



# What's around the next bend?

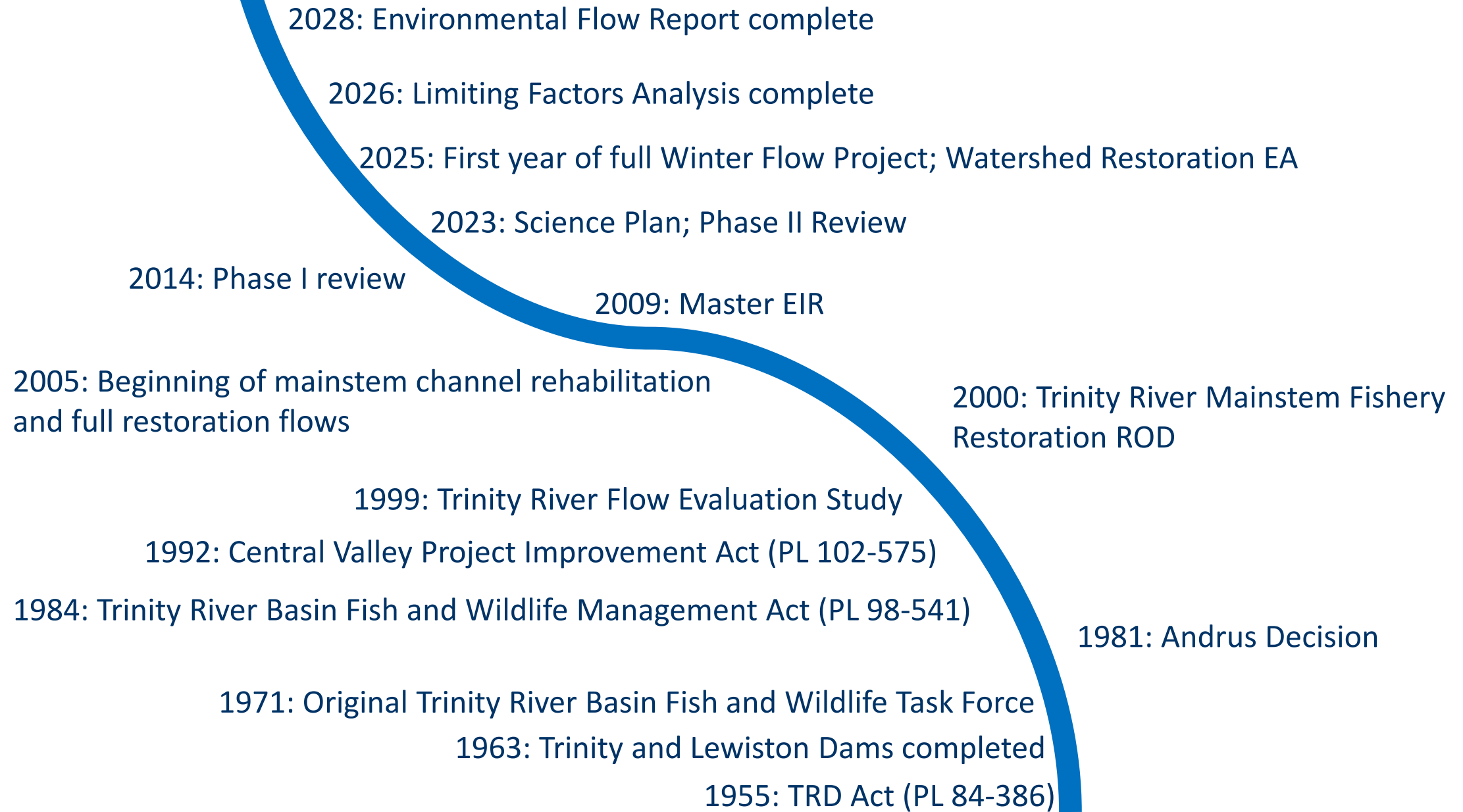
At 25, the TRRP looks back to see the future

Mike Dixon, Executive Director

December 10, 2025



- The restoration days of yore
- Evolution of our tools through time
- Checkpoints in our learning
- What comes next?







# Gravel augmentation, 1983









Confluence with Grass Valley Creek, April 1986 (DWR)





Sand dredging, September 1986 (DWR)





# Construction of Hamilton Ponds and Buckhorn Dam







Rush Creek side channels



Salt Flat side channel





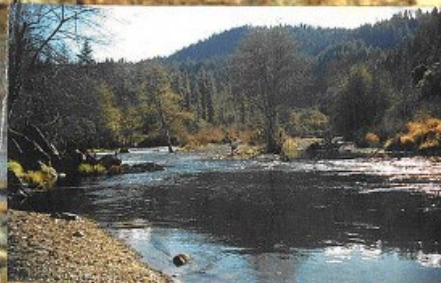
Douglas City, 1960



Douglas City, 1997



**TRINITY RIVER FLOW EVALUATION  
FINAL REPORT  
JUNE 1999**



**UNITED STATES  
FISH & WILDLIFE SERVICE  
AND HOOPA VALLEY TRIBE**

*Calman*





## Trinity River Restoration Program

*The long-term goals of this 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.*





