



Trinity River Restoration Program



Program Goals

The long term goals of the Program are to restore the form and function of the Trinity River; restore and sustain natural production of anadromous fish populations in the Trinity River to pre-dam levels; and to facilitate full participation by dependent tribal, commercial, and sport fisheries through enhanced harvest opportunities.

CHAPMAN RANCH PHASE A

IMPLEMENTATION OVERVIEW

JUNE – DECEMBER 2019



DESIGN: HOOPA VALLEY DESIGN TEAM

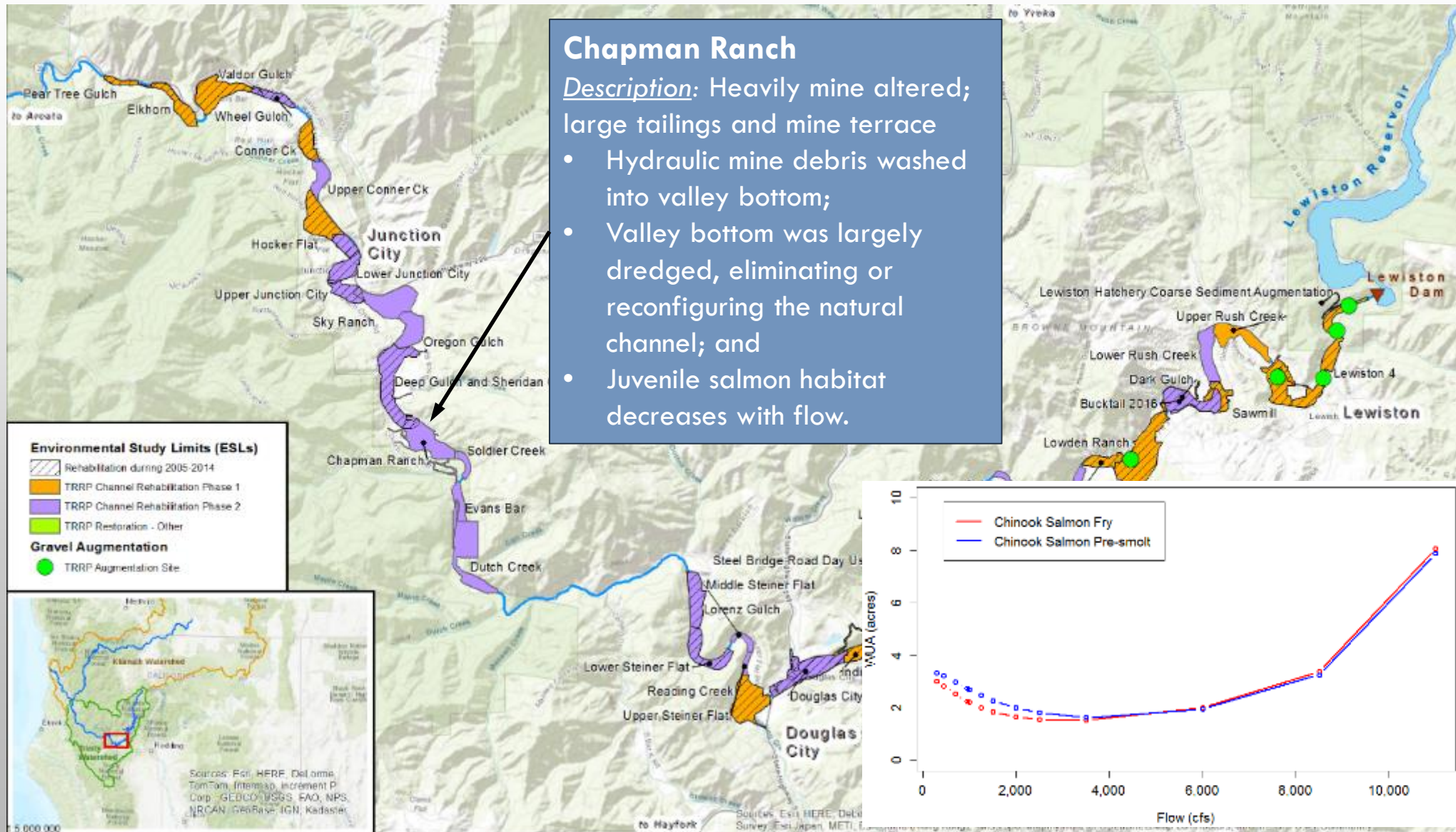
CIVIL IMPLEMENTATION: YUOK AND HOOPA VALLEY TRIBES

