR8W Section 7, Michigan California Lumber Co.
Site #2: Assessor Parcel # 007-230-030
T47NR9W Section 1, Fruit Growers Supply Co.
Site #3: Assessor Parcel # 007-230-020 &
007-230-010
T47NR9W Sections 2 and 3, Fruit Growers Supply Co.
Sites #4 and #5: Assessor Parcel # 006-040-020
T48NR8W Section 33, Fruit Growers Supply Co.
Willamette Meridian
Siskiyou County, California
Map By the Mid Klamath Watershed Council 3/8/2021


WF Beaver Heliwood Project

West Fork Beaver Creek Heliwood Loading Project


WF Beaver Accelerated Wood Recruitment

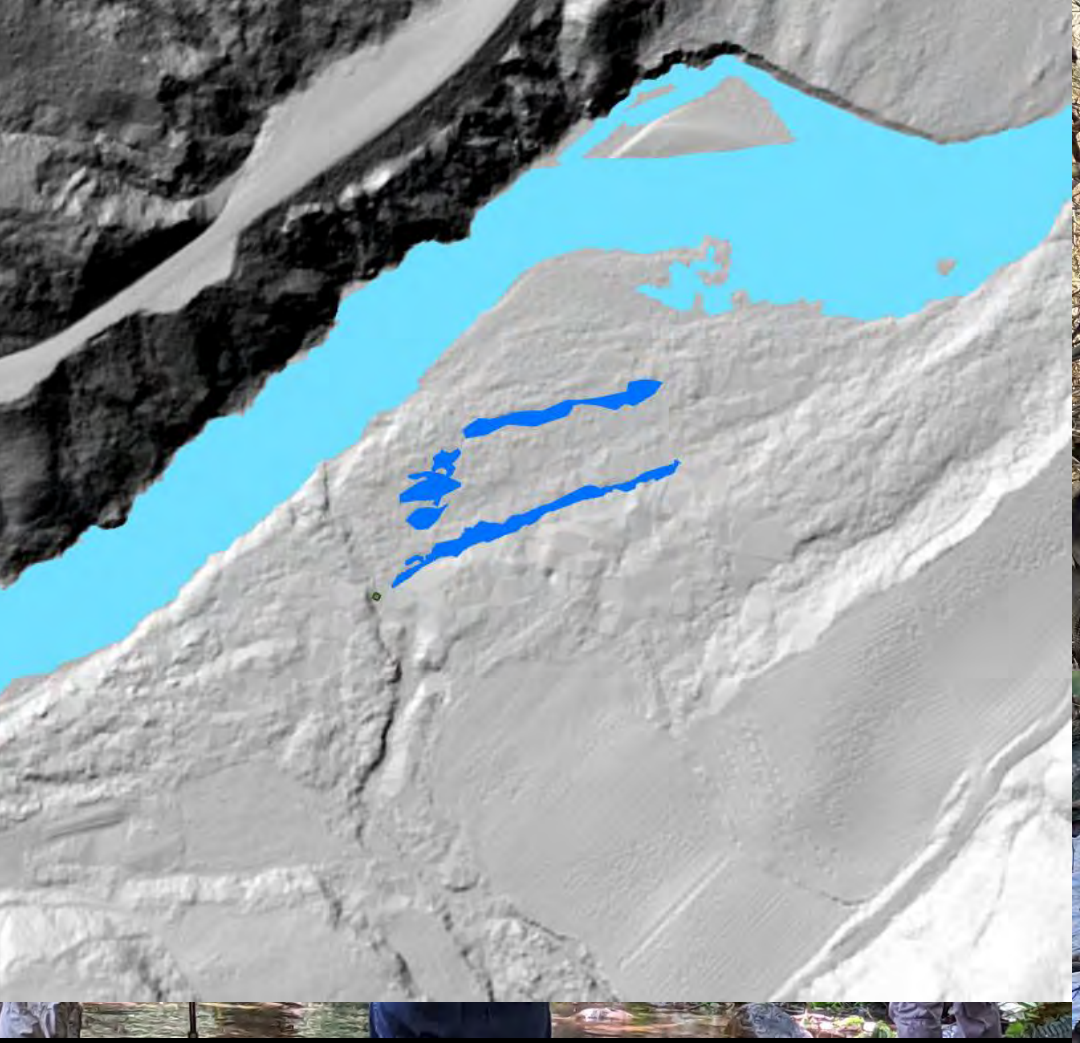
Red Cap at Schnable Bar Phase I and II

East Fork Elk Creek Fish Passage

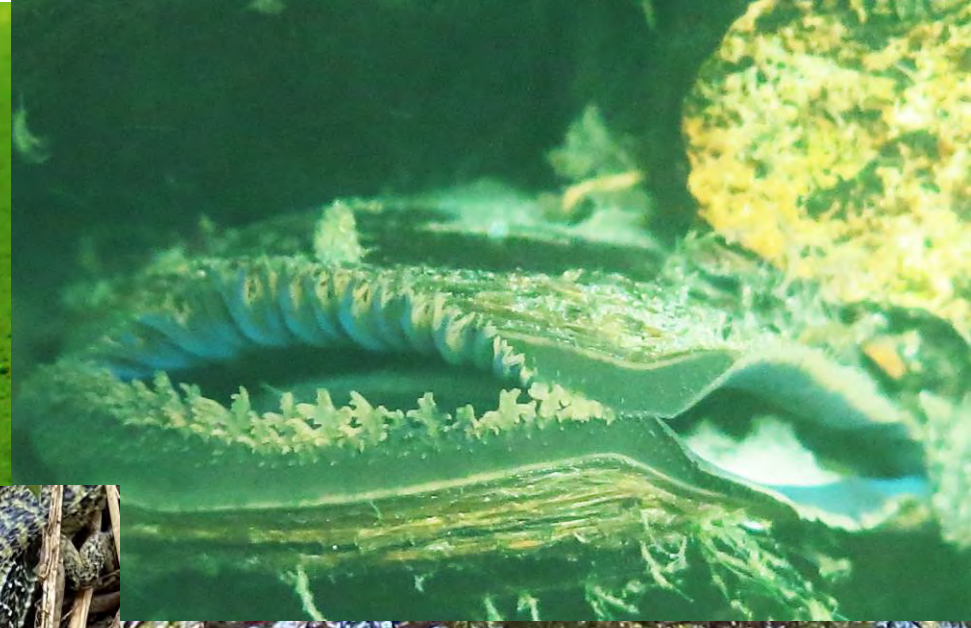
Winter 2025

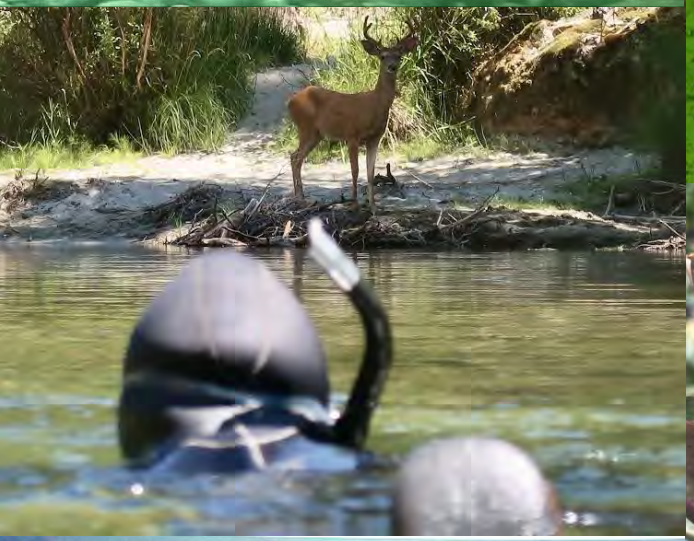
Summer 2024

Klamath Meadows Partnership



Connected over 26,000 square feet of existing beaver ponds using Beaver Dam Analogues (BDAs) in Boise Creek to salmon



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TRAILCAM01
09/19/2019 08:30PM

MKWC Sandy Bar Creek Fish Passage Improvement Workday - 2002