Gravel Augmentation

# Our toolbox



Channel Rehabilitation

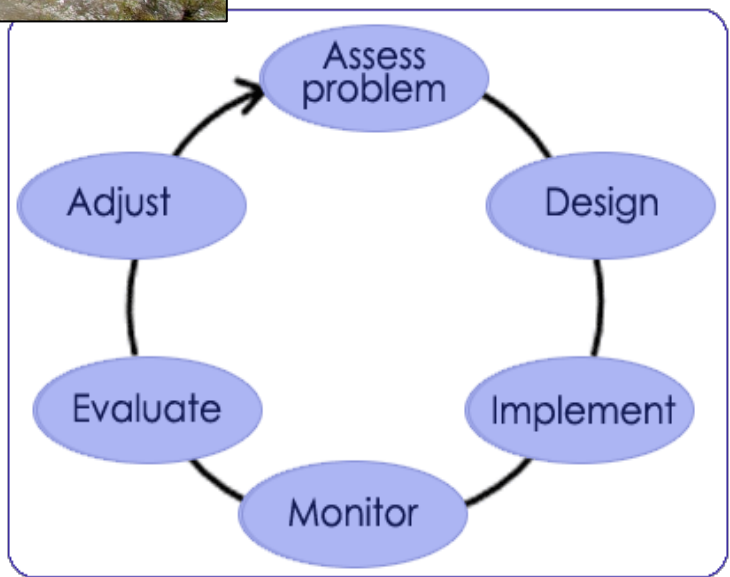


Watershed Restoration

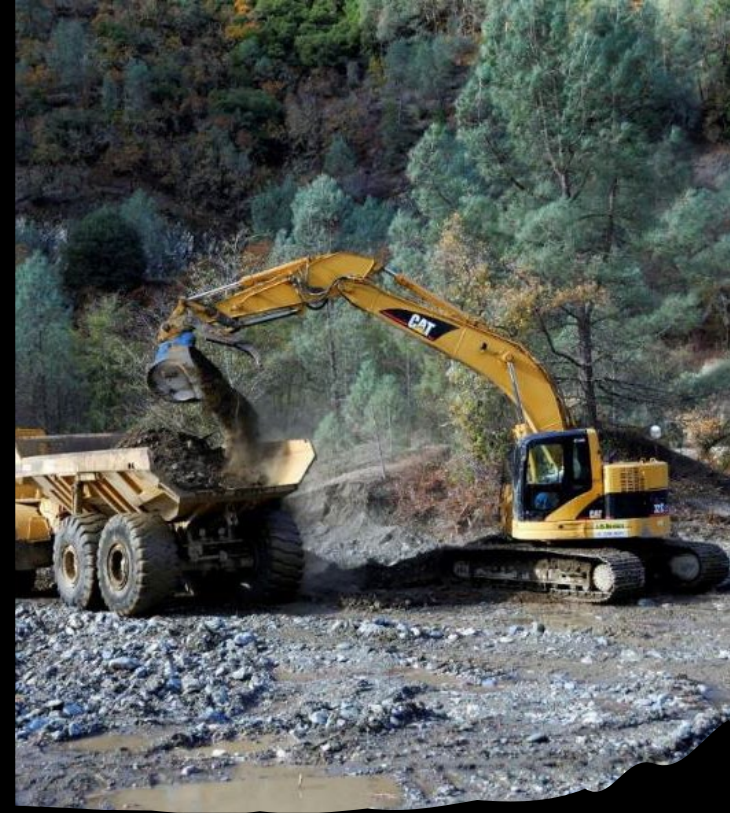
Adaptive Management



Restoration Flows

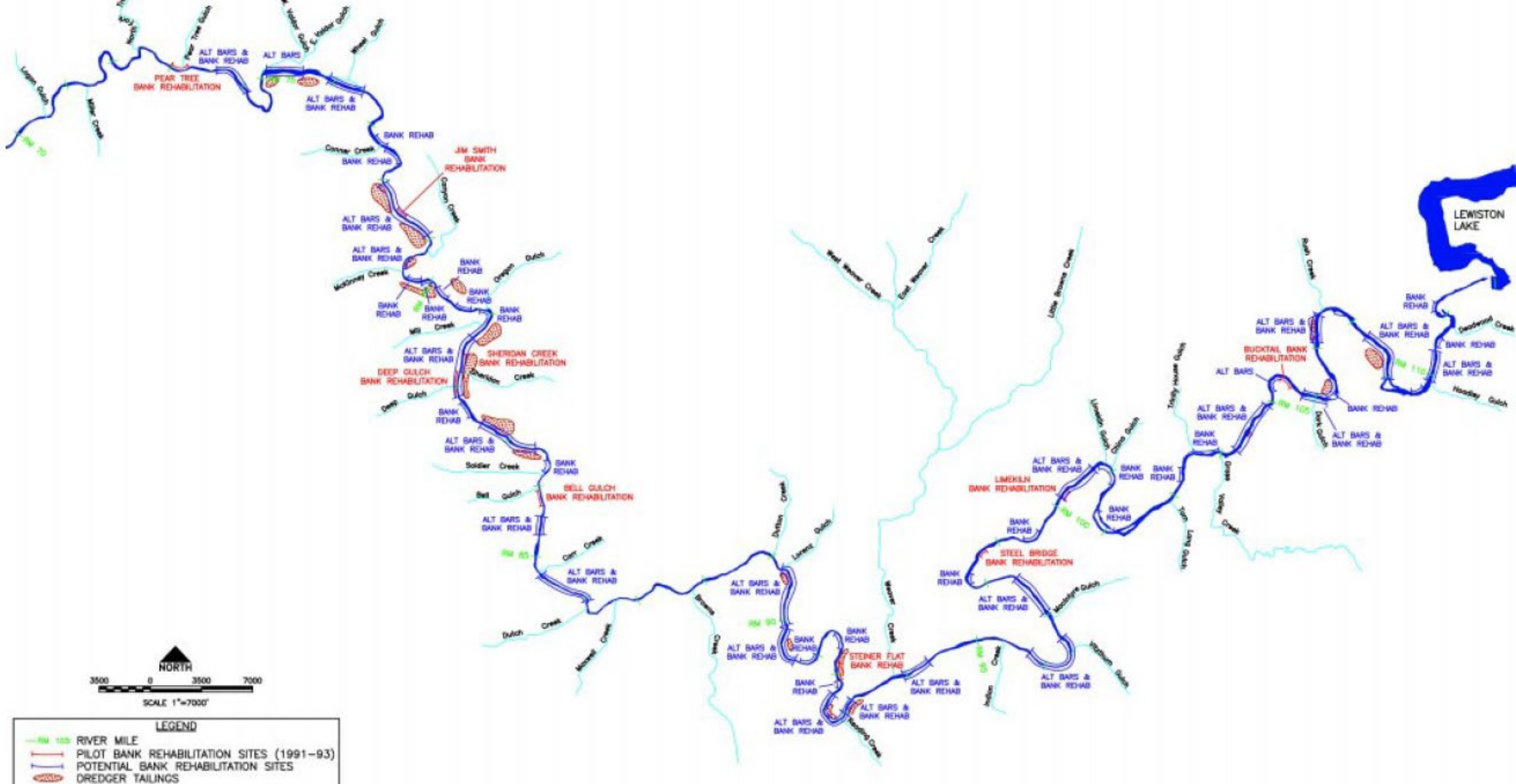






# Channel Rehabilitation







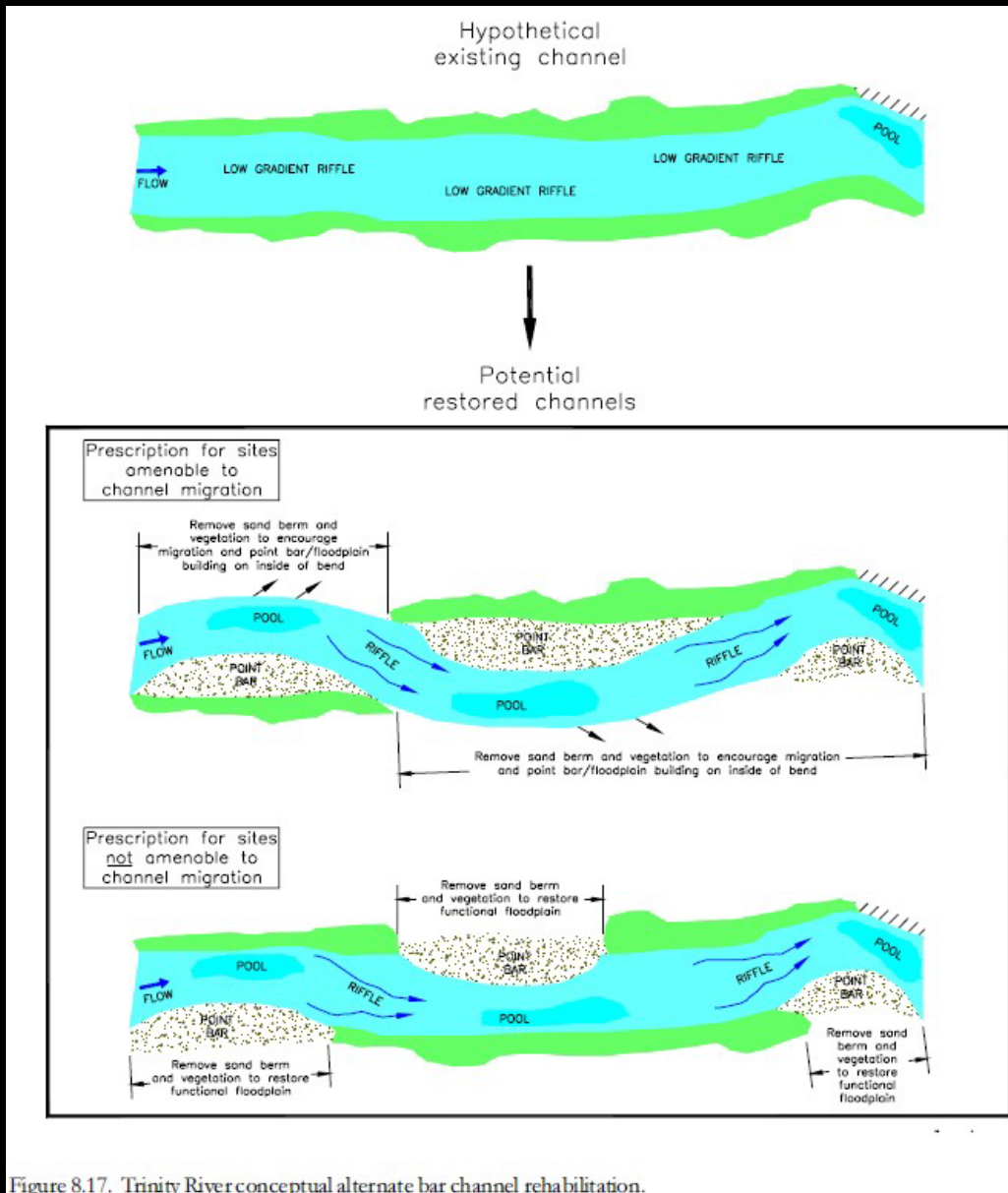


Figure 8.17. Trinity River conceptual alternate bar channel rehabilitation.

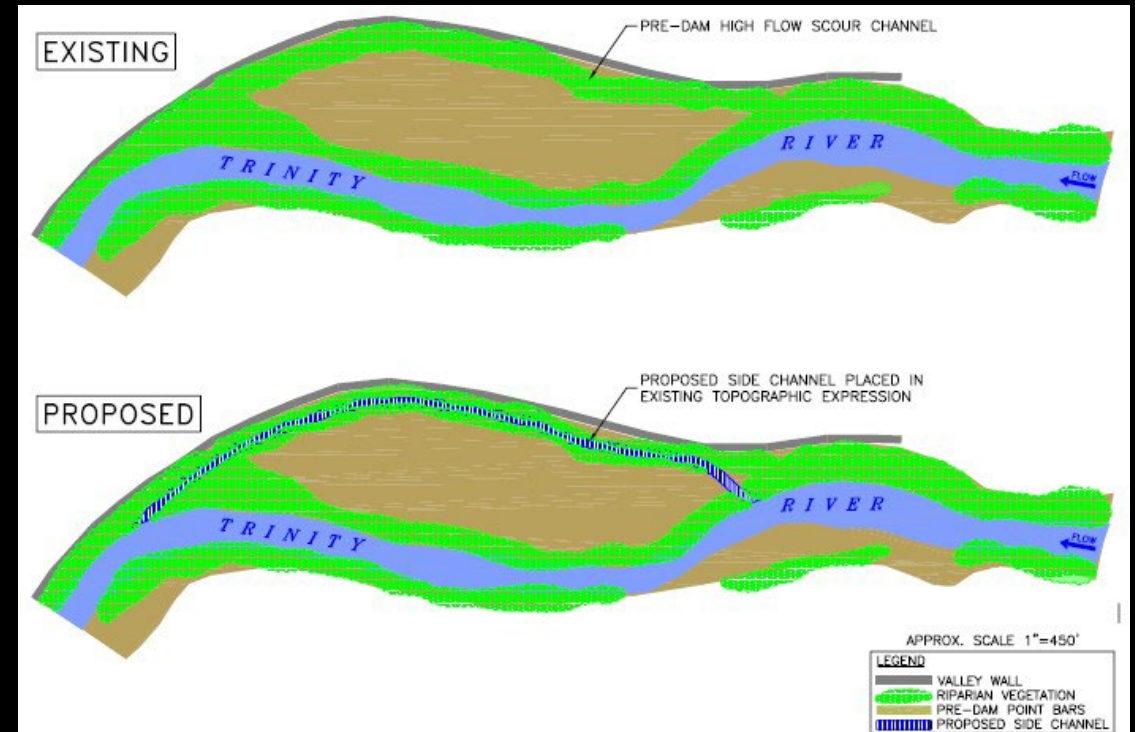


Figure 8.18. Trinity River conceptual side channel rehabilitation.