RIPARIAN IMPLEMENTATION : HOOPA VALLEY TRIBE

PRESENTERS: DJ BANDROWSKI AND FRED MEYER



SITE LOCATION AND PROBLEM STATEMENT



RESTORATION STRATEGY FOR CHAPMAN RANCH

SITE SPECIFIC OBJECTIVES:

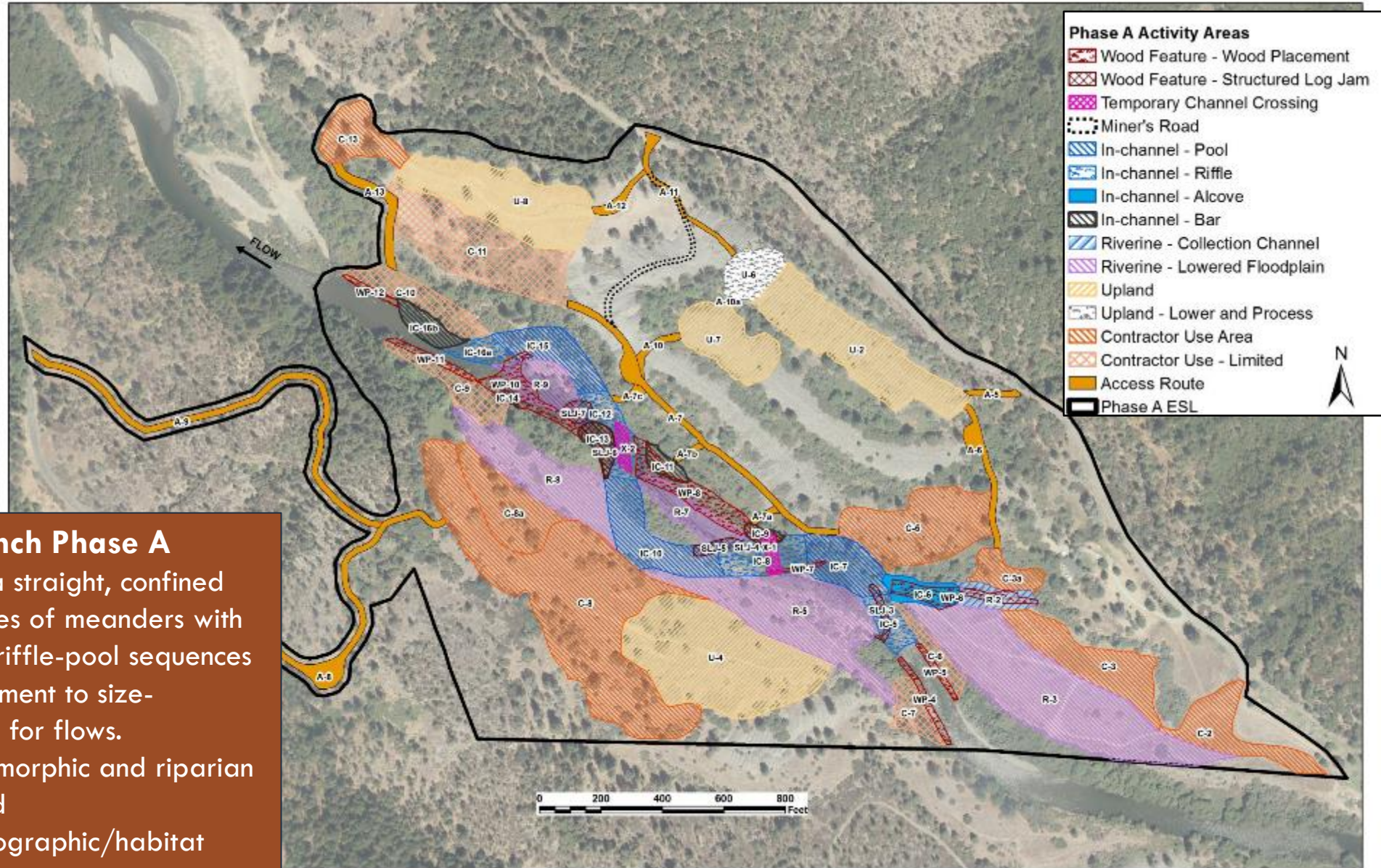
- GEOMORPHIC – NATURAL PROCESSES OF SCOUR AND DEPOSITION TO CREATE CHANNEL COMPLEXITY.
- RIPARIAN – RESTORE MULTI-STORY RIPARIAN VEGETATION
- HABITAT – CONSTRUCT/ENHANCE AREAS OF SUITABLE FLOW SPEEDS AND DEPTHS FOR JUVENILE SALMON AND STEELHEAD WITH ENHANCED ACCESS TO COVER:
 - MEANDERS
 - SIDE CHANNELS
 - ALCOVES
 - LARGE WOOD

