Lower Crooked River Strategic Restoration Project Update

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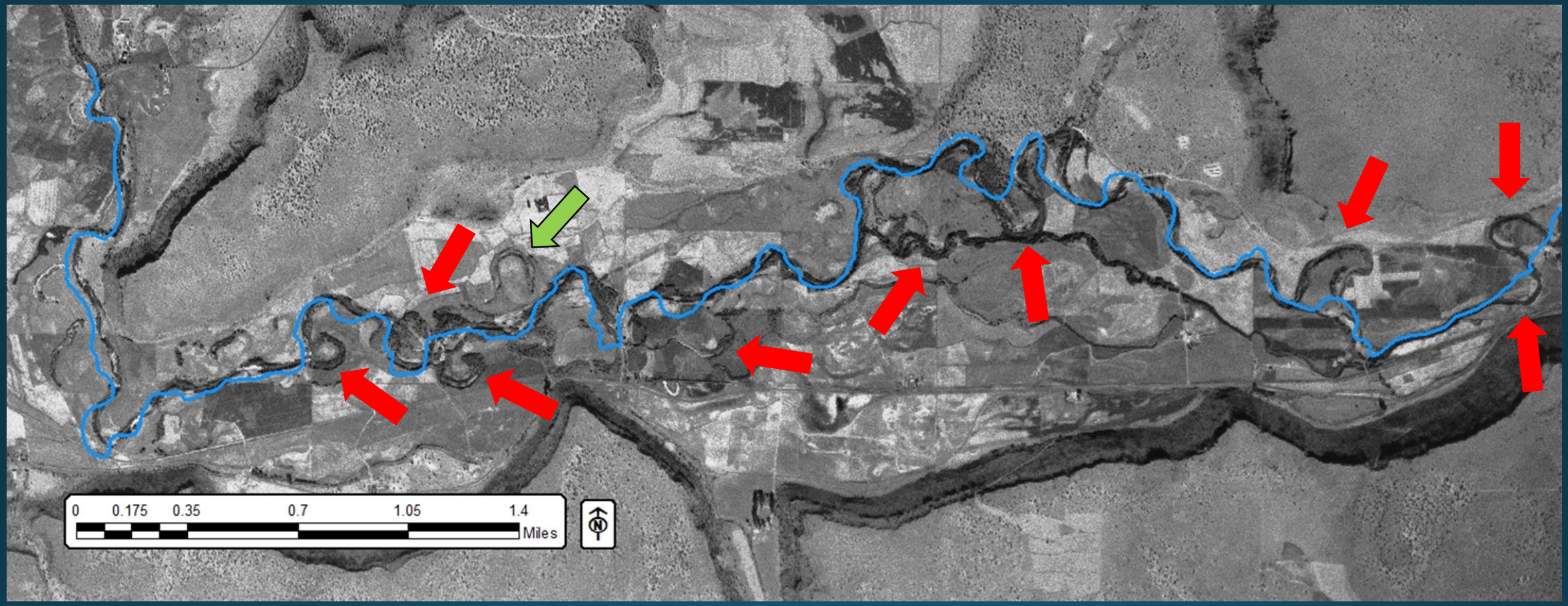
Crooked River Watershed Council