# Hocker Flat (2005)

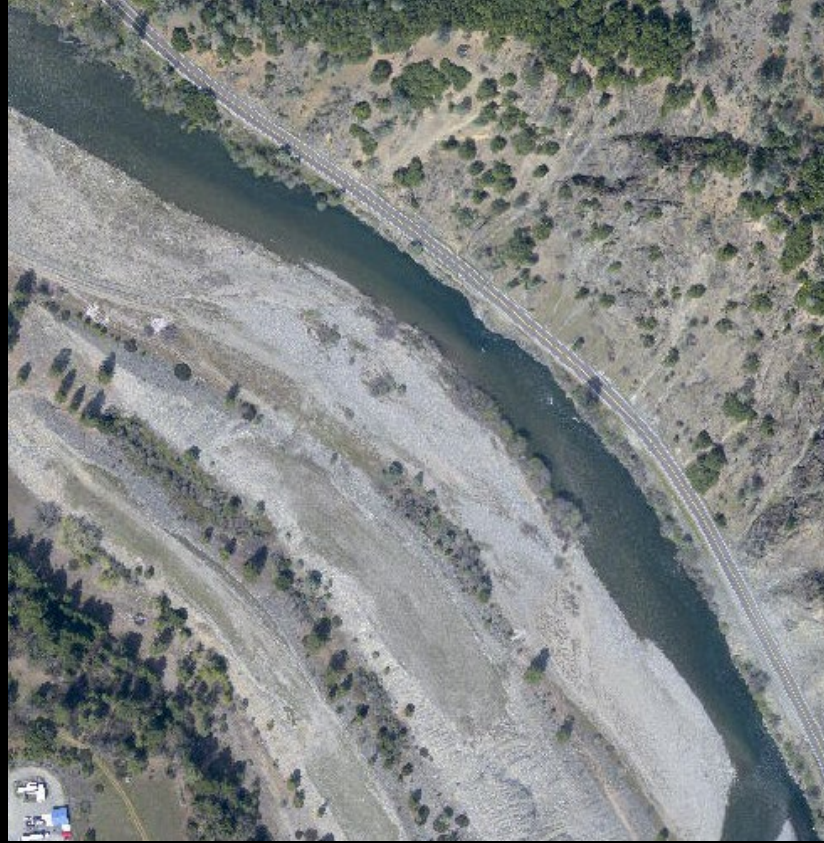
- Feathered edges
- Berm removal
- Floodplain lowering







2001



2009



2024

## Hocker Flat

- Essentially no channel dynamism
- Feathered edge recolonized by narrow strip of narrowleaf willow
- Riparian revegetation very poor, even with revisit





Elkhorn floodplain



Pear Tree wood jam



Valdor point bar and flood plain

## Canyon Creek Suite (2006)

- Floodplain grading and feathered edge projects similar to Hocker Flat
- Noteworthy for first use of large wood in our restoration projects, though it was unsophisticated and did not persist
- Pear Tree was not one of the 47 EIS sites

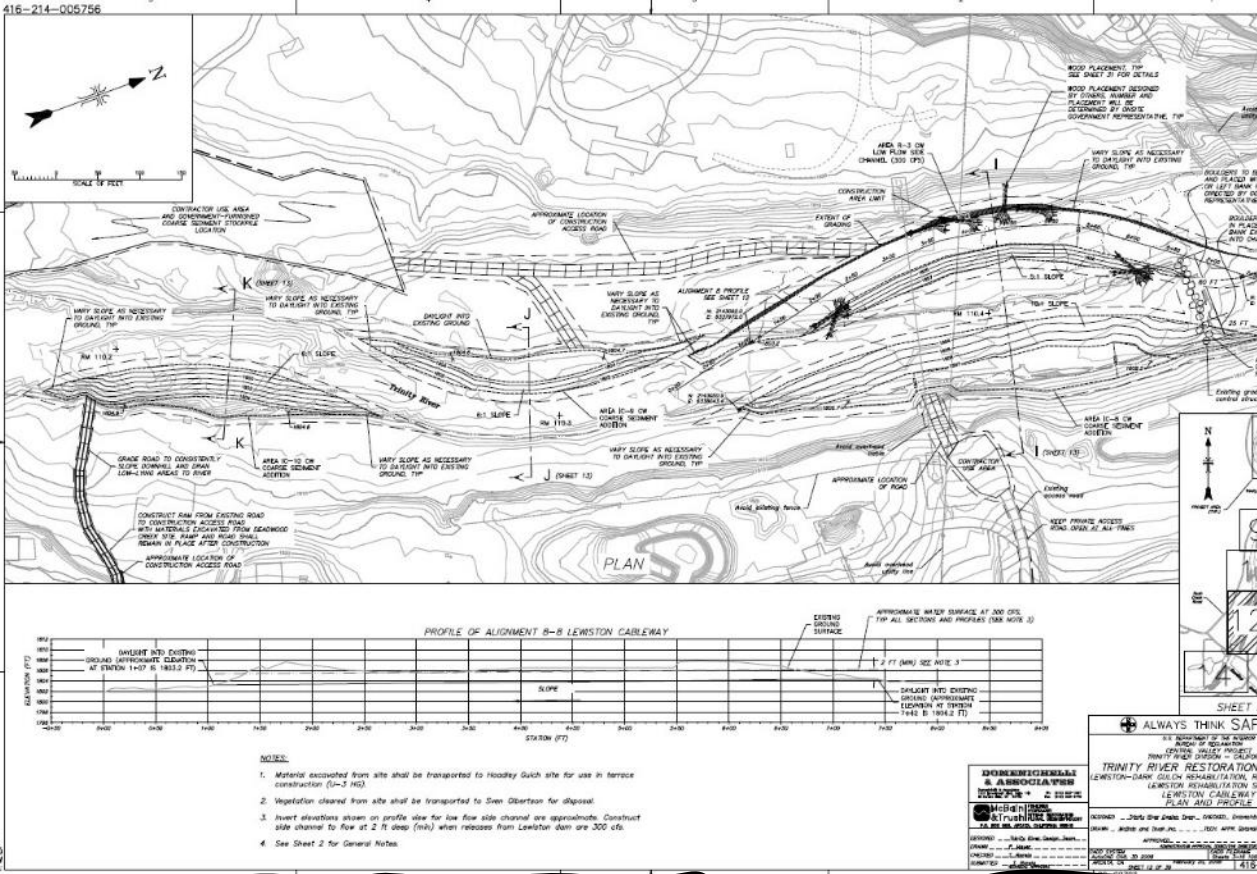




## Indian Creek (2007)

- One of three TRFES identified side channels (Weaver Creek)
- Home of the notorious “boat slips”, an attempt to notch berms on the inside of the point bar at Vitzhum Gulch





# Cableway

2008



## Sven Olbertson (2008)

- Identified as a bank rehabilitation site, became side channel improvements
- Portions ceased to function; reactivated following gravel work in 2024
- Very good riparian vegetation and aquatic habitat







## Sawmill (2009)

- Legacy side channel site with floodplain lowering and additional side channel work
- Removed grade control structures from river
- Incorporated engineered log jam features



# Lowden Ranch and Trinity House Gulch (2010)

- Fully transitioned into constructed habitat era – “if you build it, they will come”
- Aggressive in-channel and side channel work at Lowden Ranch (but also floodplain lowering and channel expansion)
- Trinity House Gulch also included a side channel not planned for in the TRFES



