February 7, 2023

MEMORANDUM

TO: **Fish & Wildlife Committee Members**

FROM: **Cathy P. Kellon, Oregon Fish and Wildlife Policy Analyst**

SUBJECT: **Whole watershed restoration of Trout Creek in the Deschutes basin**

BACKGROUND:

Presenters: Tom Nelson, Trout Creek Project Manager, Oregon Department of Fish and Wildlife (ODFW) and Adam Haarberg, Trout Creek Program Manager, Jefferson County Soil & Water Conservation District (JSWCD)

Summary: Tom Nelson, ODFW, and Adam Haarberg, JSWCD, will provide an update on long-term monitoring and restoration activities in the Deschutes River, Oregon tributary, Trout Creek.

Relevance: Restoration and monitoring in the Trout Creek watershed have been part of the Council's Fish and Wildlife Program's implementation since the early 1990s. In 1994, BPA went into contract with ODFW for the "Trout Creek Restoration Project" (see project #1994-042-00) and in 1998 with JSWCD's for the "Trout Creek Watershed Restoration Project" (see project #1998-028-00). See also the Deschutes Subbasin Plan and the 2014 Fish and Wildlife Program and 2020 addendum.

Background: Trout Creek originates in the Ochoco Mountains of central Oregon and flows 51 miles north and west before entering the Deschutes River, 87.2 miles above its confluence with the Columbia River. Trout Creek is the largest east-side tributary in the lower Deschutes and is the greatest producer of steelhead in the Deschutes basin.

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In the past 150 years, the Trout Creek watershed was severely degraded by grazing, farming, and timber harvest. Restoration work began in earnest in the 1980s, when ODFW started working with landowners to fence off portions of the creek to protect it from cattle, with funding by BPA. In 1994, ODFW proposed the "Trout Creek restoration project" (#1994-042-00) and in 1998 with JSWCD's "Trout Creek Watershed Restoration" project (#1998-028-00) as part of the Council's Fish and Wildlife Program implementation.

These projects' primary goals are to enhance habitat for native salmonids, particularly summer steelhead and redband trout and to increase the numbers of out-migrating summer steelhead smolts. More than 86% of the basin is privately-owned, requiring strong, on-the-ground relationships to get projects done across the landscape. The individual leads from each partner organization – Tom, ODFW, and Adam, JSWCD – have been working together in the watershed since 1999 making it possible for them to take a "ridgetop to ridgetop" approach that includes improving fish passage, riparian health, stream channel and floodplain connectivity, and upland hydrologic processes.

Together they have developed projects; secured outside funding; operated most of the construction equipment; and conducted project maintenance as well as monitoring. Decades of direct observation plus data from their long-term smolt monitoring program, supports adaptive management and prioritization of future habitat restoration actions throughout the whole watershed. As a result, Trout Creek restoration has proven to be effective and cost-efficient, more than doubling the funding received from the Bonneville Power Administration through the Council's fish and wildlife program.

Trout Creek Habitat Improvement Project

2000 – 2022 Project Overview

Adam Haarberg

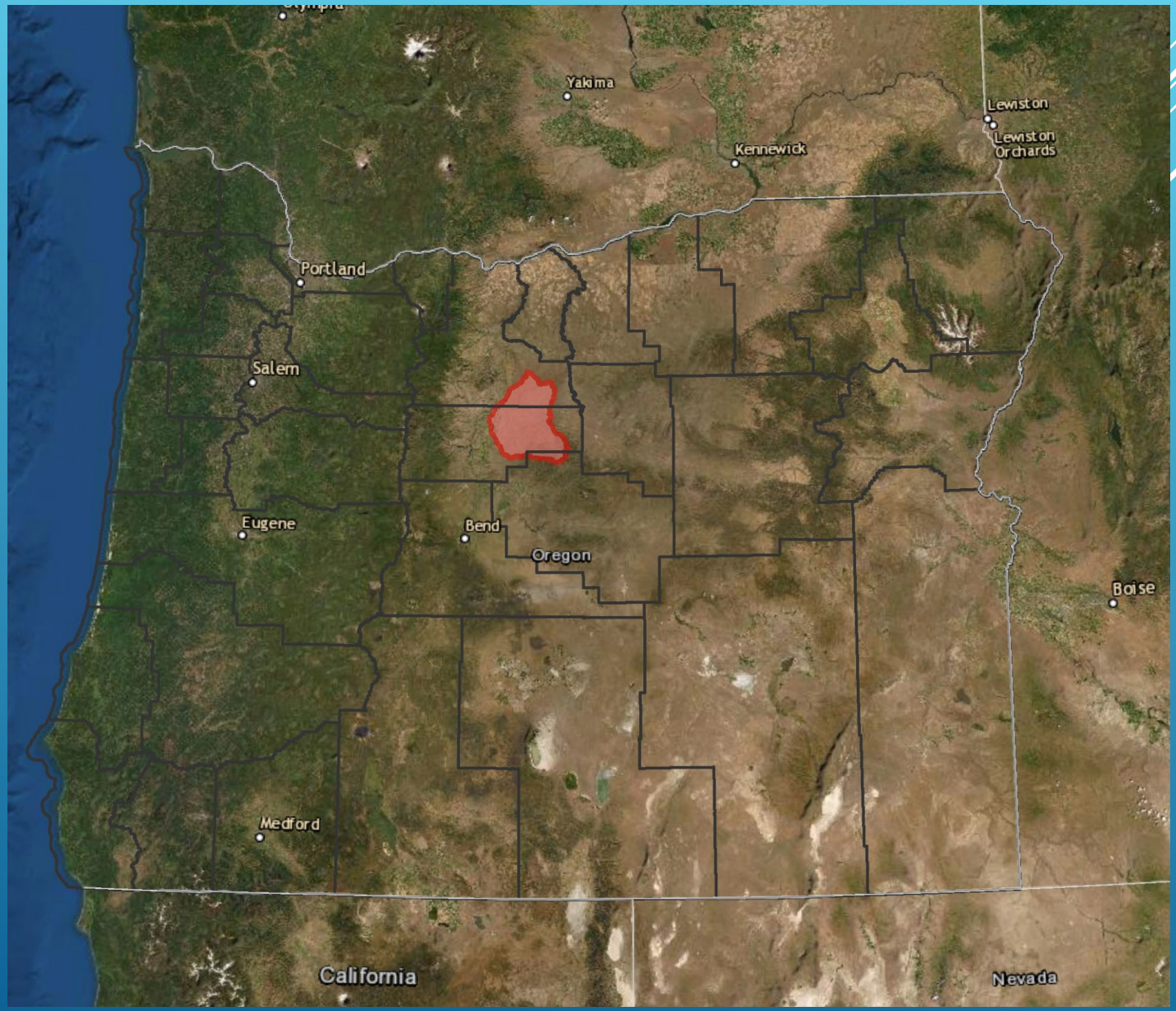
Jefferson County SWCD
Project #1998-028-00