PRE-CONSTRUCTION: 2018 SITE CONDITIONS



2018 Aerial photograph

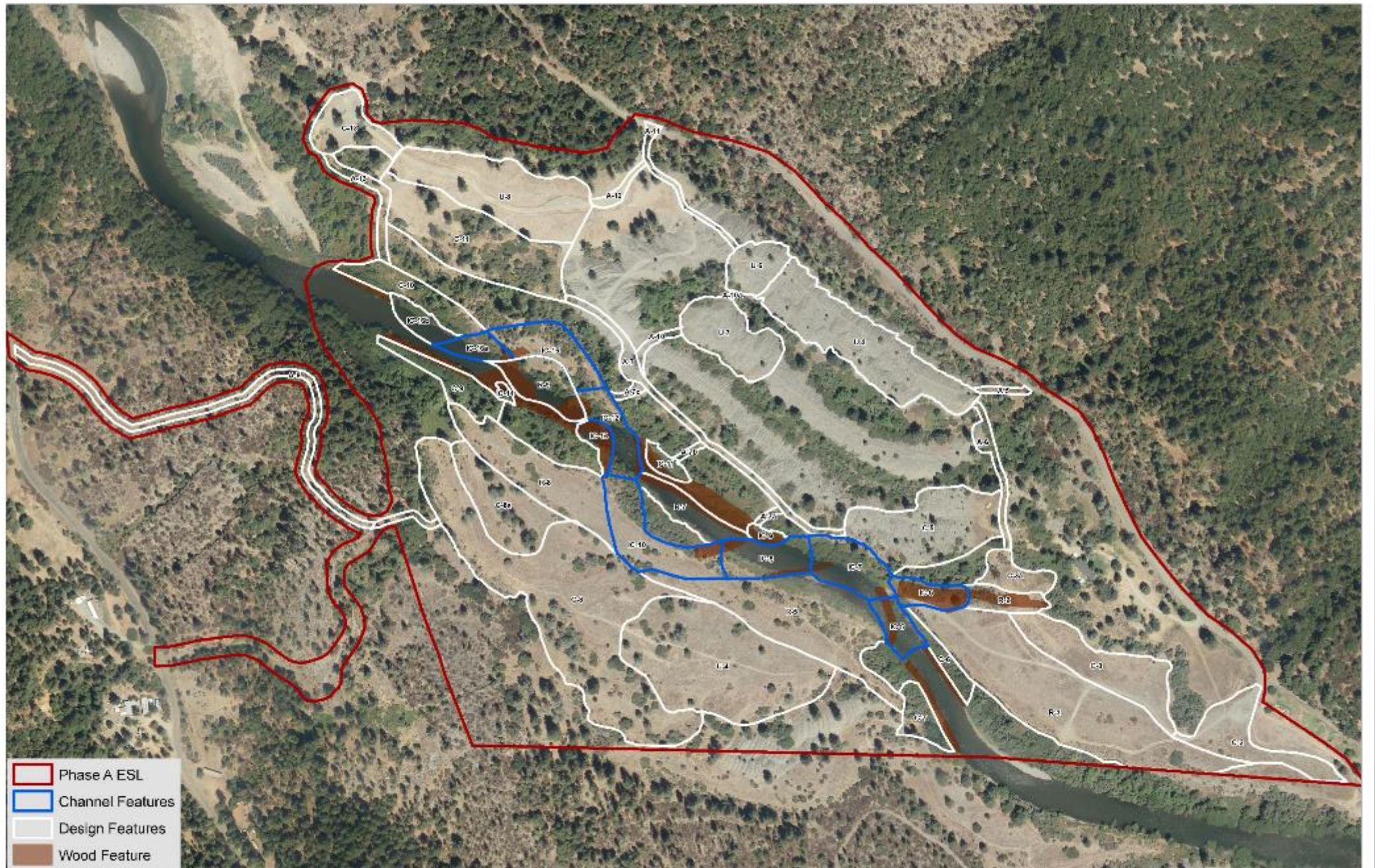
PRE-CONSTRUCTION: DESIGN OVERVIEW



Chapman Ranch Phase A

Intent: Realign a straight, confined riffle into a series of meanders with point bars and riffle-pool sequences

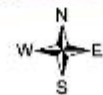
- Rescale sediment to size-appropriate for flows.
- Restore geomorphic and riparian function; and
- Provide topographic/habitat complexity.



Chapman Ranch Phase A

1:1,250

500 250 0 500 Feet



Design Features

CIVIL IMPLEMENTATION



Pre-project landscape - disconnected from contemporary flows. Soon to be lowered.



Processing of tailings into various coarse sediment size classes.

- *Fines saved to place on the surface of newly constructed floodplains and terraces, enhancing planting surfaces.*
- *Fish rock (1/4 inch to 5 inch) over 30,000 cubic yards placed in the channel appropriately scaled to interact with contemporary flows.*
- *Oversized (6 inch to 24 inch) to provide a skeletal component to bar features.*









2019/07/27







New Trinity River mainstem meanders.

CIVIL CONSTRUCTION



Over 500 pieces of large wood were brought to the site and used in the construction of Chapman Ranch.



Completed willow trench plantings that will establish quickly, trap fine sediment and rapidly restore floodplain processes.