# Channel Design Guide (2011)

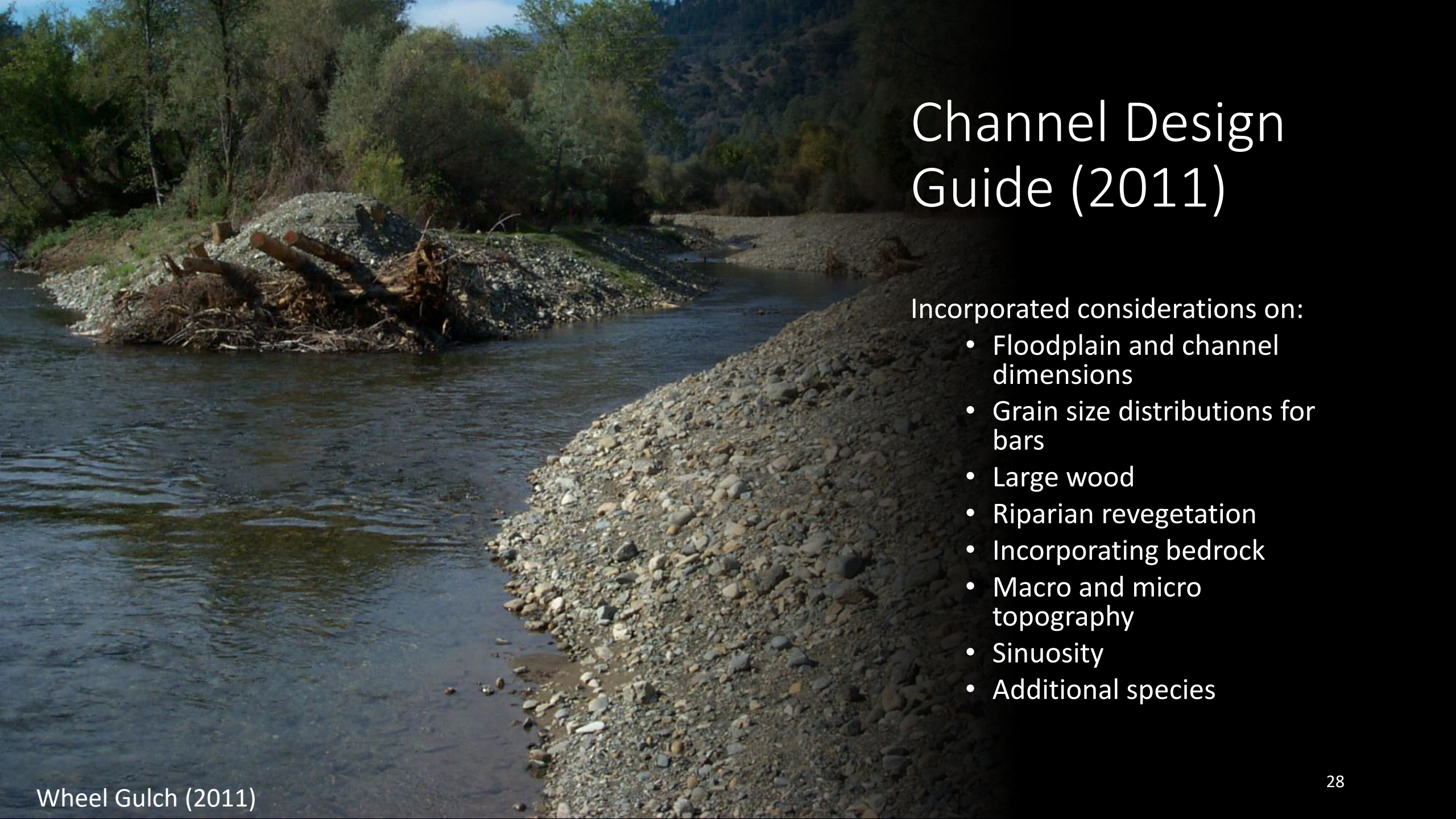
Based on learning and practices since TRFEFR

*Channel avulsion will certainly not occur via the ROD high flow regime, and will likely not occur even during tributary-derived flood events.*

*...there is growing emphasis on evaluating the role of coarse sediment supply on bar form and evolution rather than strictly striving for a balanced coarse sediment budget*

*...early side channel entrance failures resulted in the TRFEFR and ROD focusing on mainstem channel rehabilitation over side channel restoration, and thus only three side channels were identified for construction. However, secondary channels (side channels, split channels, high flow channels) have become much more common in designs due to their immediate habitat benefits. Secondary channels are now considered in every site design and are implemented in many*



A photograph of a river channel with a rocky bar in the foreground and a log jam on the left bank. The river is flowing from the left towards the background. The right bank is a steep, rocky slope. The left bank has a large pile of logs and debris. The background shows a forested hillside.

# Channel Design Guide (2011)

Incorporated considerations on:

- Floodplain and channel dimensions
- Grain size distributions for bars
- Large wood
- Riparian revegetation
- Incorporating bedrock
- Macro and micro topography
- Sinuosity
- Additional species



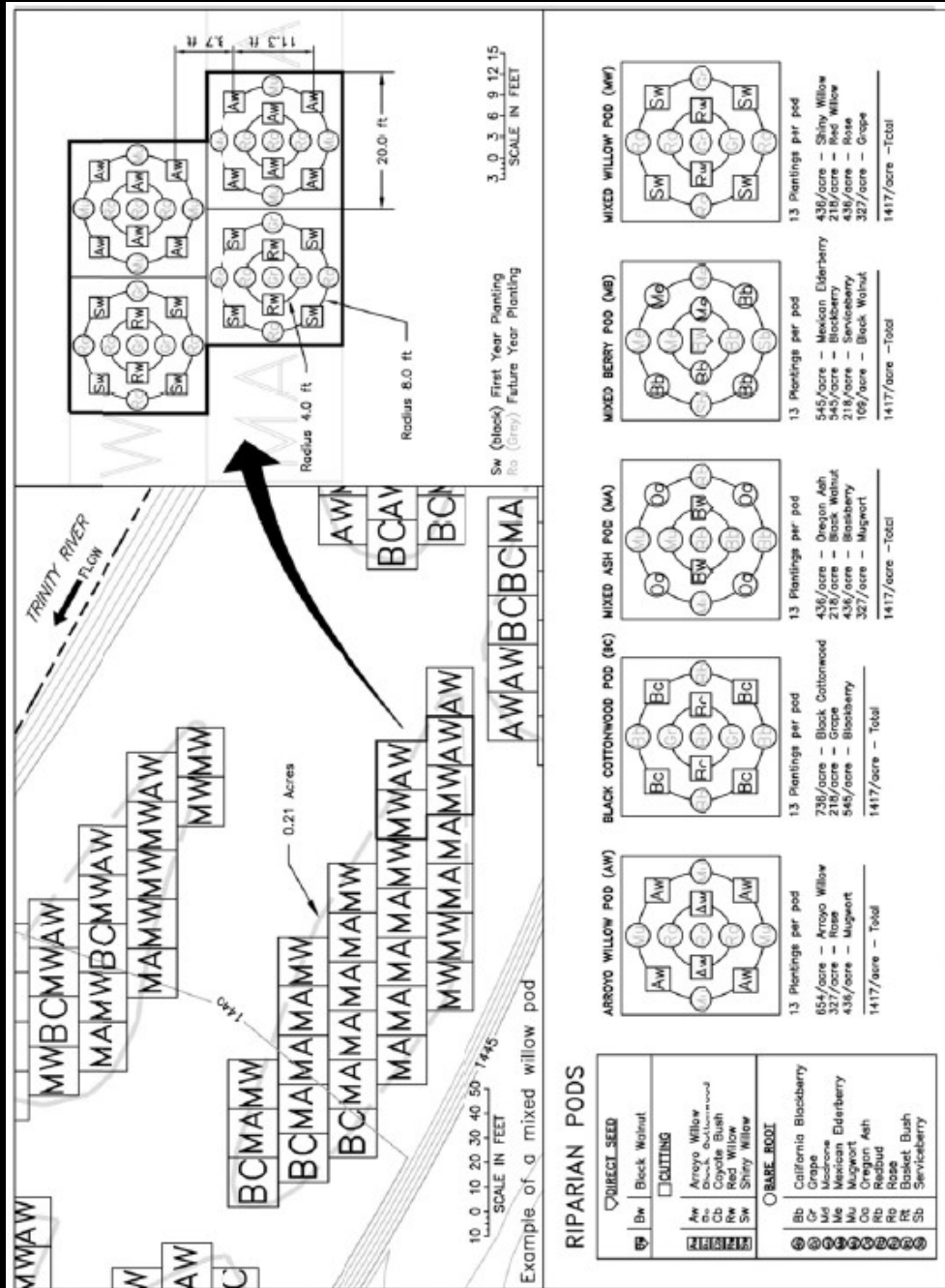


Figure 5-47. General revegetation design layout showing patches, planting pods, species composition within pods and plant layout within planting pods.