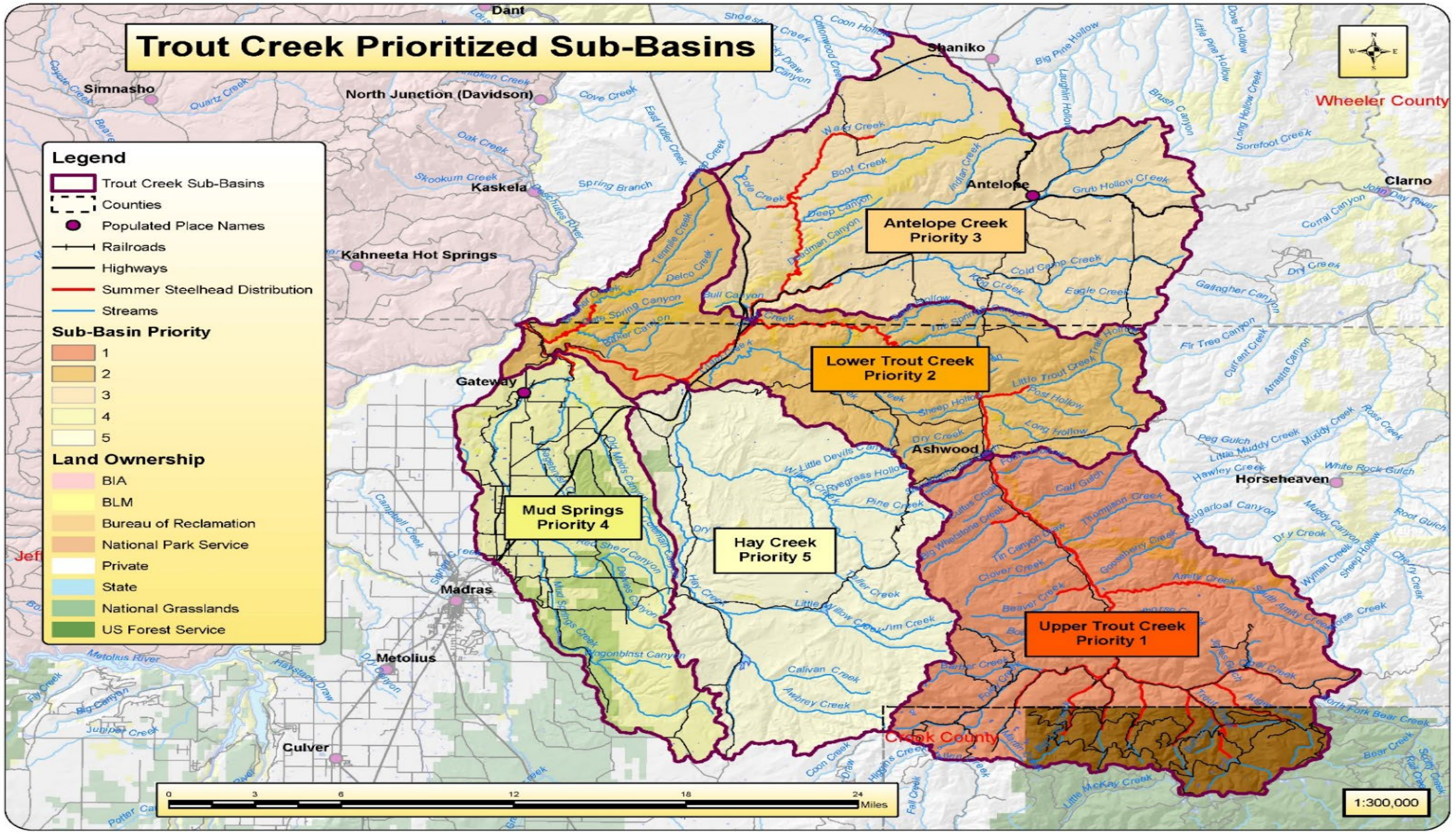
Tom Nelson

Oregon Fish and Wildlife
Project #1994-042-00

Trout Creek Watershed

- 692 Square Miles
- Largest east side tributary to Deschutes river.
- Accounts for 15-25 % of wild Summer Steelhead production in the Deschutes River




Trout Creek Prioritized Sub-Basins
Legend
Trout Creek Sub-Basins
Counties
Populated Place Names
Railroads
Highways
Summer Steelhead Distribution
Streams
Sub-Basin Priority
1
2
3
4
5
Land Ownership
BIA
BLM
Bureau of Reclamation
National Park Service
Private
State
National Grasslands
US Forest Service
Antelope Creek Priority 3
Lower Trout Creek Priority 2
Mud Springs Priority 4
Hay Creek Priority 5
Upper Trout Creek Priority 1
Wheeler County
Crook County
Dant
Shaniko
Simnasho
North Junction (Davidson)
Kaskela
Kahneeta Hot Springs
Antelope
Clarno
Gateway
Ashwood
Horseheaven
Madras
Metolius
Culver
0 3 6 12 18 24 Miles
1:300,000

