



**North Fork Lewis River (RM 13.8-15.0)**

**Haapa Habitat Enhancement Project**

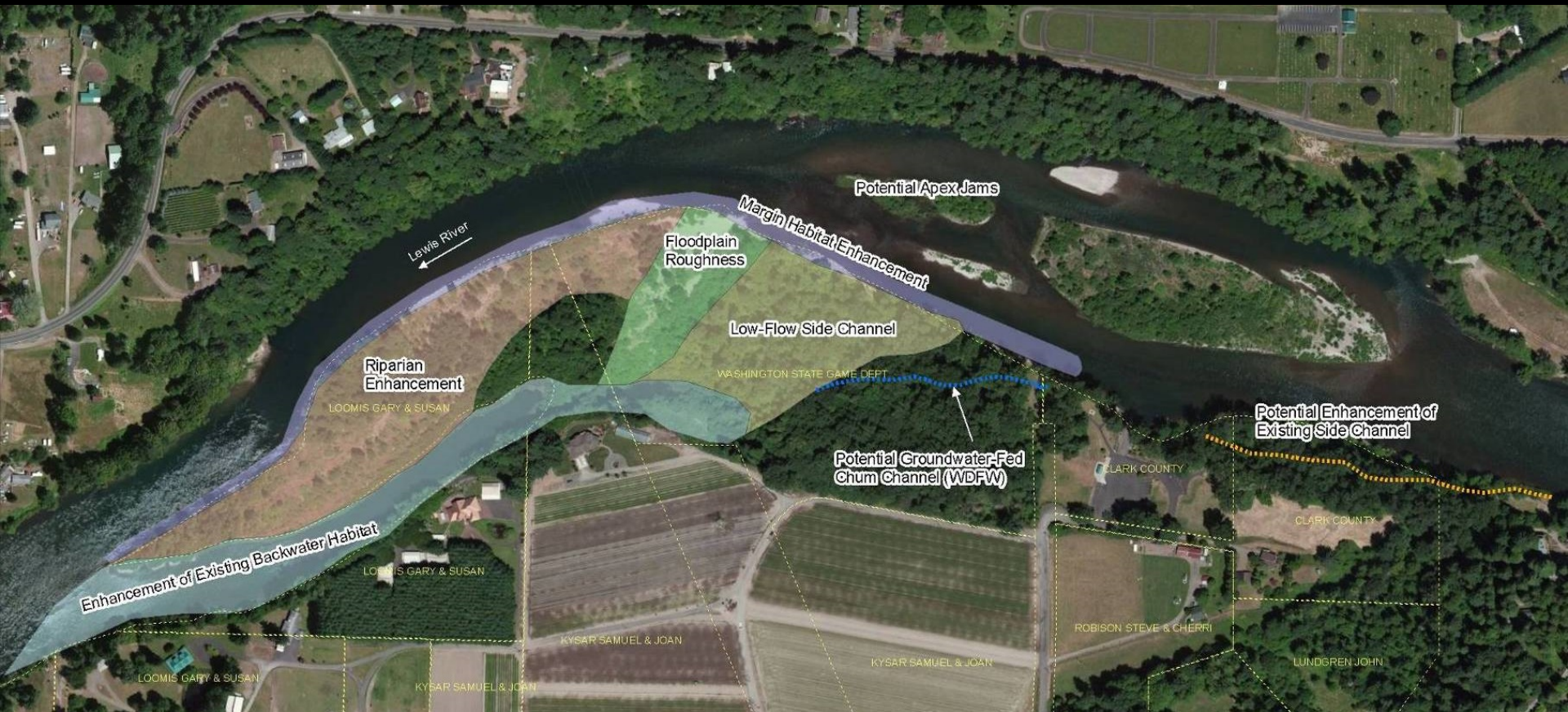
LCFEG - ACC Presentation – Feb 13, 2014

# Project History

2010 Successful completion 2,900ft side channel downstream (RM 13.5)

2011 SRFB Haapa Habitat Enhancement Design \$112,900

Goal: Produce final designs to increase the quality and quantity of fish habitat



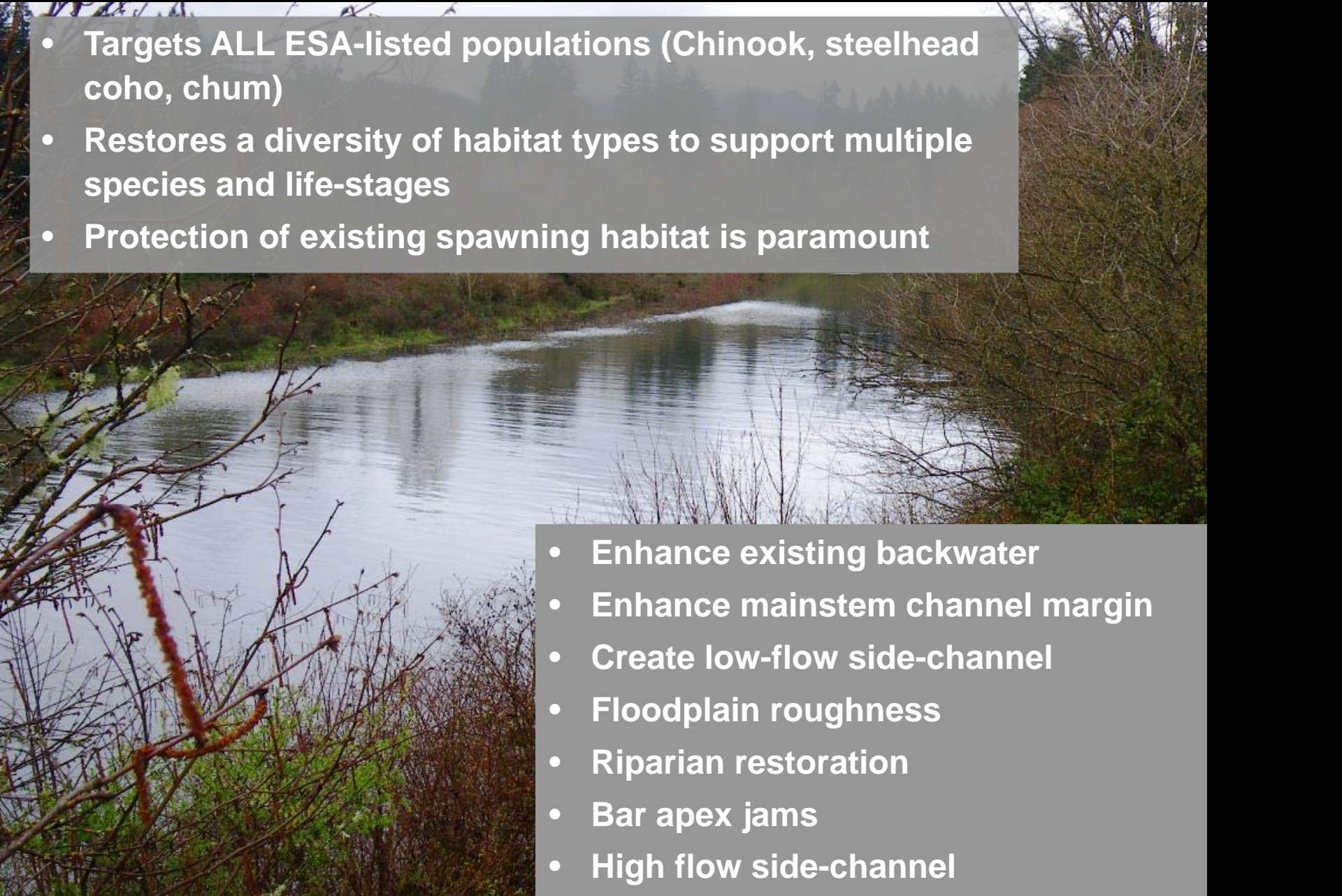
# Agency and Landowner Involvement



- WDFW
- Clark County
- Kysar
- Loomis
- BPA
- WA DNR