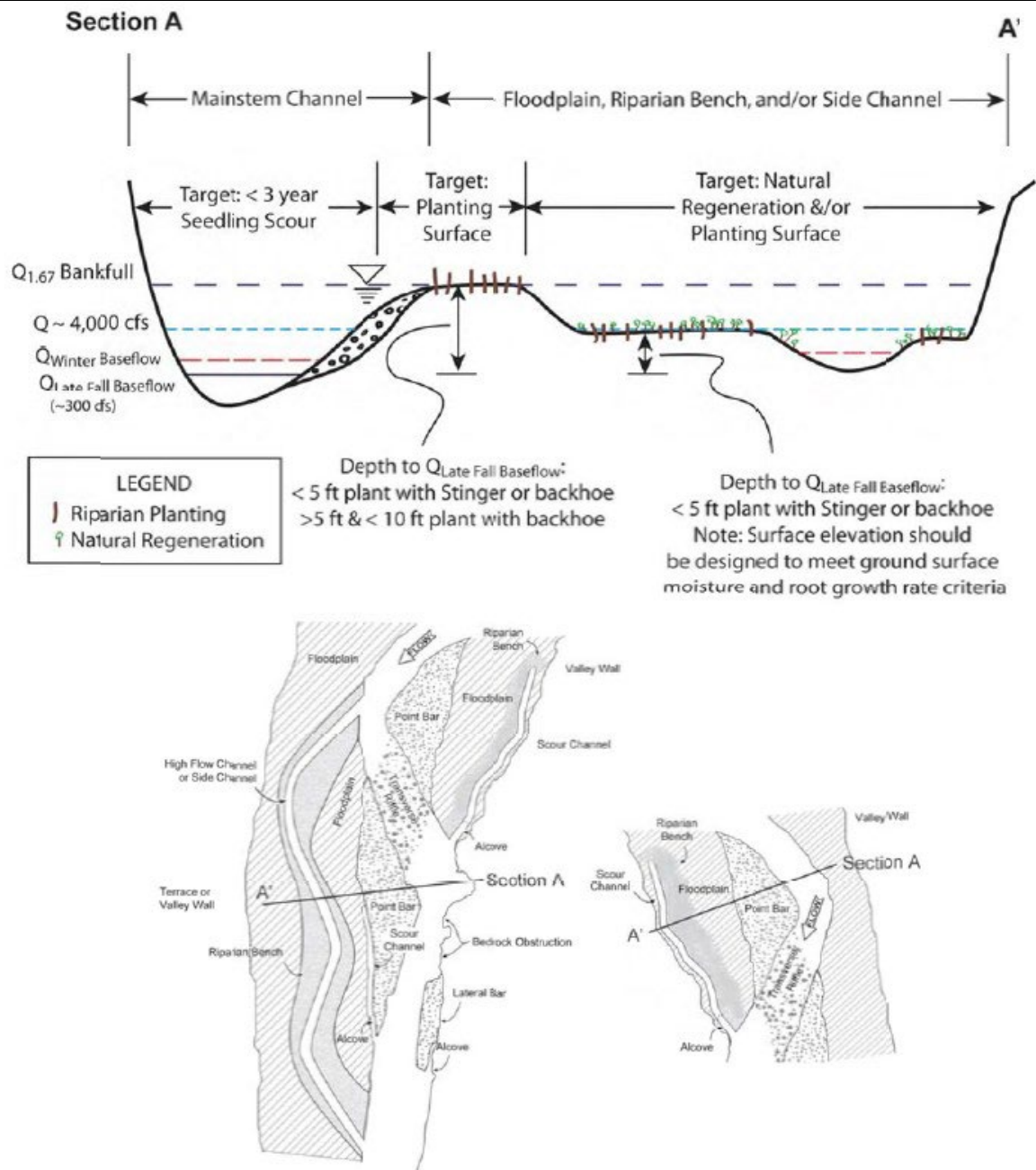


Figure 5-42. Example of riparian objectives associated with the mainstem channel, alluvial bars, secondary channels (e.g. alcoves, side channels...), and floodplains.





## Review of the Trinity River Restoration Program Following Phase 1, with Emphasis on the Program's Channel Rehabilitation Strategy

Prepared for Trinity River Restoration Program

April 2014

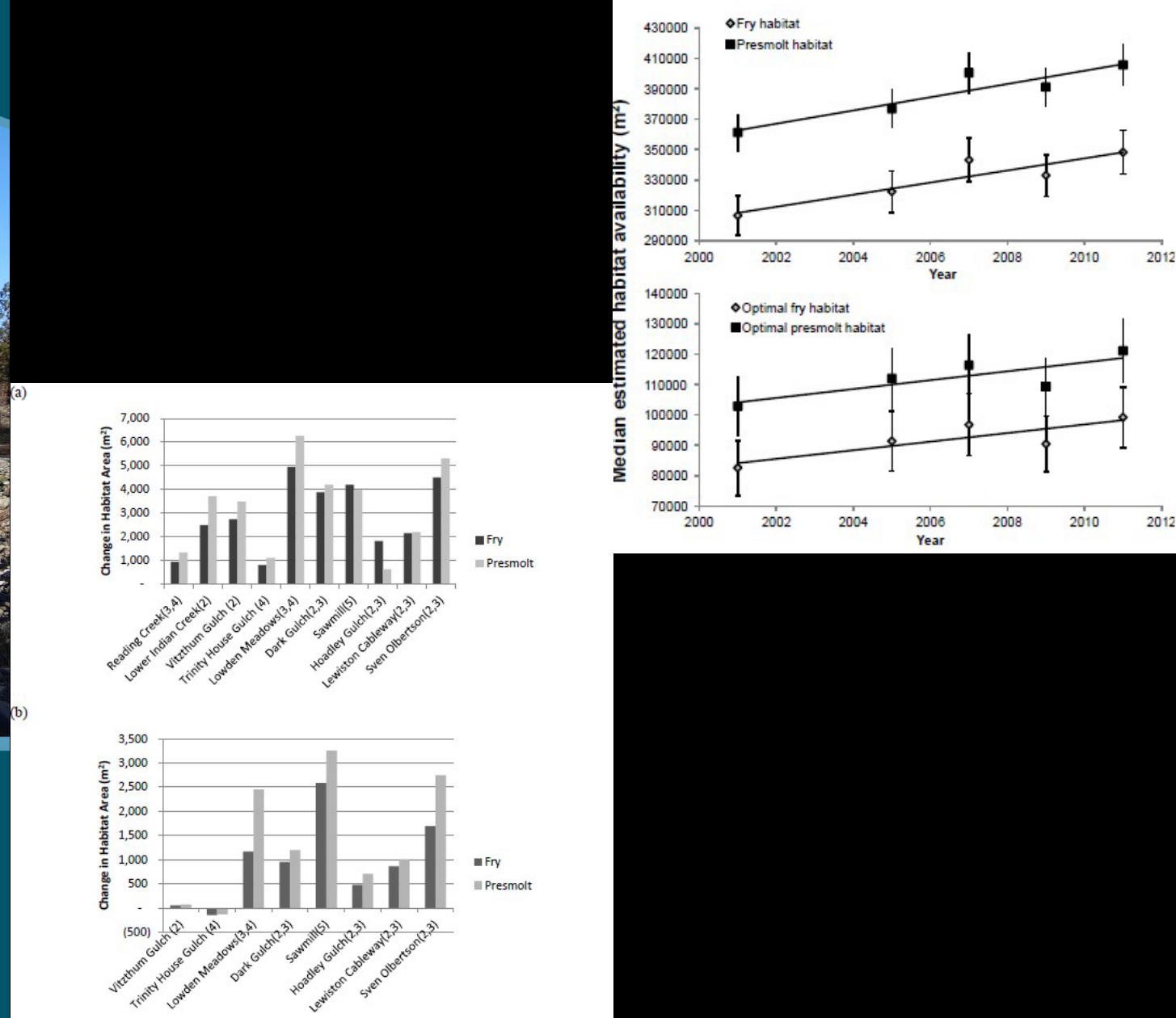


Figure 6

Change in (a) total and (b) optimal habitat area for juvenile Chinook and coho salmon at Phase 1 rehabilitation sites from pre- to post-construction condition at base flow ( $8.6 \text{ m}^3 \cdot \text{s}^{-1}$ , 300 cfs). Note the change in vertical scale between panels. Data sources: (2) Goodman et al. (2010), (3) Alvarez et al. (2011), (4) unpub. Program data, and (5) Martin et al. (2012). See Appendix A, Section 2.1.5 for further detail.



# Phase I review

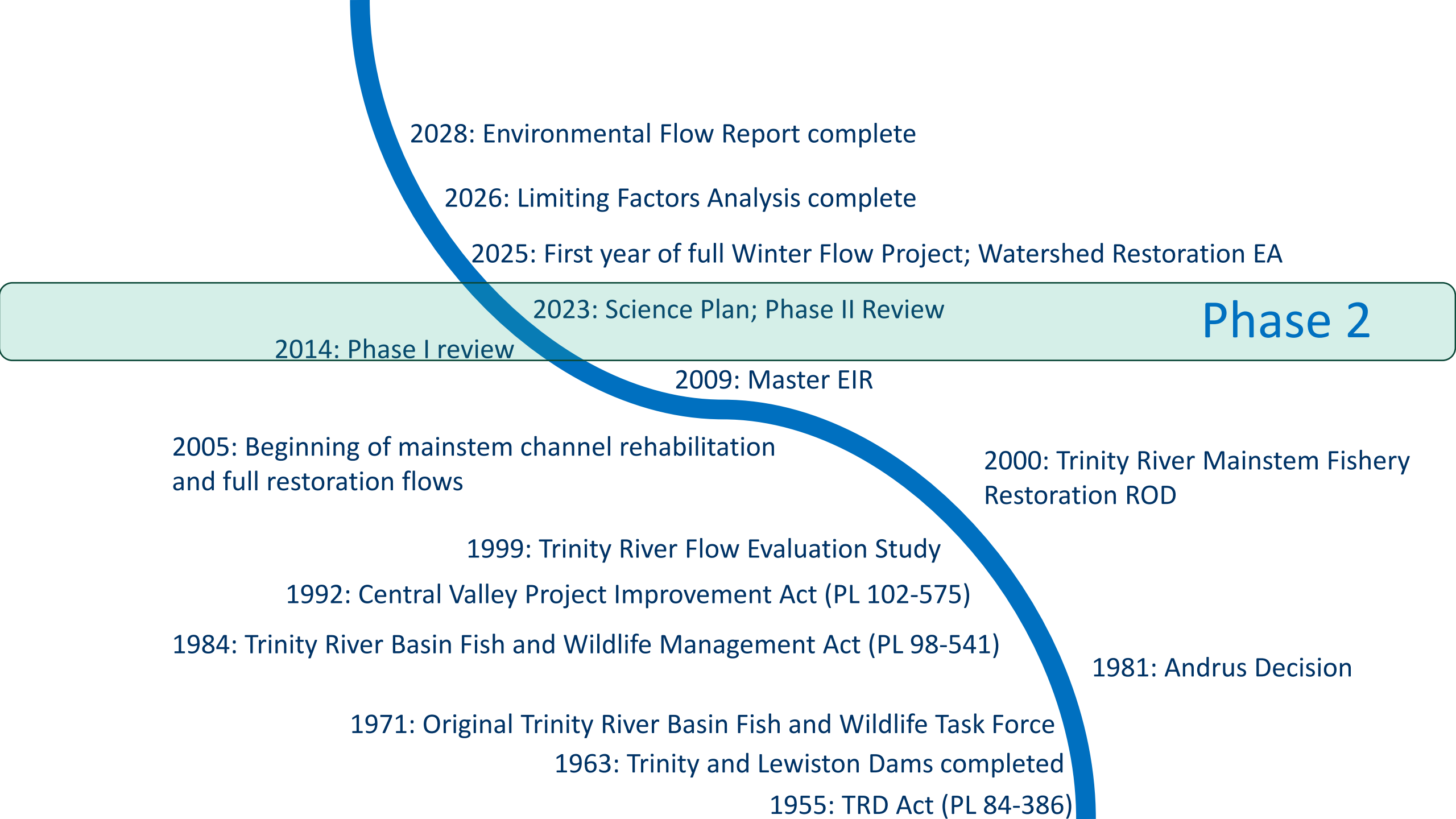
“First, the river is much less alluvial than originally envisioned. The original and perhaps over simplistic view of the river as being fully alluvial with riparian stabilized berms along the length of the river is now known to apply only to a much smaller portion of the restoration reach...Second, river terraces from past mining activity may require extensive cutting in locations where floodplain habitat is being designed for juvenile fish to use during high-flow events...Third, large-scale channel features may be needed to interact with flood flows and drive more rapid changes.” (p32)