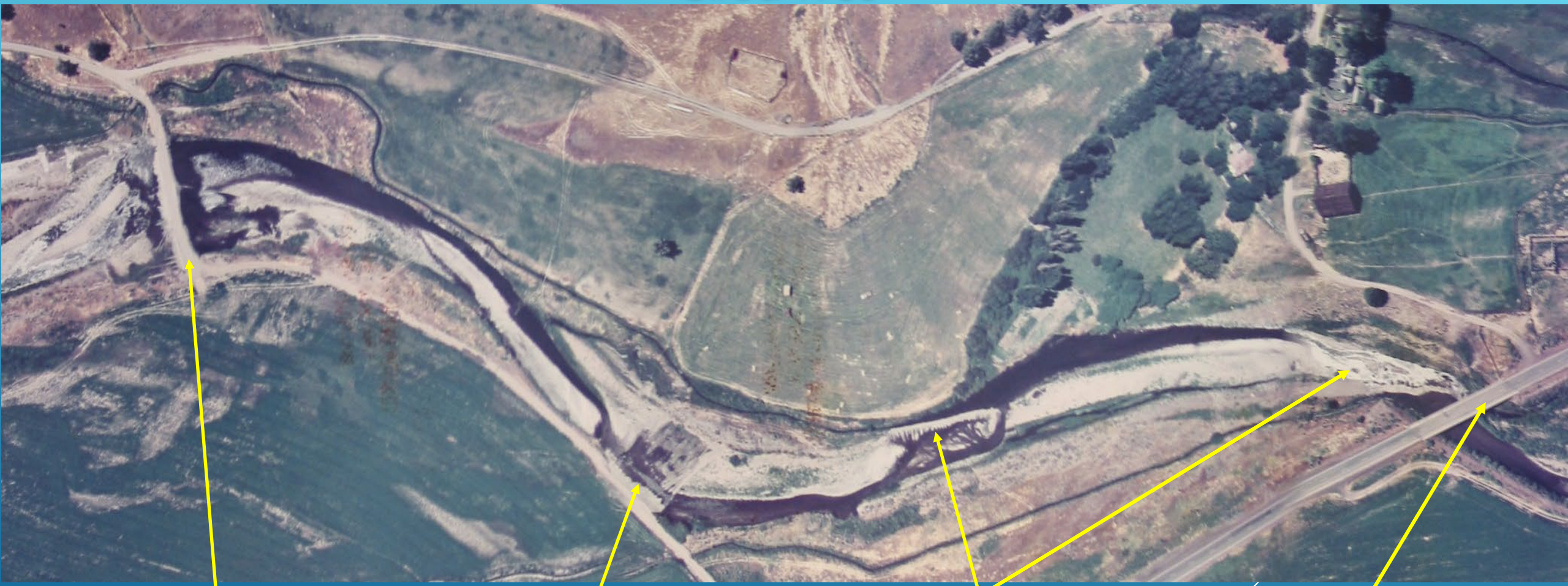
Project Goal

Improve habitat for wild summer steelhead

April 23, 2020

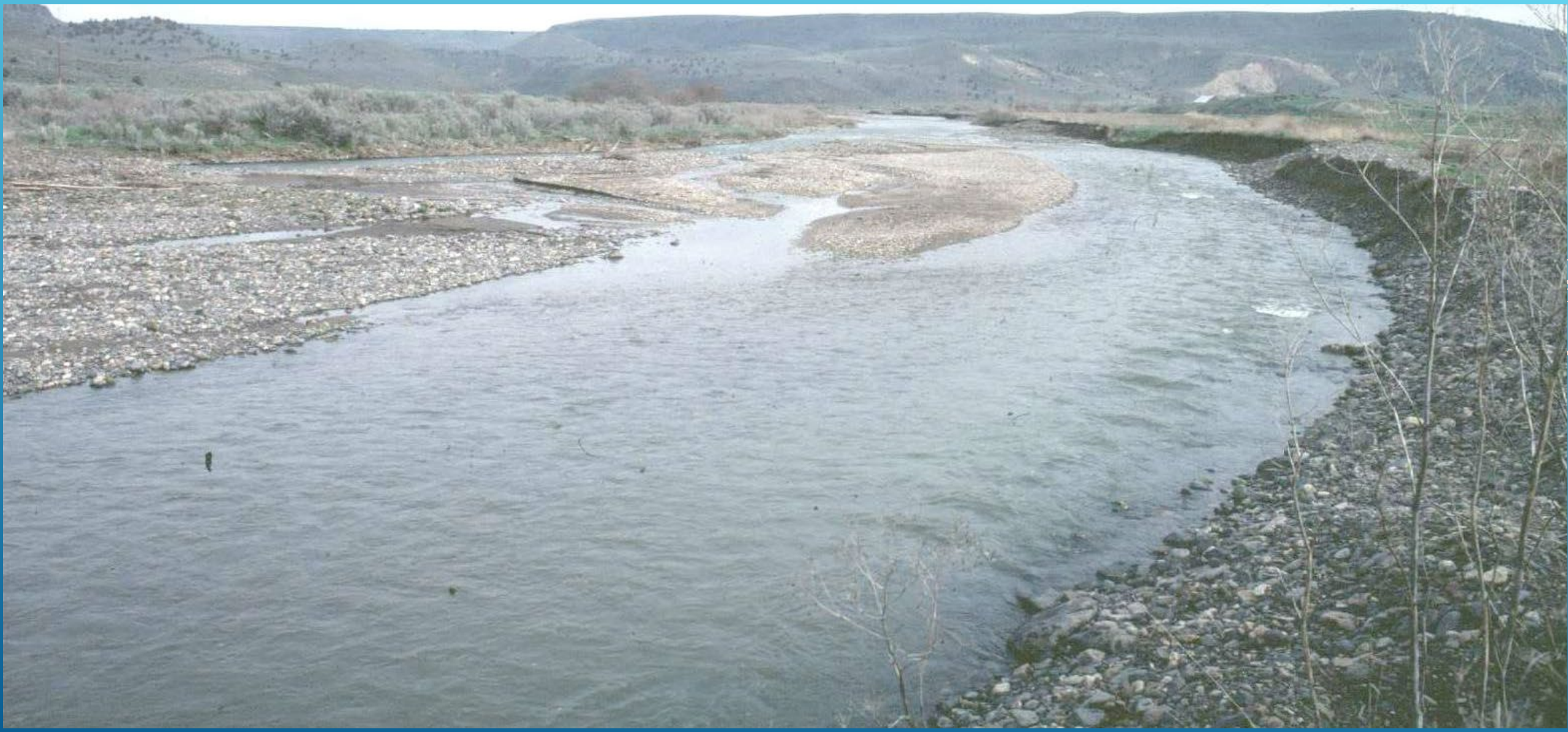
Trout Creek Condition Pre-Project

Circa 1983



Trout Creek 1983

Trout Creek 1983



Trout Creek 2003

Trout Creek 2003

Trout Creek 2003

PROJECT CONCEPTUAL DEVELOPMENT

GRANT WRITING TO LEVERAGE BPA FUNDING

Bonneville