Willow clump salvage and planting.

Total Earthwork: 200,000 CY

- **Excavation = 110,000 CY (Wet and Dry Excavation)**
- **Fill = 36,500 CY (Course Sediment and Cobble)**
- **Additional Material Processed = Approx. 50,000 CY**

CIVIL IMPLEMENTATION



Construction of a new, longer and more sinuous mainstem Trinity River.



*Meander construction isolated from the mainstem Trinity River.
Note clear Trinity River adjacent to active work area.*

CIVIL IMPLEMENTATION



Old Trinity River mainstem is now side-channel loaded with wood providing immediate high quality juvenile salmonid habitat.



Toppled trees increasing bank complexity and wood storage.



Completed alcove with large wood.

CIVIL IMPLEMENTATION



Trinity River July 2019 at 2,300 cfs.

- *Desired bank erosion as a result of new mainstem meander (upper left photo).*
- *Inundation of constructed floodplain (lower left photo).*
- *Large wood providing low velocity areas for salmonids (upper right photo).*

RIPARIAN IMPLEMENTATION



Nursery setup at Chapman Ranch.



Receiving plants.



Surfaces prepped for planting.

RIPARIAN IMPLEMENTATION



Seeding and mulching after planting.



Actively watering plantings prior to rains.



RIPARIAN IMPLEMENTATION



Pod planting – a combination of container stock and cuttings.



Thousands of sedges and rushes were planted by hand.