# Targeted Populations & Project Goals

- Targets ALL ESA-listed populations (Chinook, steelhead coho, chum)
- Restores a diversity of habitat types to support multiple species and life-stages
- Protection of existing spawning habitat is paramount

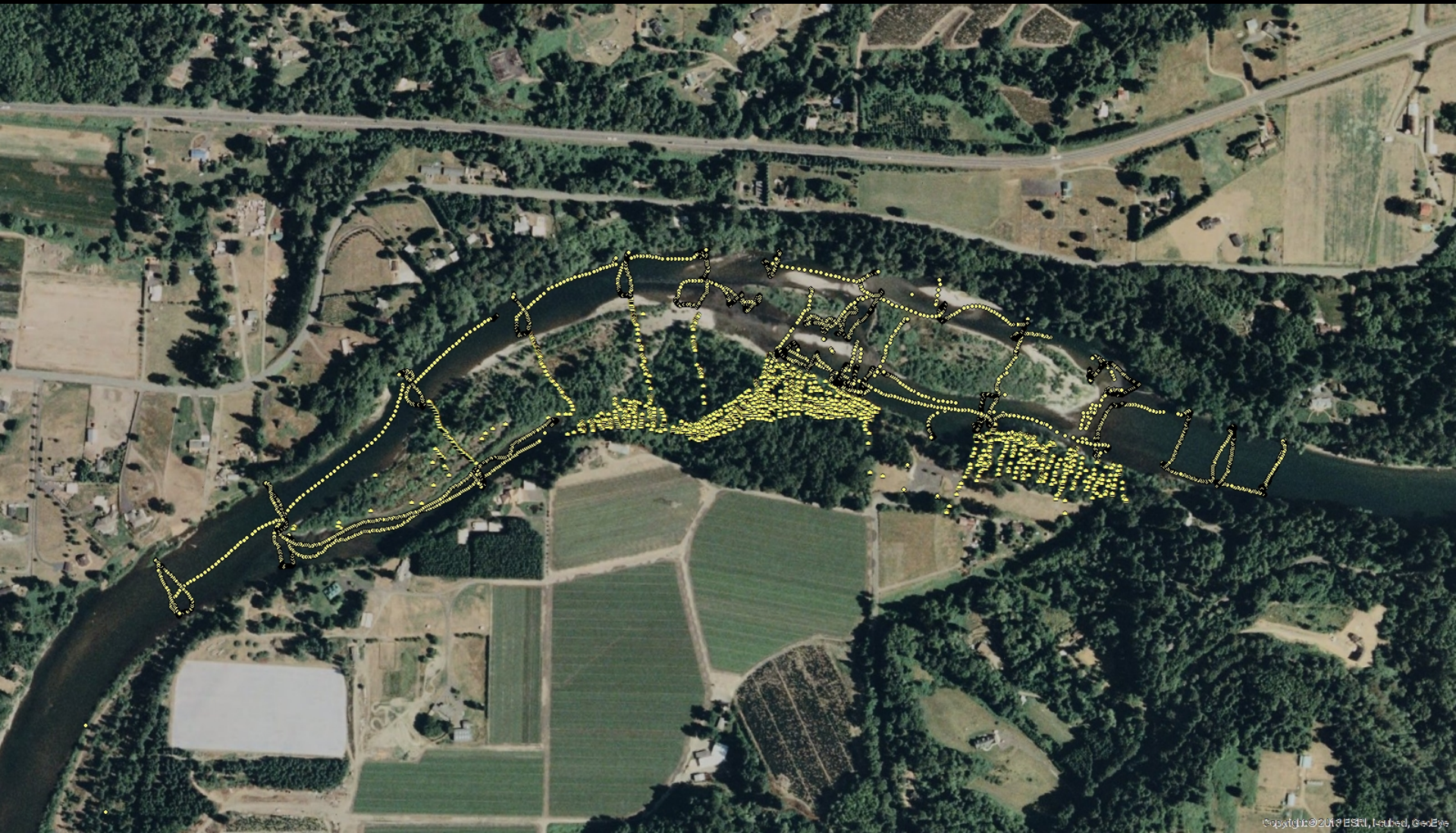
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- Enhance existing backwater
  - Enhance mainstem channel margin
  - Create low-flow side-channel
  - Floodplain roughness
  - Riparian restoration
  - Bar apex jams
  - High flow side-channel