POWER ADMINISTRATION

OREGON
WATERSHED
ENHANCEMENT BOARD

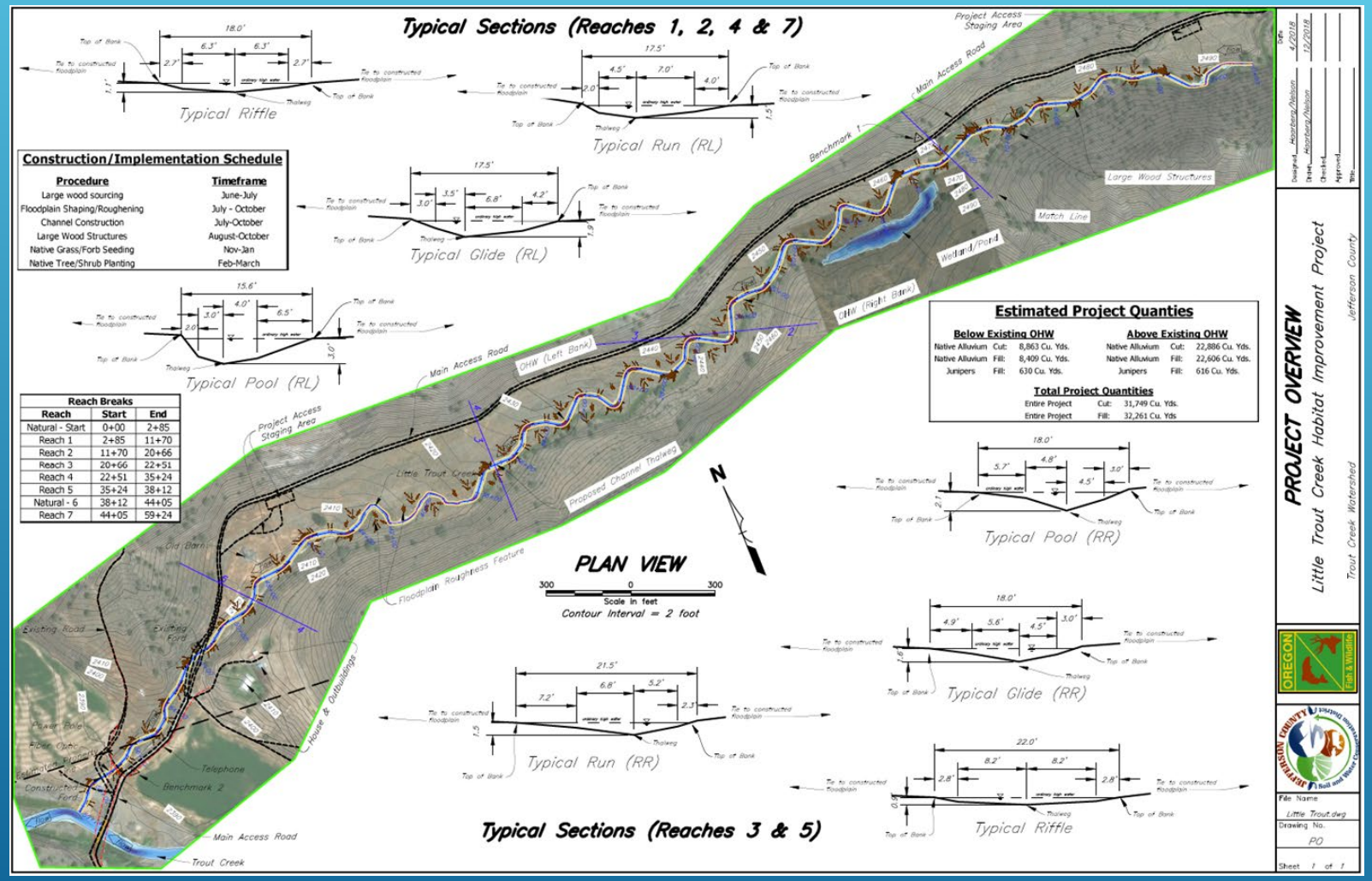
PGE
Portland General Electric

NATIONAL FISH AND WILDLIFE FOUNDATION

JEFFERSON COUNTY
OREGON

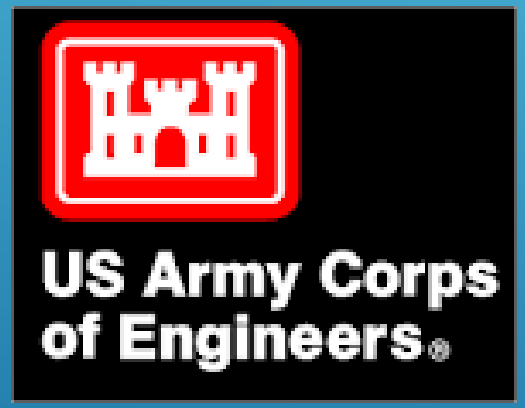
USDA
NRCS

PROJECT DESIGN



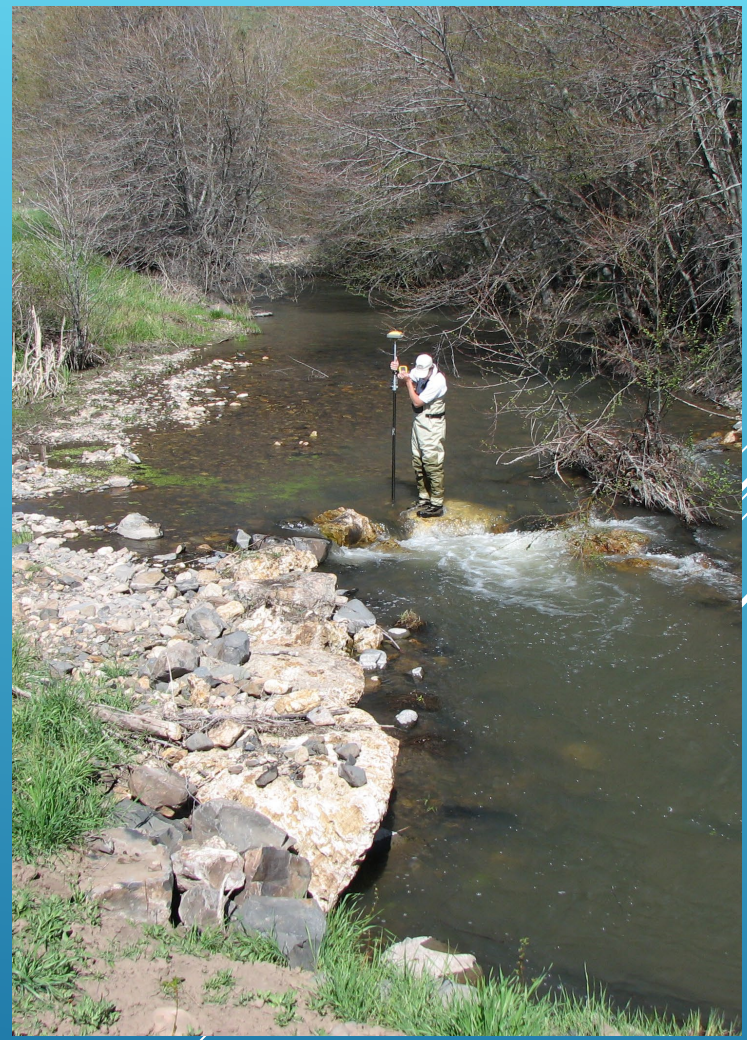
- Total Station Survey
- AutoCAD, HEC-RAS & ArcMap
- Field Data Collection