# Phase I review

- “The design process for channel rehabilitation projects is focused at site scales and does not yet consider the larger effects of rehabilitation actions, nor how individual projects may be interacting with one another and collectively affecting fish habitat and production. The same is true for other program activities (e.g., management of flow, temperature, and sediment). Nor are the relative effects of these activities on fish production known.” (p34)
- “Phase 2 projects should continue to use opportunistic design strategies to promote dynamic alluvial reaches where possible, while working with local constraints on channel morphology in this semi-alluvial river. Designs should be based on models involving channel morphodynamics, flow–habitat relations, and fish production, rather than based on alluvial regime theory and reach-average channel characteristics.” (p40)









2018

# Lower Steiner Flat

2012



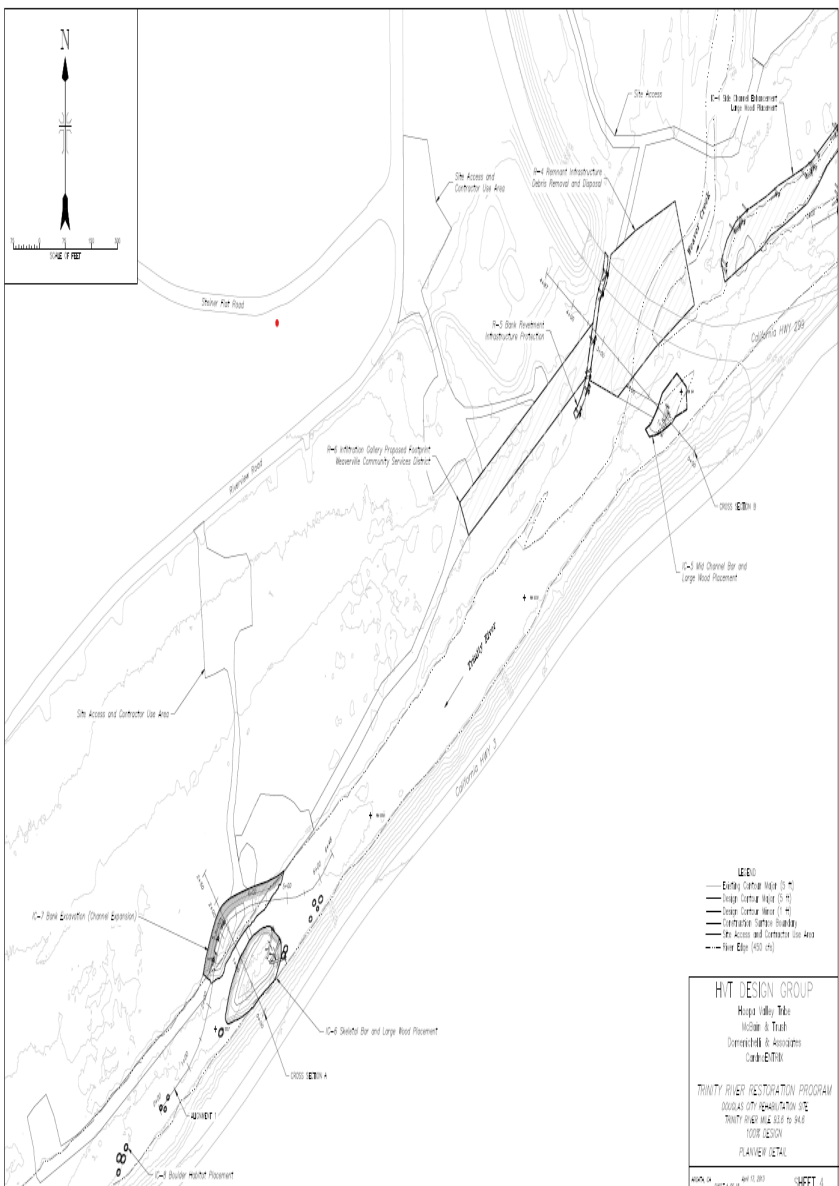
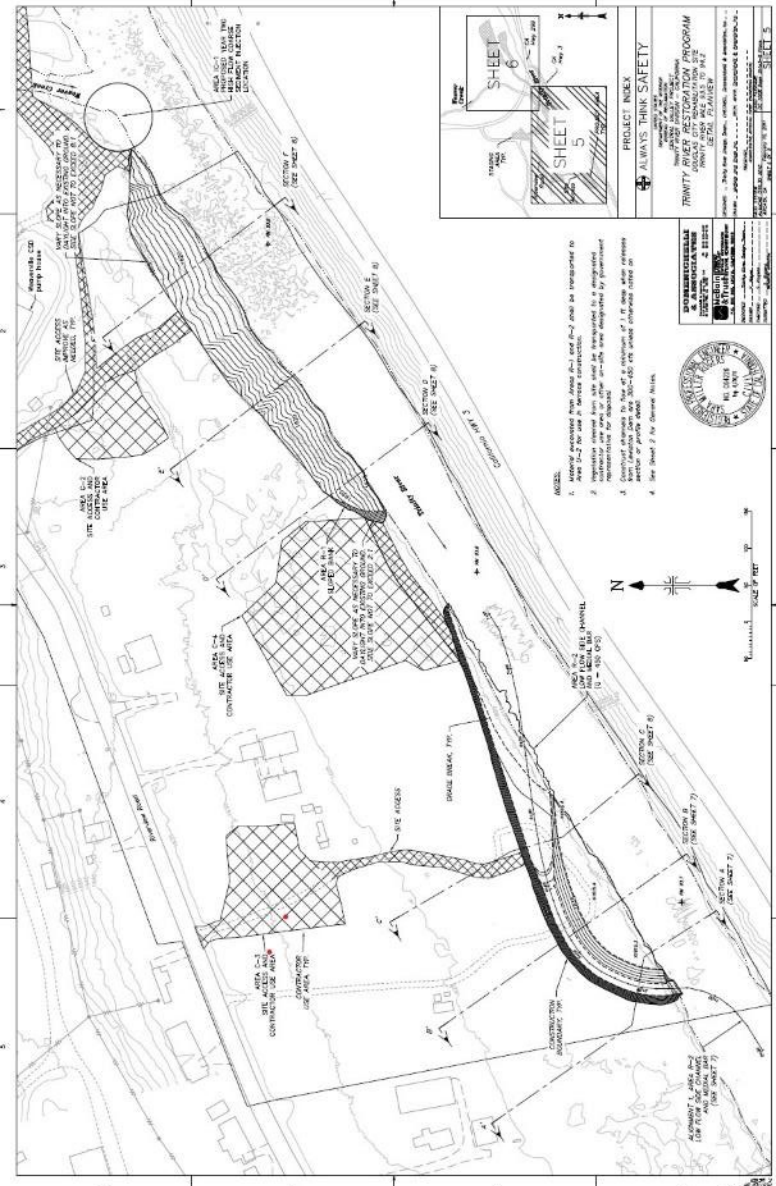


Upper Junction City (2012)



# Lower Douglas City (2013)

2024







## Upper Douglas City & Limekiln (2015)

- Both very much constructed habitat projects, but different in approach and scale
- Upper Douglas City was largely a revisit to the 2007 Indian Creek Project
- Limekiln was first to directly incorporate tribal employees in construction





# Bucktail (2016)

- Revisit to 2008 Dark Gulch Project, which was itself in the footprint of a pre-TRRP channel rehab project
- Focus on immediate constructed habitat results
  - Side channels, large wetlands, alcove, new meander





## Bucktail (2016)

Strong revegetation emphasis  
Incorporation of beaver dam analog and large wetland  
features



# Deep Gulch & Sheridan Creek (2017)

Sheridan Creek (Oct 2018)



- Very different design approaches
  - DG emphasized process – medial bar w/channel expansion, alcove wetland, floodplains
  - SC emphasized immediate habitat – off-channel ponds, large meander
- Post high-flow change led to analysis of site evolution

Deep Gulch (Oct 2025)





# Chapman Ranch

- “It will never happen”
- Enormously complex
  - Ownership
  - Both sides of the river
  - Mining claim
  - Cultural resource
- First attempt to really occupy the whole valley
- Network of new channels and lowered floodplains