# Design Criteria

- Complex habitat to support ESA-listed anadromous salmonids at multiple life stages.
  - Chinook –shallow margin juvenile rearing habitat; adult holding habitat
  - Chum – off-channel spawning
  - Coho – off-channel juvenile rearing. Mainstem cover
  - Steelhead – main channel juvenile rearing habitat cover, spawning habitat, and adult holding cover.
- Consider predation by invasives or other salmonids
- Do not increase erosion on the high bank on river-left
- Do not increase erosion on river-right bank/valley wall
- Safety considerations for wood placements
- Minimize sediment accumulation within the backwater and side-channel
- Re-vegetation and erosion control following construction
- Ensure adequate boat access to backwater area during and after construction
- Consult with BPA on transmission line restrictions
- Consult with Clark County Parks re: Haapa Boat Launch.

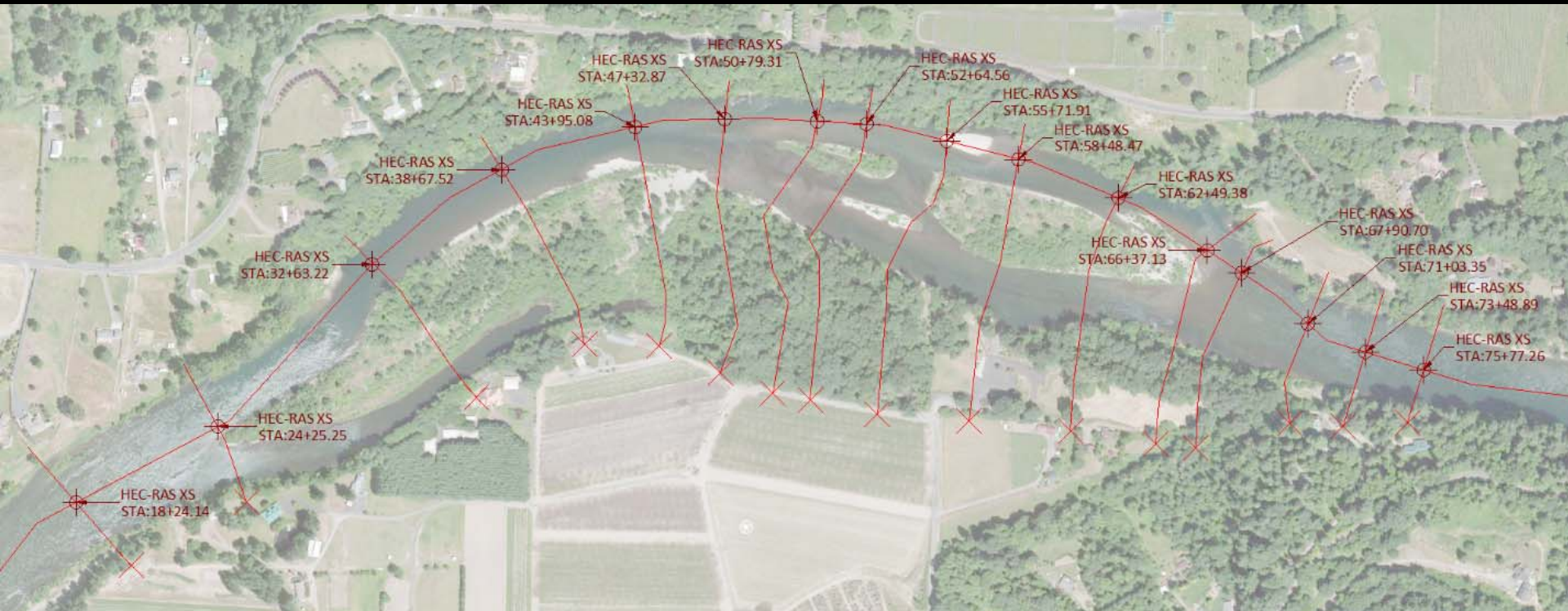
# Site Analysis

## Topographic Survey



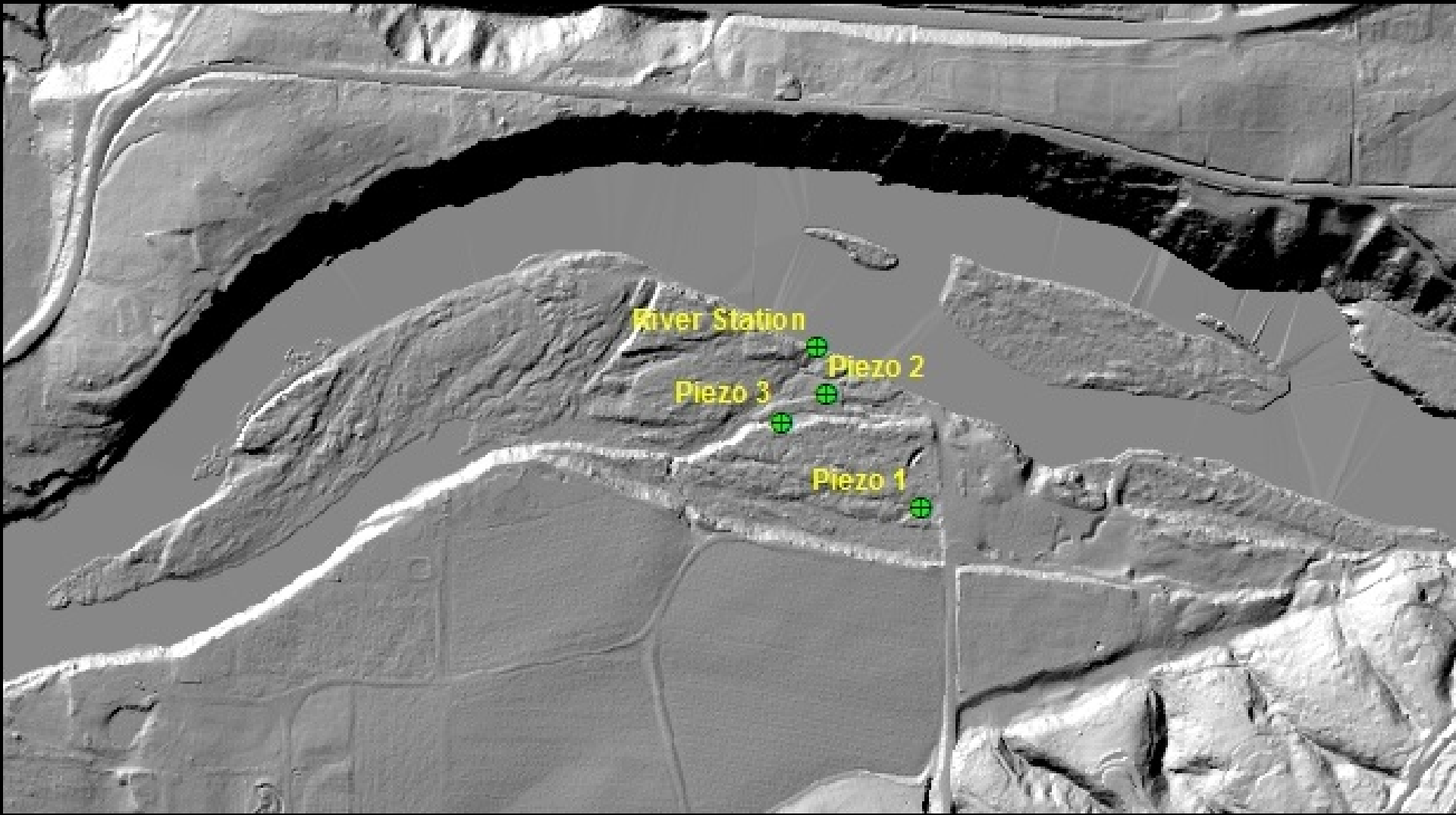
# Site Analysis

## Hydraulic Modeling



# Site Analysis

## Water Level Monitoring





# Site Analysis

## Historical Photos

1938