PROJECT PERMITTING



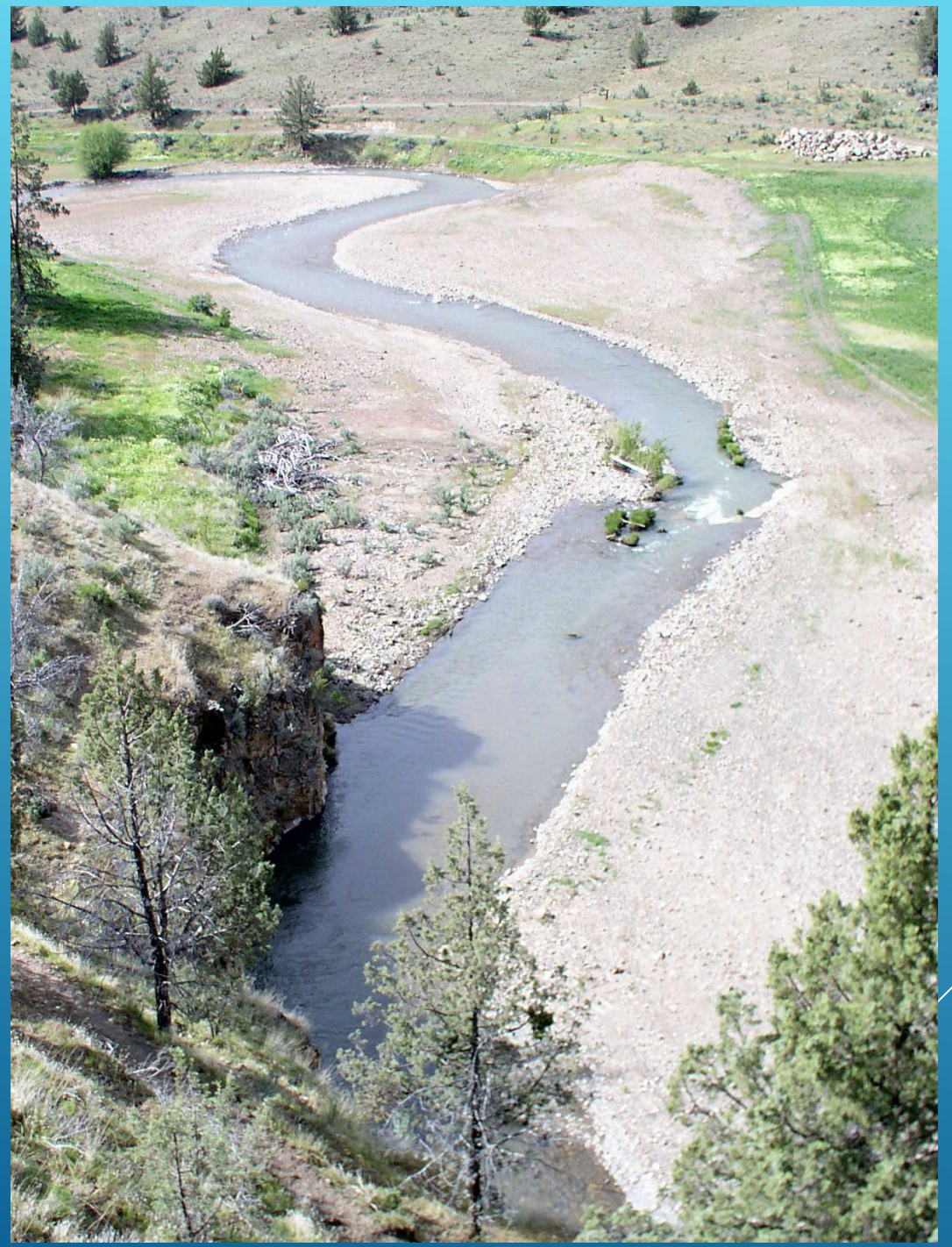
PROJECT CONSTRUCTION

PROJECT MONITORING AND MAINTENANCE



PRIDAY PHASE 2 2005

PRIDAY PHASE 2 2006



PRIDAY PHASE 2 2007

PRIDAY PHASE 2 2008

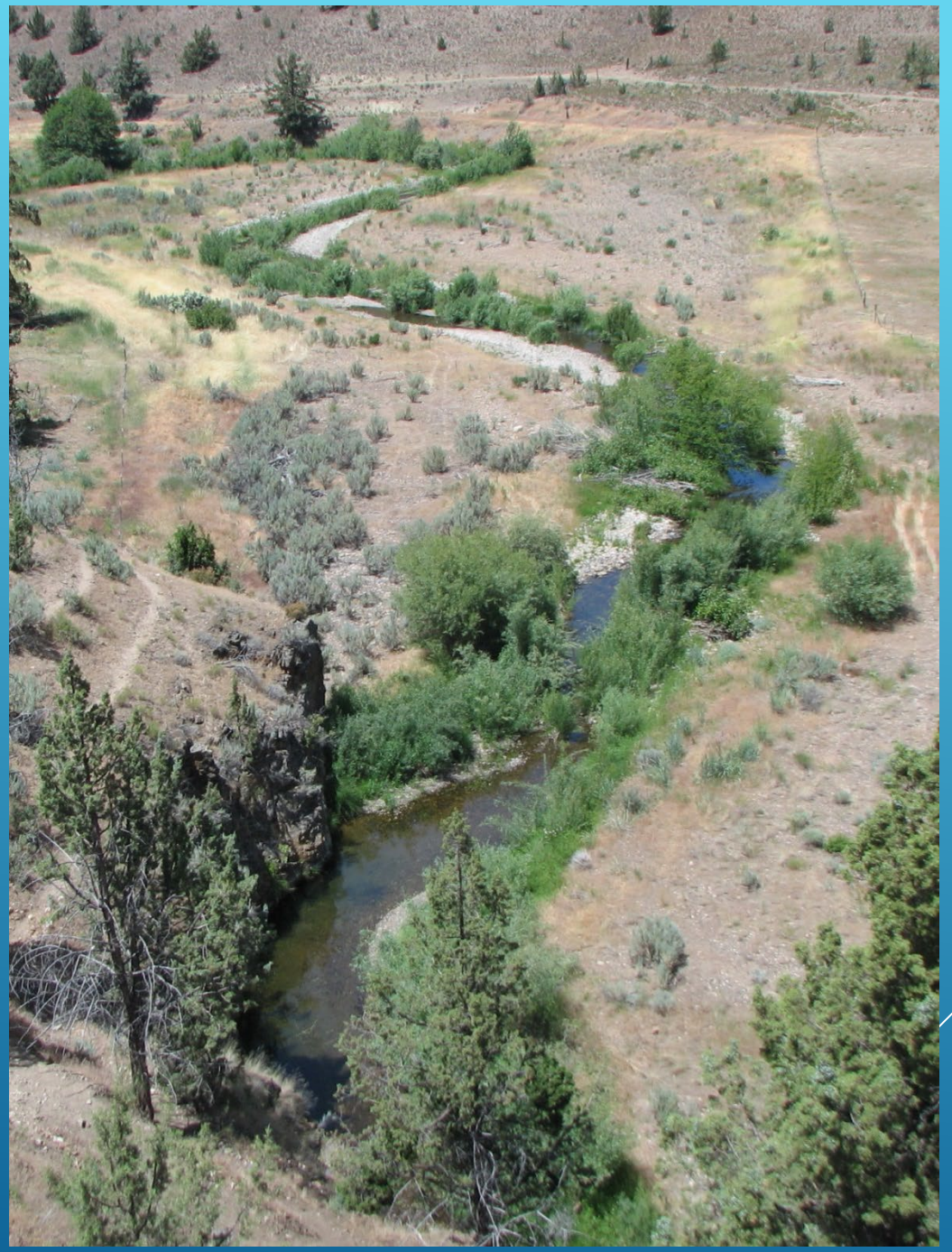
PRIDAY PHASE 2 2009

PRIDAY PHASE 2 2010

PRIDAY PHASE 2 2011

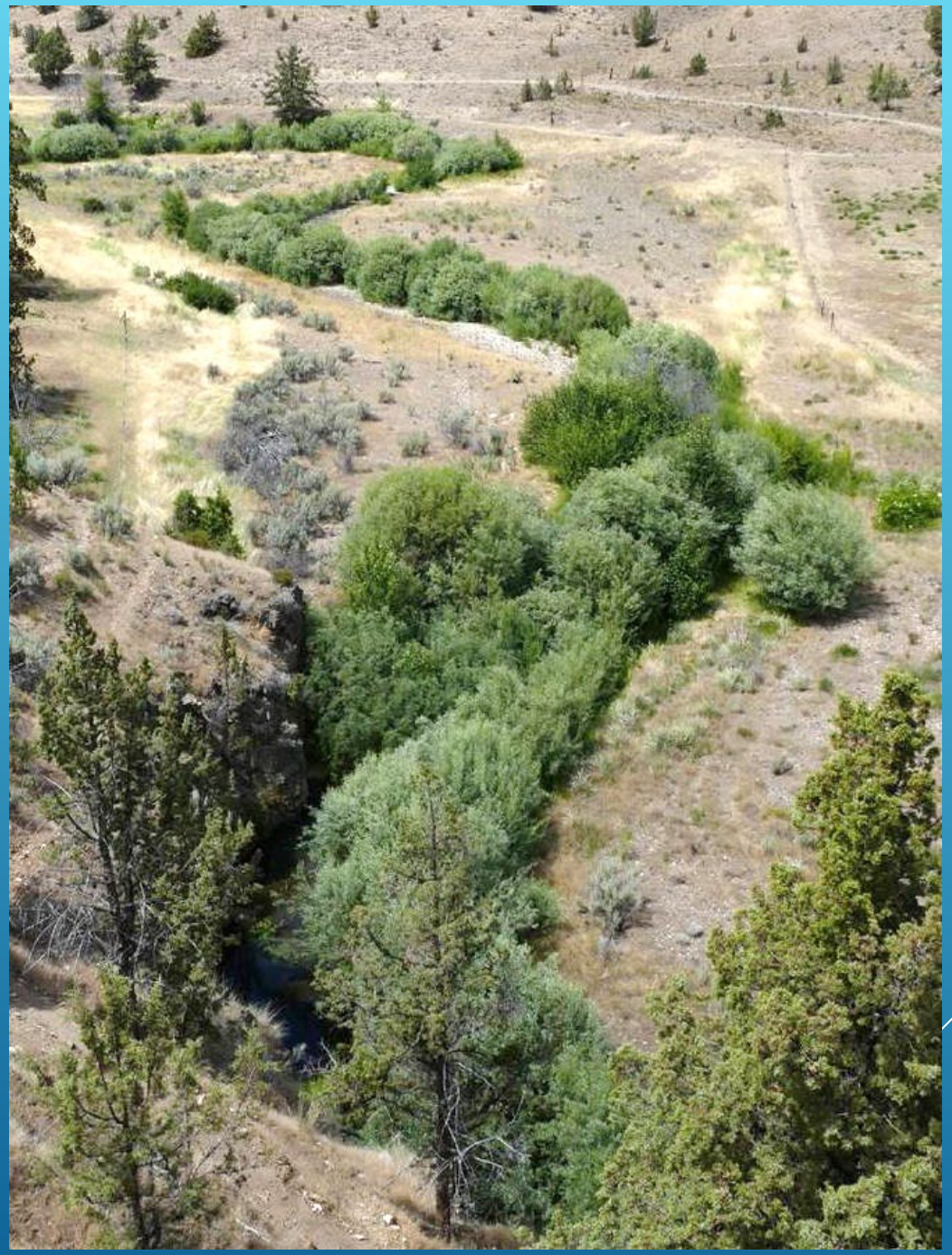
PRIDAY PHASE 2 2013

PRIDAY PHASE 2 2014



PRIDAY PHASE 2 2017

PRIDAY PHASE 2 2019



PRIDAY PHASE 2 2021

PRIDAY PHASE 2 2022


2005


2022

TROUT CREEK – PRIDAY PHASE 2
2005

TROUT CREEK – PRIDAY PHASE 2
2006

TROUT CREEK – PRIDAY PHASE 2
2007

TROUT CREEK – PRIDAY PHASE 2
2008

TROUT CREEK – PRIDAY PHASE 2
2009

TROUT CREEK – PRIDAY PHASE 2
2010

TROUT CREEK – PRIDAY PHASE 2