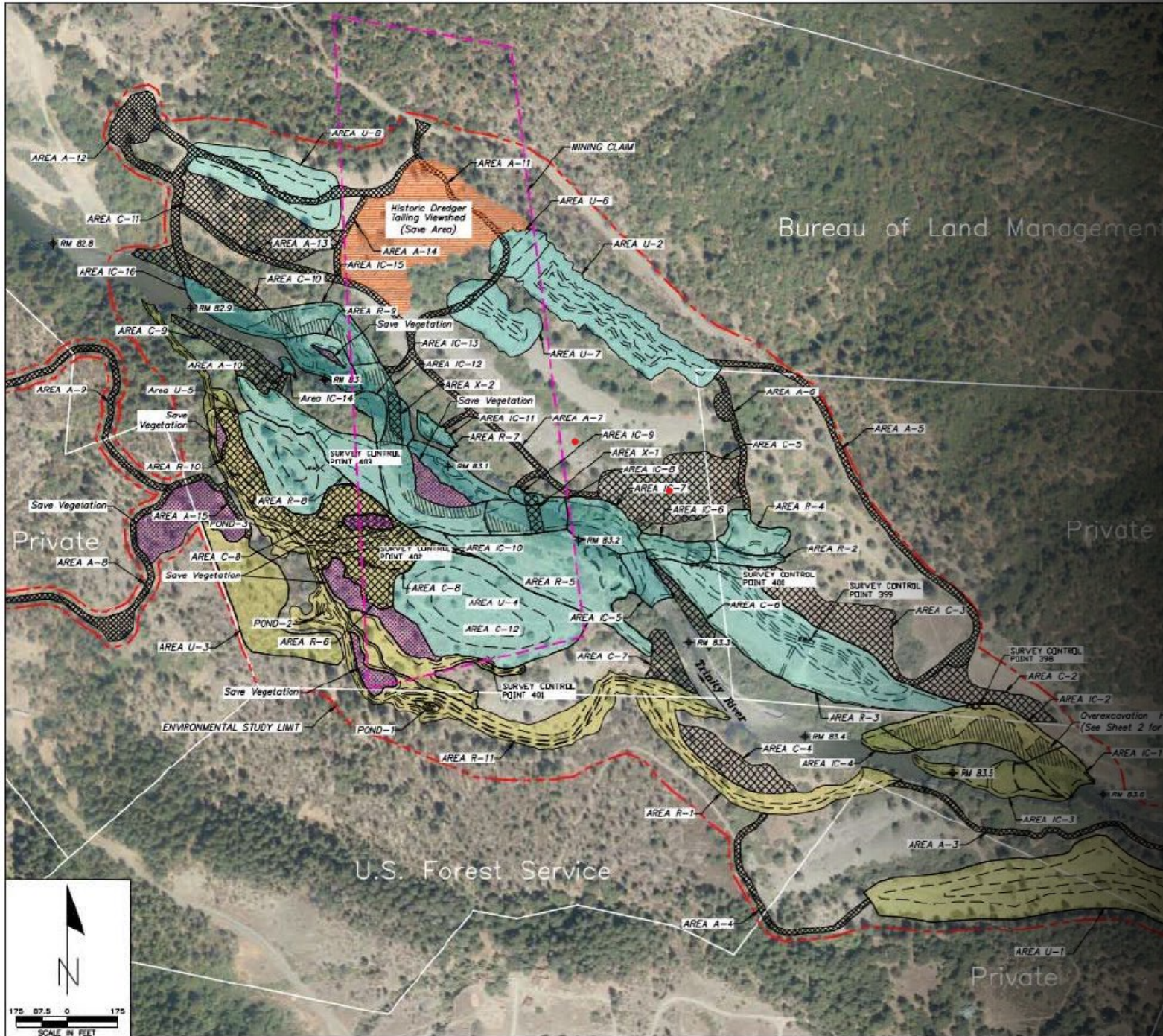


Figure 26. Chapman Ranch Phase A and Phase B 90% design overview.





Chapman Ranch Phase A (2019)







2019

# Dutch Creek (2020)

- Added significant channel complexity, which continues to grow
- First joint TRRP/BLM/USFS project

2024





## Chapman Ranch Phase B (2021)

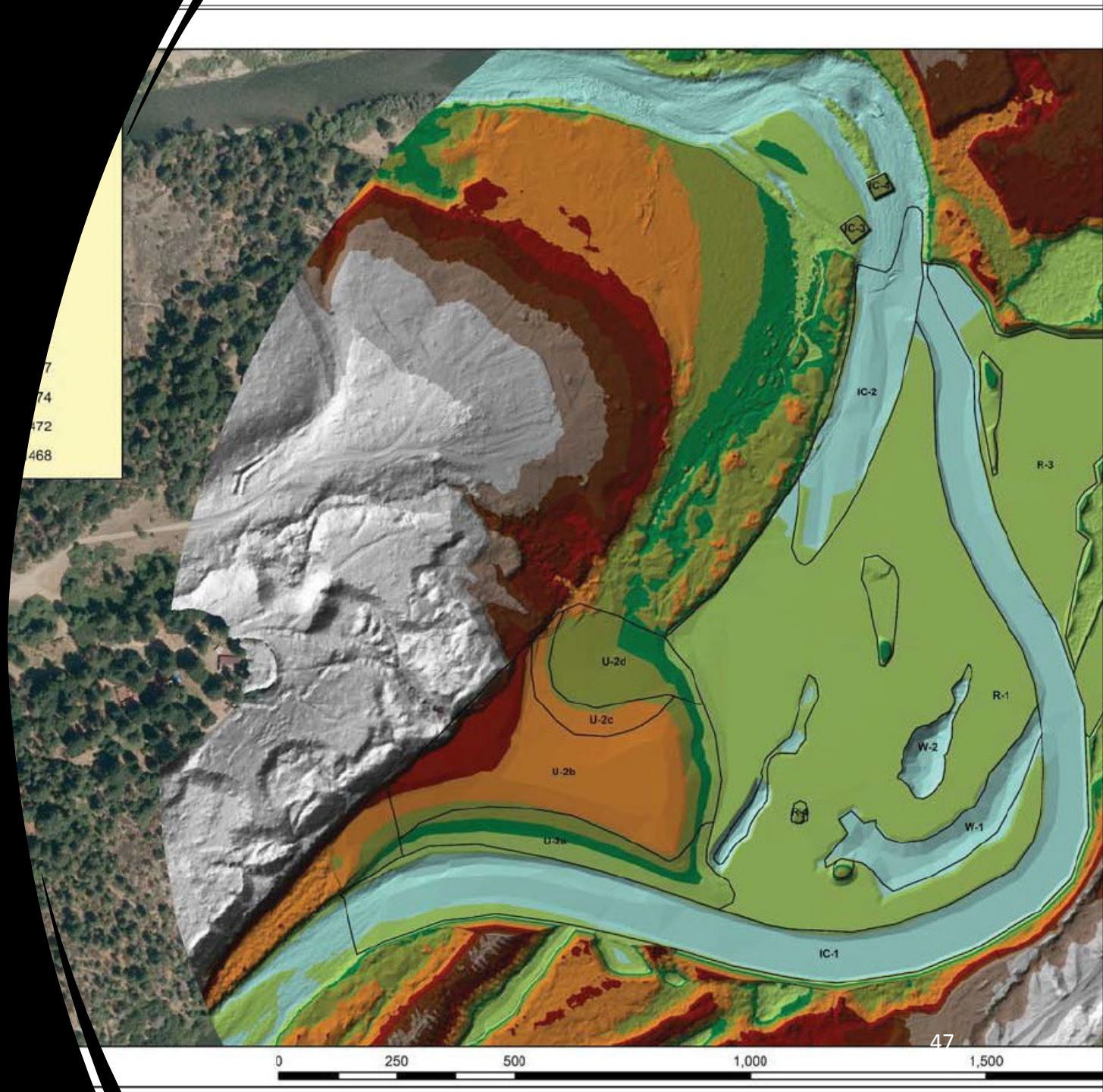






# Oregon Gulch (2022-2023)

- 550,000 cy of excavation
- >1000% increase in juvenile salmon habitat
- Nearly 50% increase in low floodplain area in restoration reach