# Site Analysis

## Historical Photos

1968



# Site Analysis

## Historical Photos

1973



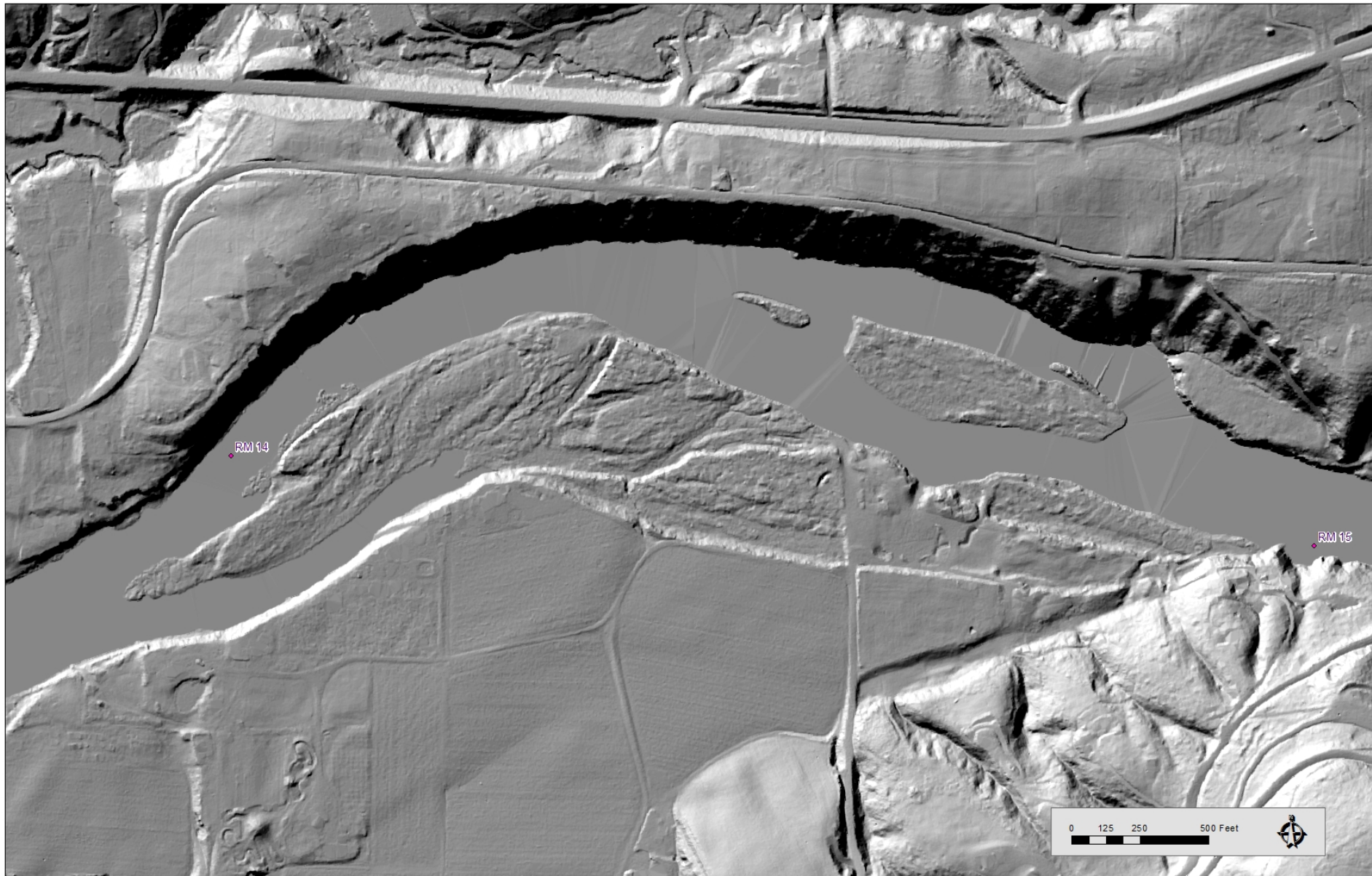
# Site Analysis

## Historical Photos

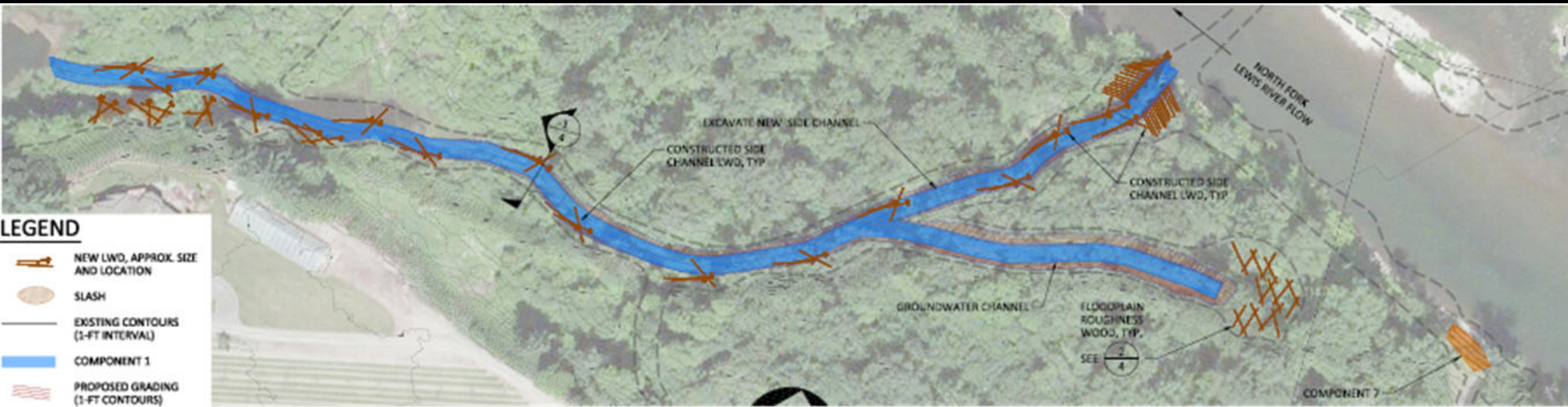
**Current**



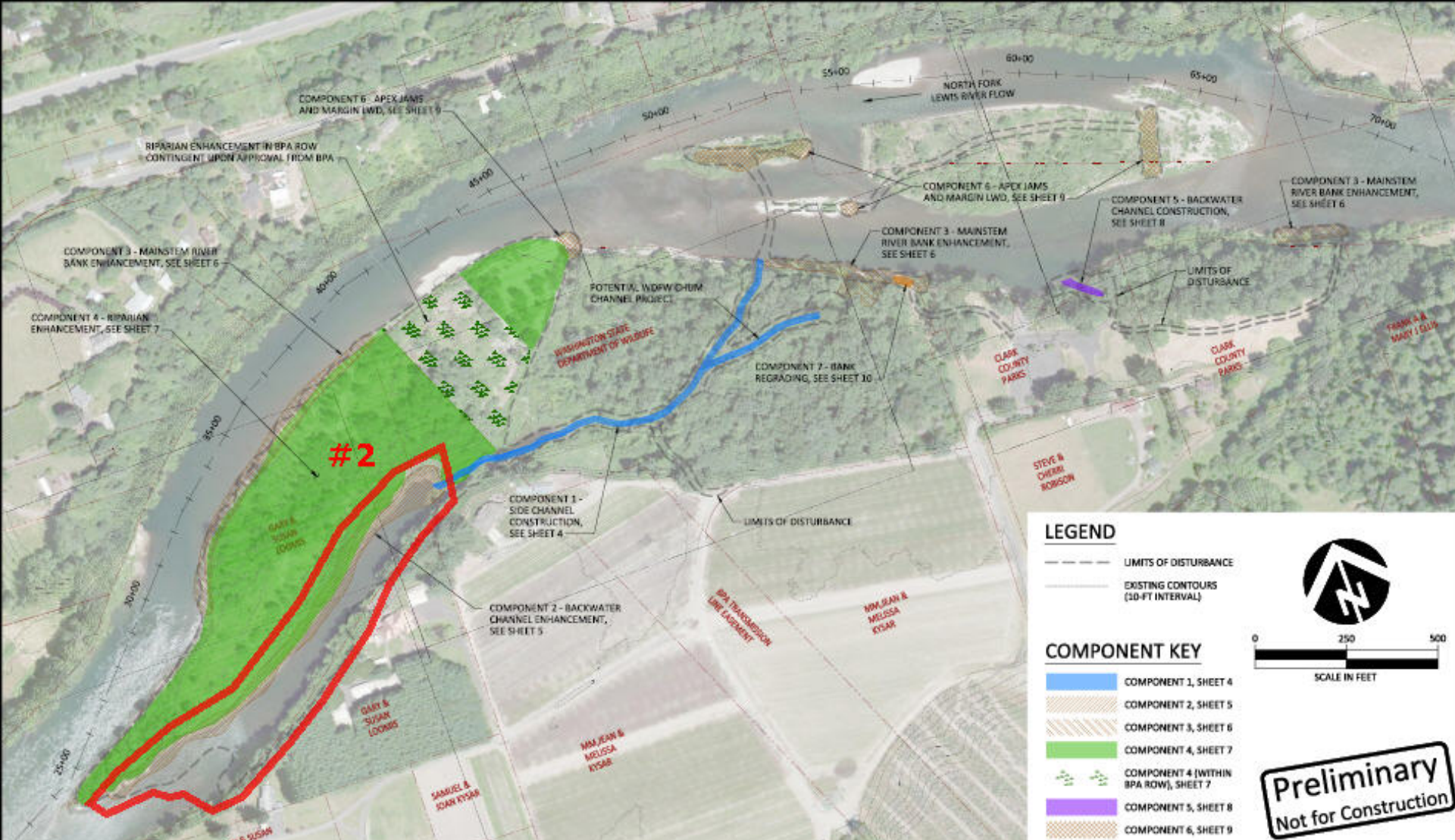
# LiDAR







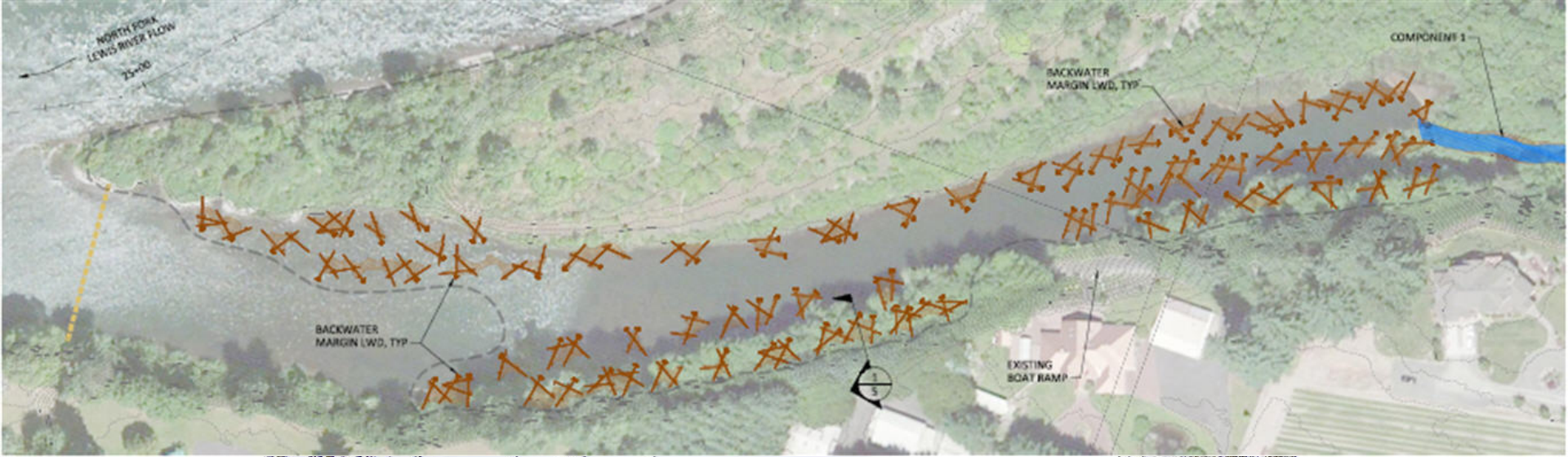
**Component #1 Side Channel Construction = \$200k**