2011

TROUT CREEK – PRIDAY PHASE 2
2013

TROUT CREEK – PRIDAY PHASE 2
2014

TROUT CREEK – PRIDAY PHASE 2
2017

TROUT CREEK – PRIDAY PHASE 2
2021

TROUT CREEK – PRIDAY PHASE 2
2022


2005


2022

NYE PHASE 1 2005

NYE PHASE 1 2006

NYE PHASE 1 2007

NYE PHASE 1 2008

NYE PHASE 1 2009

NYE PHASE 1 2010

NYE PHASE 1 2011

NYE PHASE 1 2012

NYE PHASE 1 2013

NYE PHASE 1 2014

NYE PHASE 1 2015

NYE PHASE 1 2017

NYE PHASE 1 2019

NYE PHASE 1 2022

Nye Phase 1 – June 2005

Nye Phase 1 – June 2022


Nye Phase 1
2003

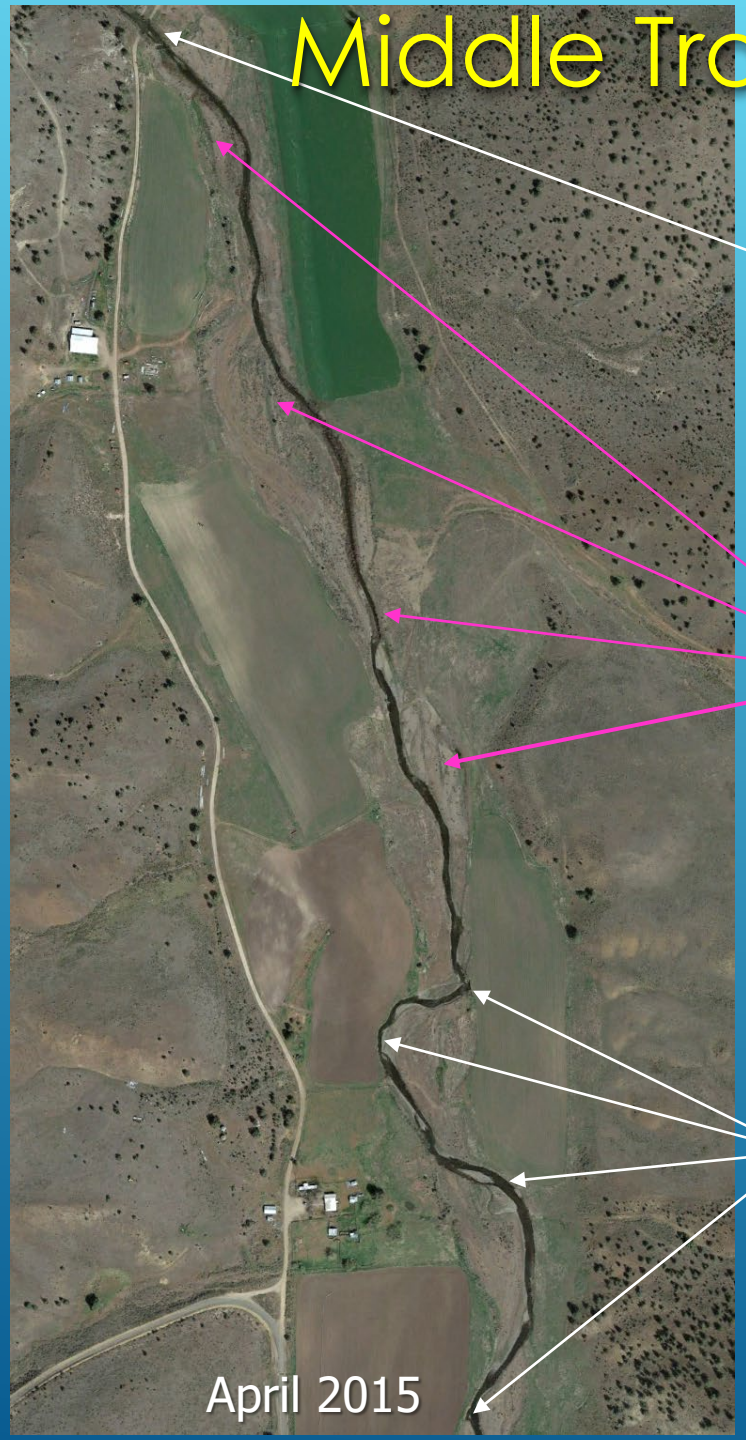
Nye Phase 1

2004


Nye Phase 1
2022

Nye Phase 3

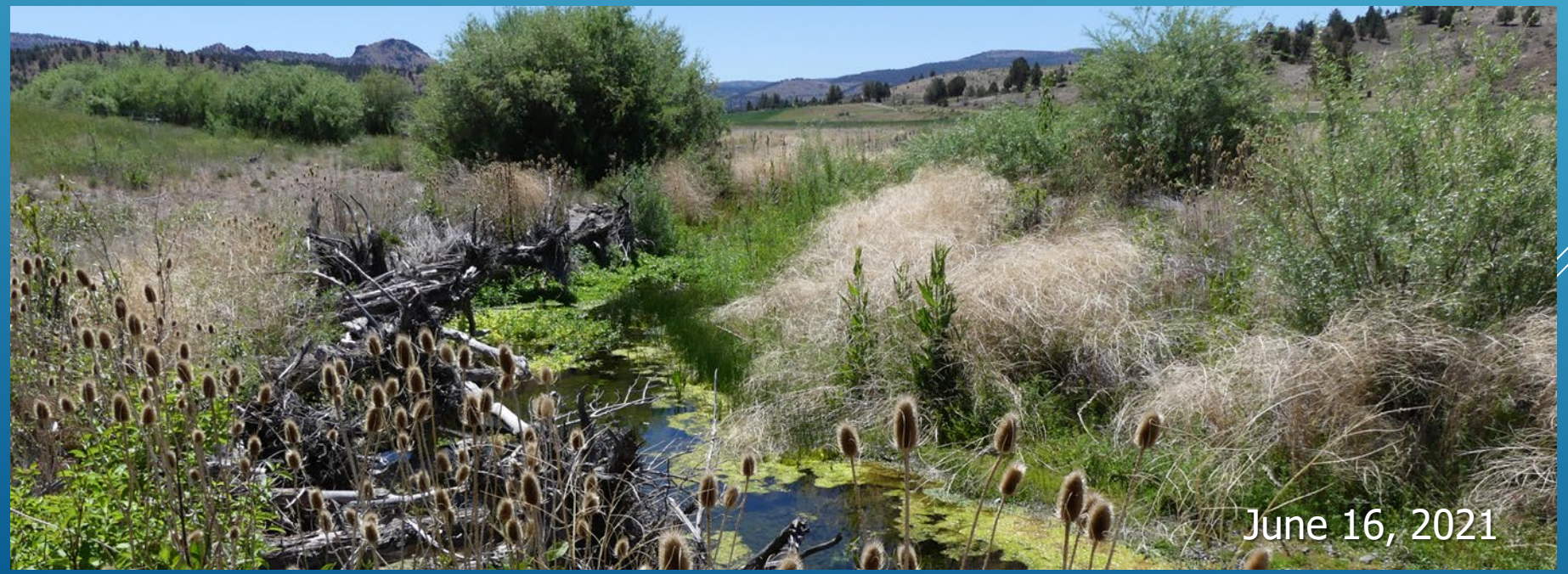
Middle Trout Creek Project - 2016




May 2013


June 2021