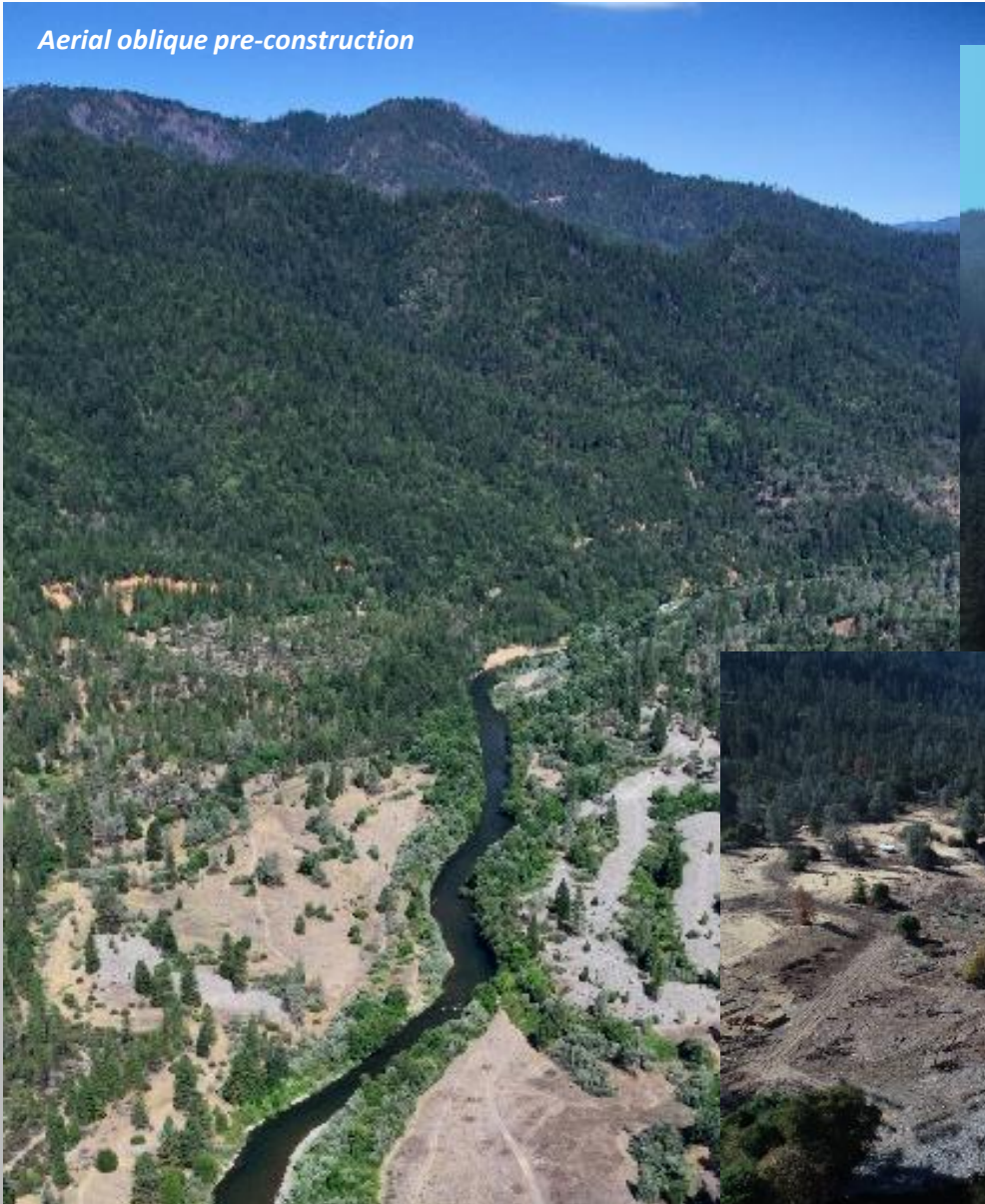
Willow clumps plated along channel margins quickly provide shade.



Completed willow trenches.

PRE VS POST CONSTRUCTION

Aerial oblique pre-construction



Aerial obliques post-construction



2018 AERIAL PHOTO AND 2019 DRONE PHOTO



BENEFITS

- Increase in channel length, sinuosity and complexity.
- Doubling of juvenile salmonid habitat.
- Reclaimed mine tailings increased coarse sediment supply and storage.
- Large wood supply increased from less than 10 to 500+ pieces.
- Floodplain now connected to contemporary flows quadrupling wetland and riparian areas.



[HTTPS://WWW.KCET.ORG/SHOWS/TENDING-
NATURE/WHAT-IT-TAKES-TO-RESTORE-A-RIVER-
FOR-SALMON-RUNS](https://www.kcet.org/shows/tending-nature/what-it-takes-to-restore-a-river-for-salmon-runs)

QUESTIONS?