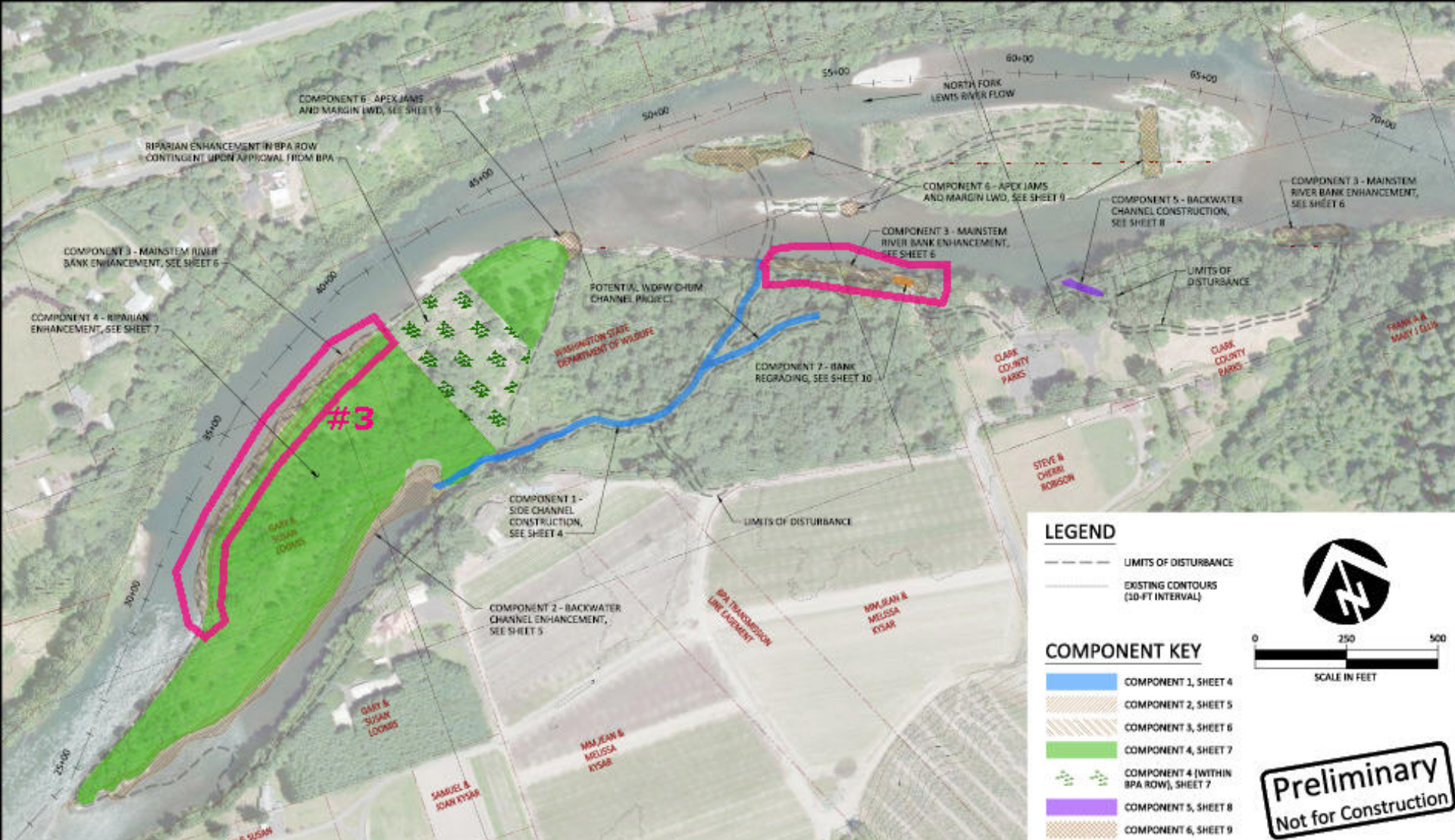
## Project Objective

2.) Enhance five acres of existing backwater habitat using large wood structures to increase habitat complexity, create margin habitat and cover to benefit rearing juvenile salmon and steelhead.