Riffle/Pool Maintenance after 1 month of bankfull flow – Feb 2017

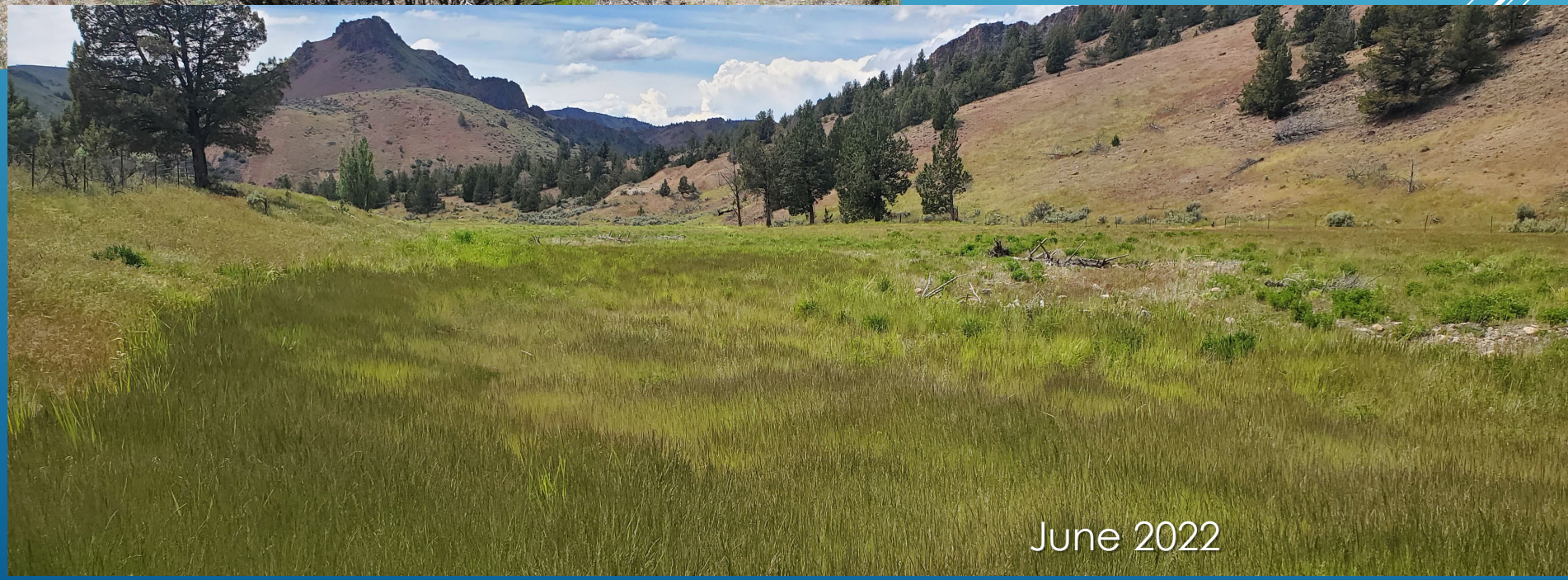

June 16, 2021

Riffle/Pool Maintenance after High Water Events – Feb 27, 2017

Riffle/Pool Maintenance after High Water Events – June 16, 2021

Little Trout Creek Habitat Improvement - 2020


June 2020


June 2022

Opal and Trout Creek - 2021

Fish Passage and Fish Habitat Improvement Project

2020 – 4' Round Culvert – Opal Creek

2022 – 22' Bottomless Culvert

2021- 6' Round Culverts – Trout Creek

2022 – 32' Bottomless Culvert

Beaver Creek - 2022 Fish Passage and Habitat Improvement Project

Trout Creek Channel Restoration Summary

2004 - 2022

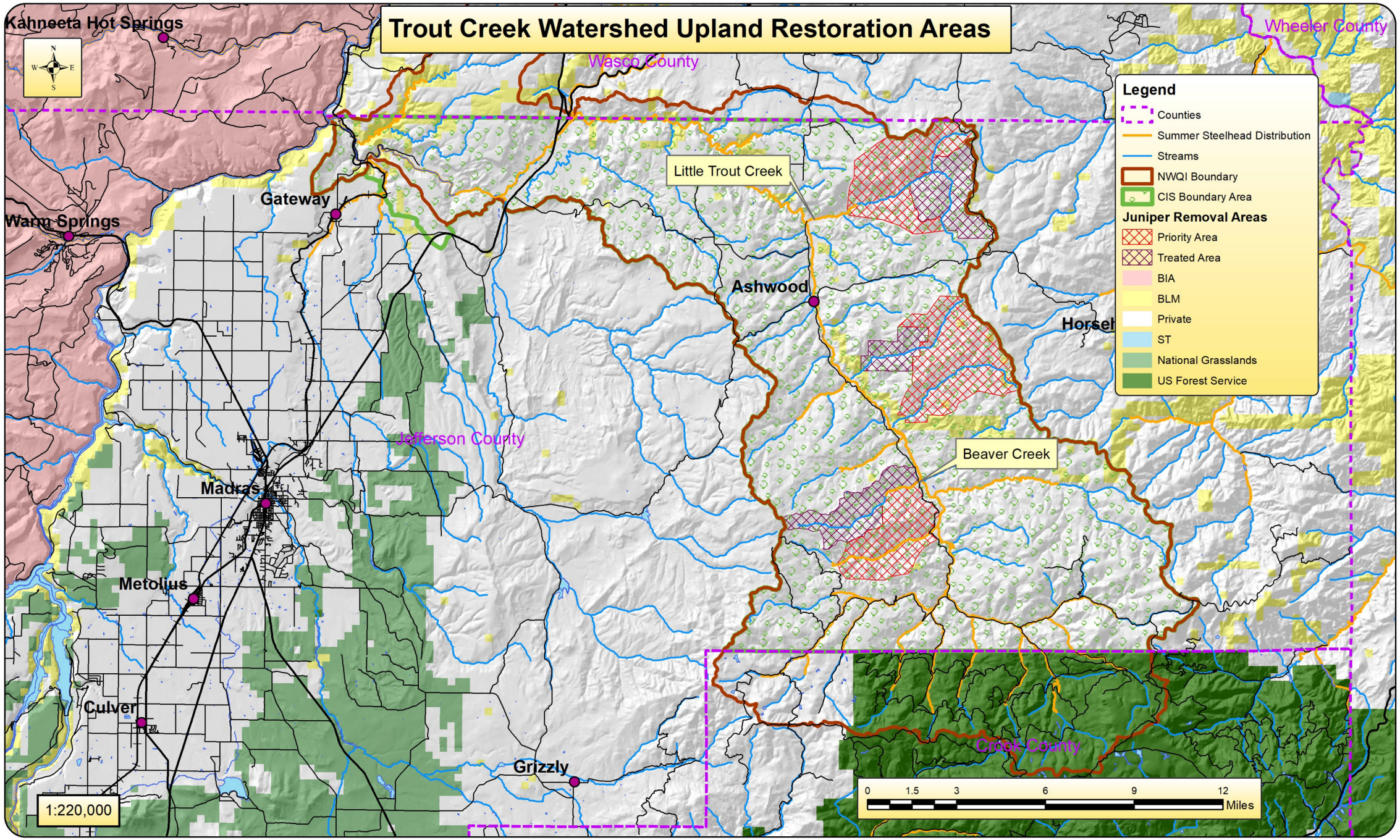
Length of stream miles restored: 14.4 miles