First spring after construction – E. Wiseman





November 2025 – E. Sarnacki





## Trinity River Restoration Program Phase II Review

SUBMITTED TO  
U.S. Bureau of Reclamation

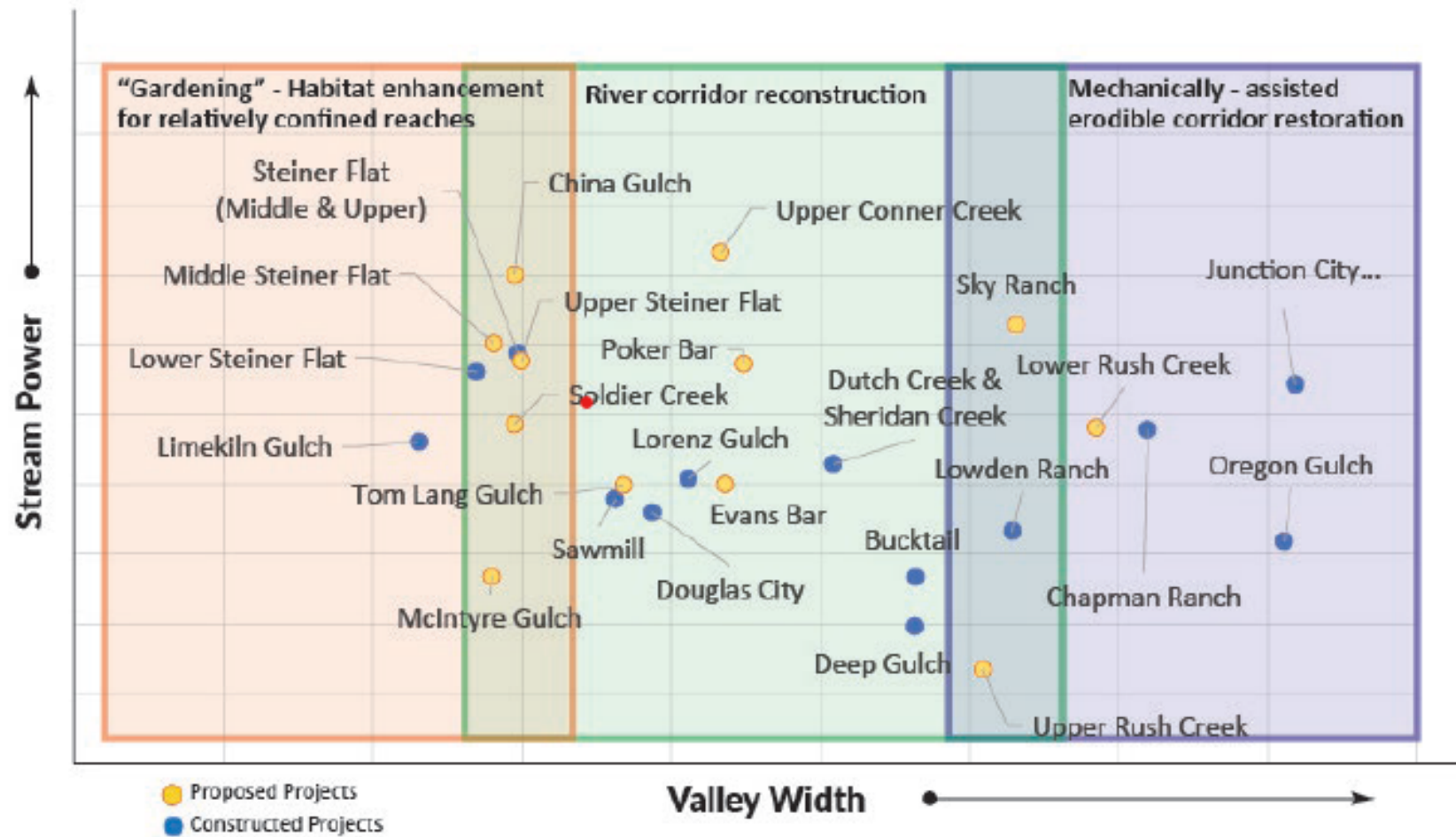
July 2023



## Phase II Review (2022-2023)

- Led by Interfluve
- Involved interviews and site visits with staff from across the TRRP
- Public meeting with brainstorming
- Addressed responsiveness to Phase I review and developed series of additional recommendations





*Figure 16. A conceptual framework for developing applicable restoration strategies for different geomorphic settings. Project restoration actions and objectives should vary by and be appropriate for their geomorphic setting.*



# Other notable Phase II Report recommendations:



Recommendation 1: Continue to refine flow management using best available science



Recommendation 2: Plan additional channel rehabilitation activities in broad alluvial valley reaches [i.e. revisits]



Recommendation 6: Provide increased programmatic support for management of vegetation



Recommendation 8: Standardize and adopt post-project appraisals



## Phase 3

2028: Environmental Flow Report Complete

2026: Limiting Factors Analysis complete

2025: First year of full Winter Flow Project

2023: Phase II Review

2023: Science Plan

2014: Phase I review

2009: Integrated Assessment Plan

2005: Beginning of mainstem channel rehabilitation  
and full restoration flows

2000: Trinity River Mainstem Fishery Restoration ROD

1999: Trinity River Flow Evaluation Study

1992: Central Valley Project Improvement Act (PL 102-575)

1991: Secretarial Decision to  
increase flows

1984: Trinity River Basin Fish and Wildlife Management Act (PL 98-541)

1981: Andrus Decision

1979: Krulitz Opinion

1971: Original Trinity River Basin Fish and Wildlife Task Force

1963: Trinity and Lewiston Dams completed

1955: TRD Act (PL 84-386)

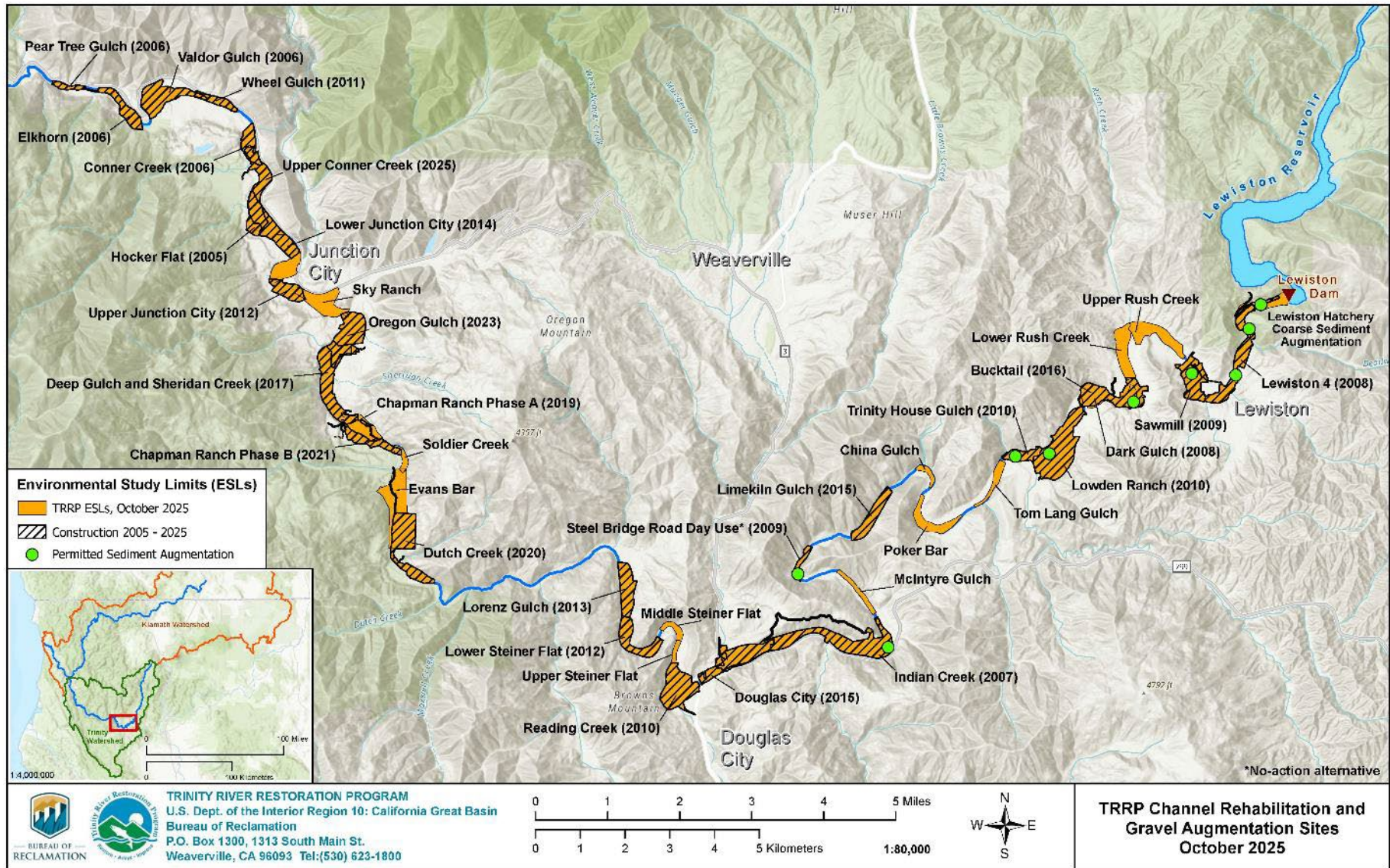


# Upper Conner Creek (2024-2025)

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# A light at the end of the tunnel?

| Project (# of TRFES Sites)           | Status                                                              |
|--------------------------------------|---------------------------------------------------------------------|
| Evans Bar (1 site)                   | 30% design complete, VE study in January. Construction 2026-2027    |
| Sky Ranch (2 sites)                  | 60% design complete. Pending land transfer. Construction 2028-2029? |
| Rush Creek Suite (1 site)            | Design assigned to YT/State design group; 60% due December 2026     |
| Upper & Middle Steiner Flat (1 site) | Design assigned to HVT design group; 60% due December 2026          |
| McIntyre Gulch (1 site)              | Large wood augmentation? Assigned to Federal design group           |
| Soldier Creek (1 site)               | Large wood augmentation? Assigned to HVT design group               |
| Poker Bar Suite (4 sites)            | ?                                                                   |







# Recommendations

“Standardize and adopt post project appraisals” (Phase 2 Review)

“Formally test the foundational hypothesis that a dynamic, complex channel can be created and that, together with other Program activities, will restore fish populations” (Phase I Review)

“Complete a Phase 3 review to determine whether ROD actions are sufficient to achieve goals” (Science Plan)



# Phase 4?

2033: TRRP 3.0?

2028: Environmental Flow Report complete

2026: Limiting Factors Analysis, flow synthesis, lower Klamath augmentation synthesis complete

2025: First year of full Winter Flow Project

2023: Phase II Review

2023: Science Plan

2014: Phase I review

2009: Integrated Assessment Plan

2005: Beginning of mainstem channel rehabilitation and full restoration flows

2000: Trinity River Mainstem Fishery Restoration ROD

1999: Trinity River Flow Evaluation Study

1992: Central Valley Project Improvement Act (PL 102-575)

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