**Component #2 Off Channel Construction = \$250k**

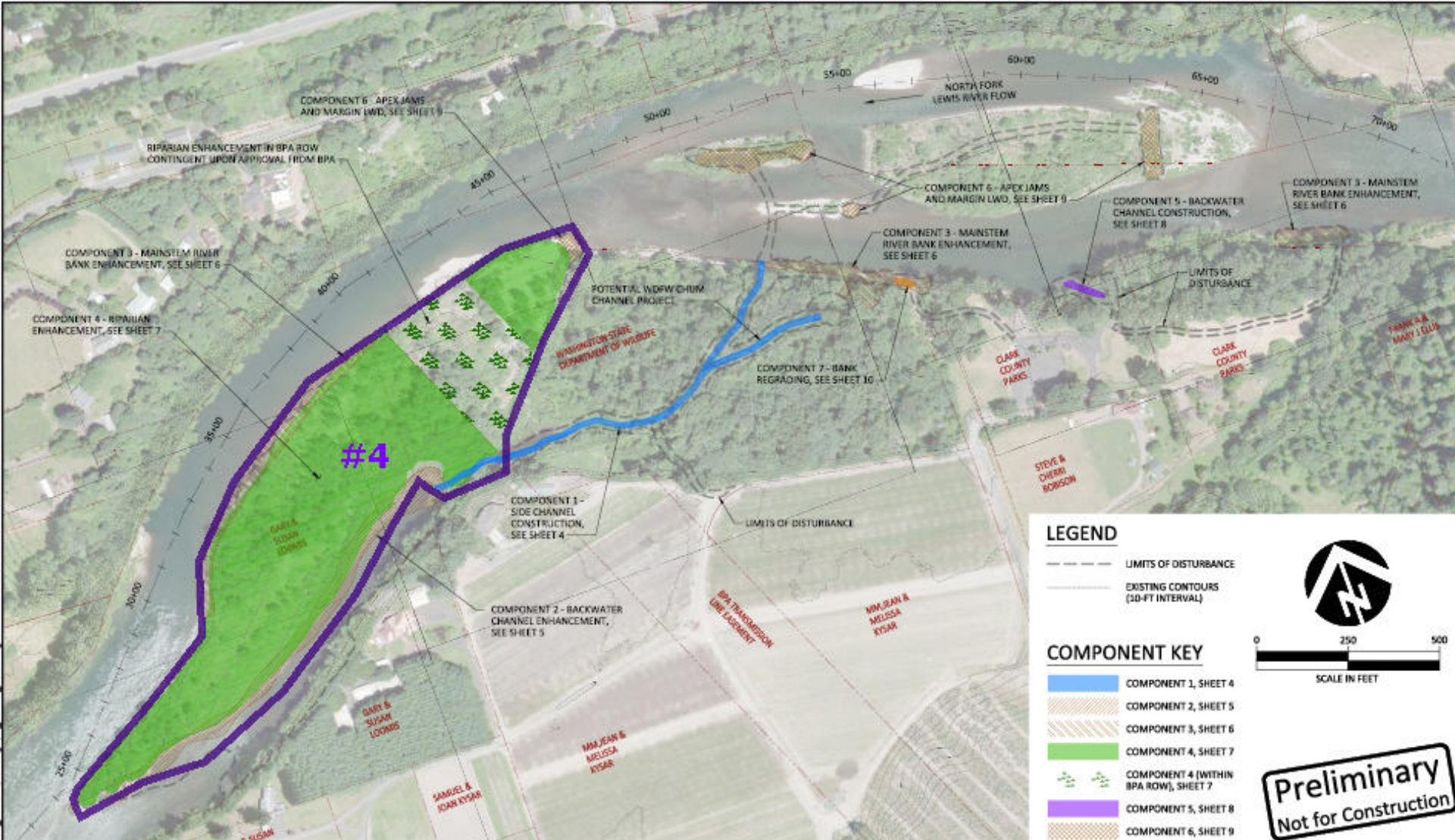


## Project Objective

3.) Enhance > 2,000 lineal feet of the main stem NF Lewis River channel margin habitat using large wood structures to benefit rearing juveniles and adult salmonids over a wide range of flows.

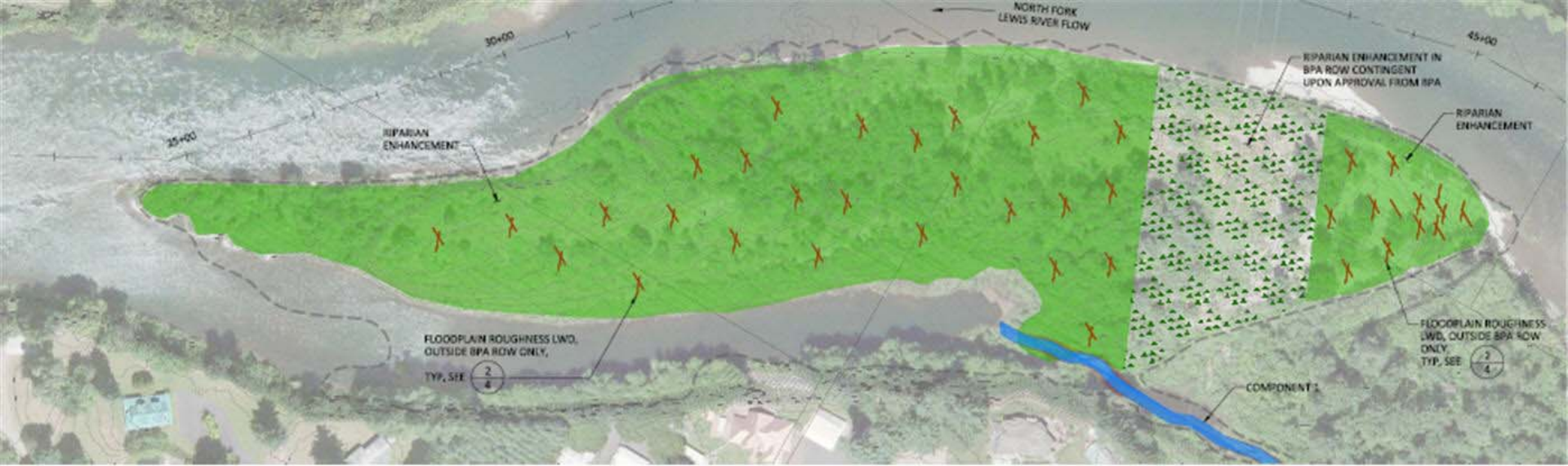


**Component #3 Mainstem Margin Habitat Complexity = \$175k**



## Project Objective

4.) Increase hydraulic floodplain roughness on four acres by adding large wood structures in addition to removing invasive plant species and under-planting with native riparian plantings.



**Component #4 Off Channel Construction = \$75k**

# Habitat and Species Benefits

- **Chinook**
  - Side-channel will increase margin rearing
  - Log jams will provide flow diversity and retain spawning gravels
- **Steelhead**
  - Large wood placements and pool scour for rearing
  - Spawning in new side-channel
- **Coho**
  - Rearing cover in existing backwater
  - Rearing and spawning in new side-channel
- **Chum**
  - Habitat diversity and velocity refuge for fry colonization
  - Potential spawning in new side-channel



An aerial photograph of a winding river through a rural landscape. The river is dark and flows from the top right towards the bottom left. The surrounding area includes green fields, brown agricultural plots, and some buildings. Numerous colored dots (yellow, blue, orange, green, purple) are scattered along the river's course, representing sampling locations. A semi-transparent green rectangular box is overlaid on the center of the image, containing the text "QUESTIONS?".

**QUESTIONS?**