Added stream length	1.2 miles
Flood prone width Increase	205% avg.
Wetland/Pond created	10.05 surface acres
Pool/riffle complexes created	202
Alcove off channel refugia	5
Trees and shrubs planted	144,000
Native Grass and Forbs planted	6,810 lbs
Area enrolled into CREP or equivalent	373 acres

Trout Creek – Nye Phase 1 – May 2021

JEFFERSON SWCD

OREGON Fish & Wildlife


Trout Creek Watershed Upland Restoration Areas
Kahneeta Hot Springs
Wasco County
Wheeler County
Little Trout Creek
Gateway
Warm Springs
Ashwood
Horseh
Jefferson County
Beaver Creek
Madras
Metolius
Culver
Grizzly
Crook County
Legend
Counties
Summer Steelhead Distribution
Streams
NWQI Boundary
CIS Boundary Area
Juniper Removal Areas
Priority Area
Treated Area
BIA
BLM
Private
ST
National Grasslands
US Forest Service
0 1.5 3 6 9 12
Miles
1:220,000

Upland Restoration Efforts

- **Outside Funding Secured**: $1,324,273 (OWEB & NRCS)

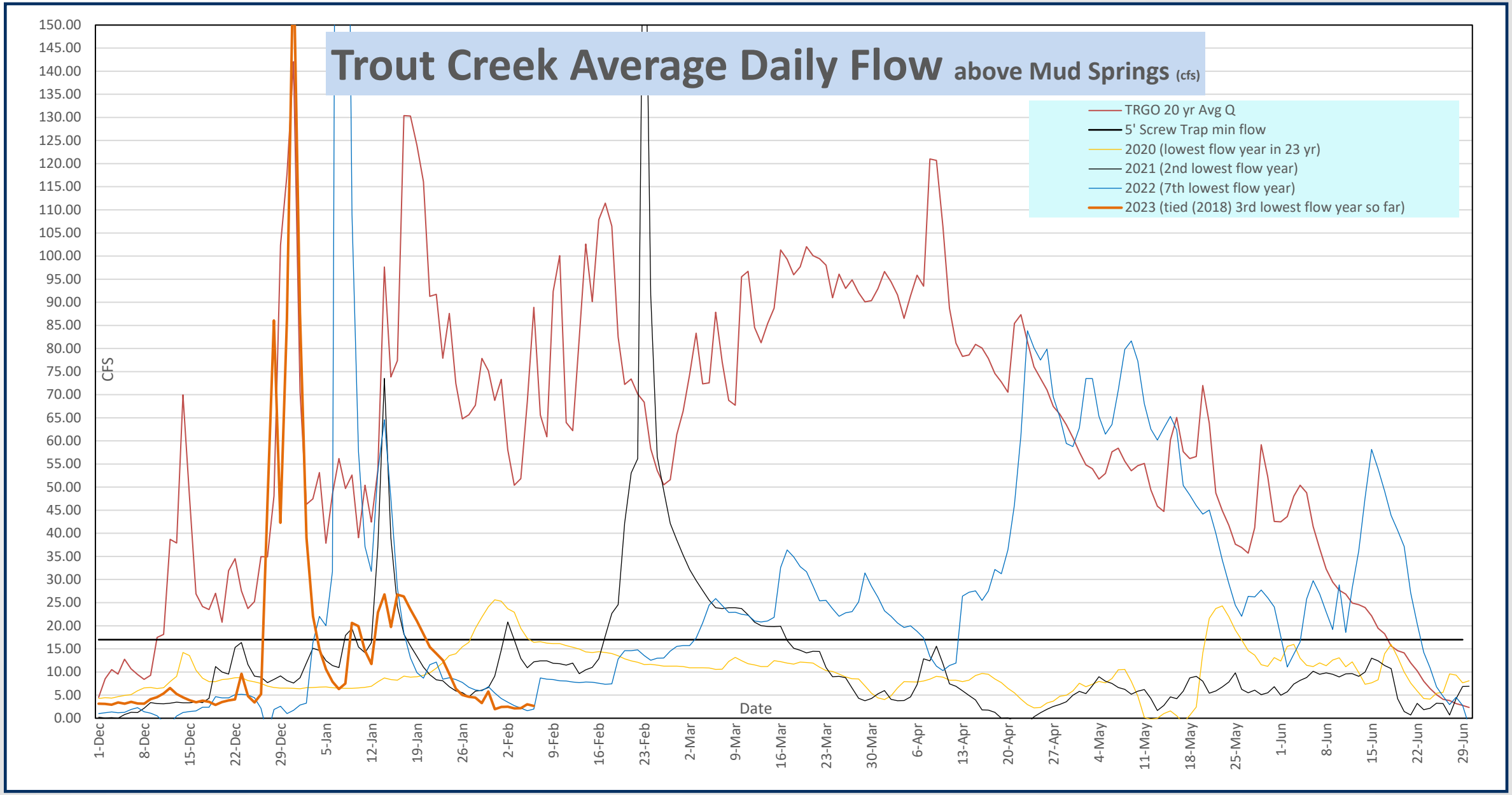
- **2019 to Present:**
  - 3,595 ac. of Juniper Removed
  - 1,700 ac. of Prescribed Burns
  - 700 ac. Annual grass control

- **Planned:**
  - 3,814 ac. of Juniper Removal
  - 1,400 ac. of Rx Burning
  - 917 ac. Perennial grass seeded


Beaver Creek Watershed– Nov 2019


Beaver Creek Watershed– June 2022


Questions?


Trout Creek Average Daily Flow above Mud Springs (cfs)
TRGO 20 yr Avg Q
5' Screw Trap min flow
2020 (lowest flow year in 23 yr)
2021 (2nd lowest flow year)
2022 (7th lowest flow year)
2023 (tied (2018) 3rd lowest flow year so far)
CFS
Date
150.00
145.00
140.00
135.00
130.00
125.00
120.00
115.00
110.00
105.00
100.00
95.00
90.00
85.00
80.00
75.00
70.00
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1-Dec
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22-Dec
29-Dec
5-Jan
12-Jan
19-Jan
26-Jan
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9-Feb
16-Feb
23-Feb
2-Mar
9-Mar
16-Mar
23-Mar
30-Mar
6-Apr
13-Apr
20-Apr
27-Apr
4-May
11-May
18-May
25-May
1-Jun
8-Jun
15-Jun
22-Jun
29-Jun