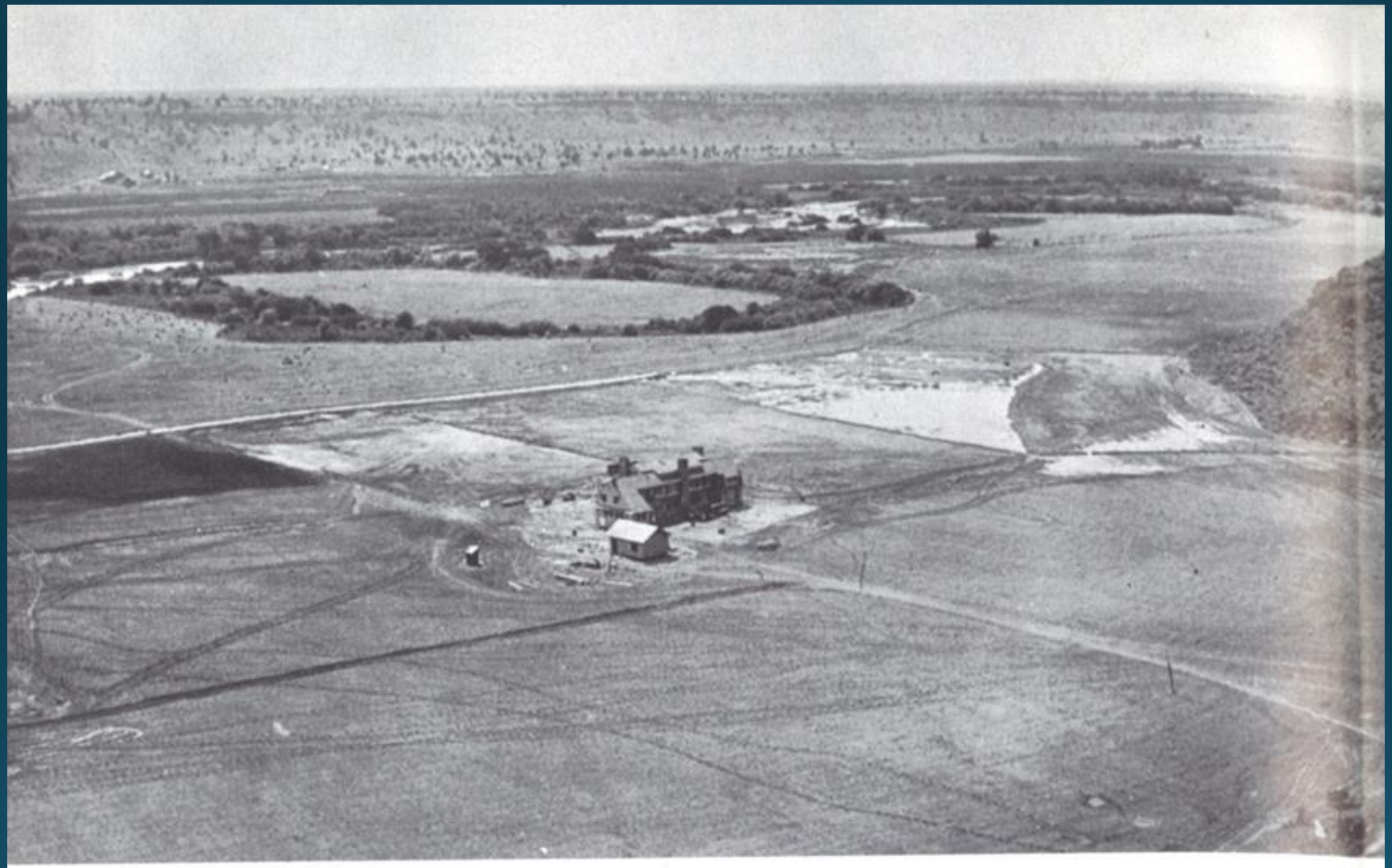
Pelton Round Butte Fisheries Workshop

July 18, 2019



How did we get here?

- Historic channel alterations and unmanaged grazing
- Ripple effects including degraded channel complexity, non-functioning or limited riparian areas, poor water quality, lack of floodplain connectivity, and impaired fish passage (CRWC 2008, NRCS 2009, ODFW 2010)

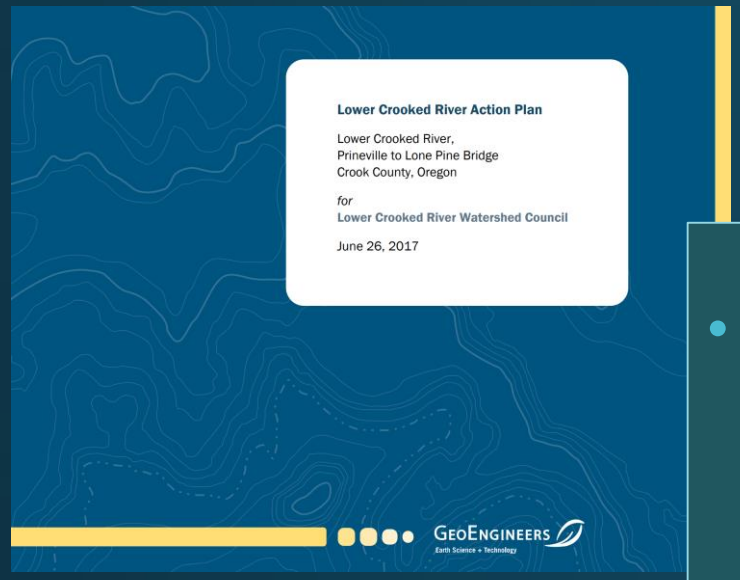


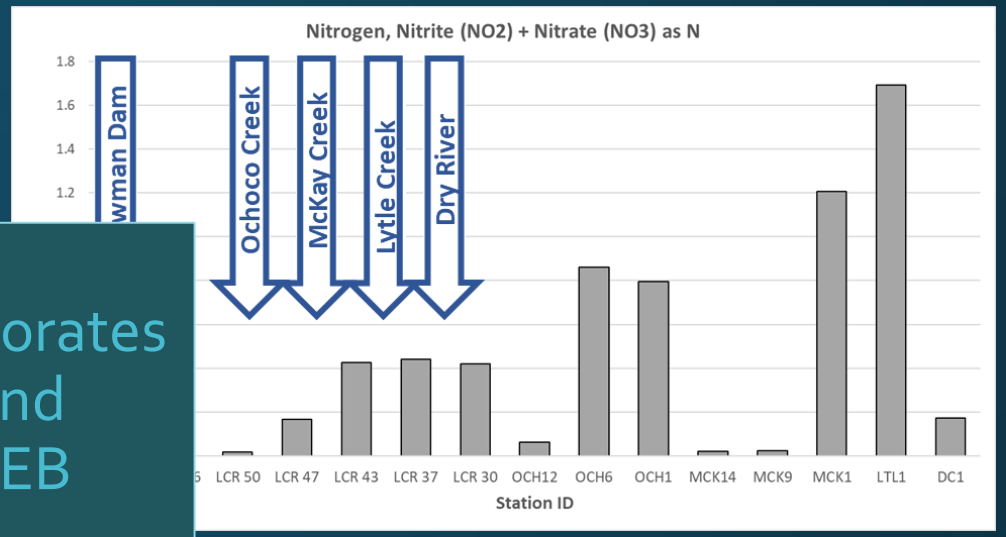
The Central Oregon ranch house under construction in 1912. Photo was taken from the top of the rimrock.


N
Google Earth
1994
Imagery Date: 7/27/2018 44°20'31.21" N 121°03'12.34" W elev 0 ft eye alt 838 ft

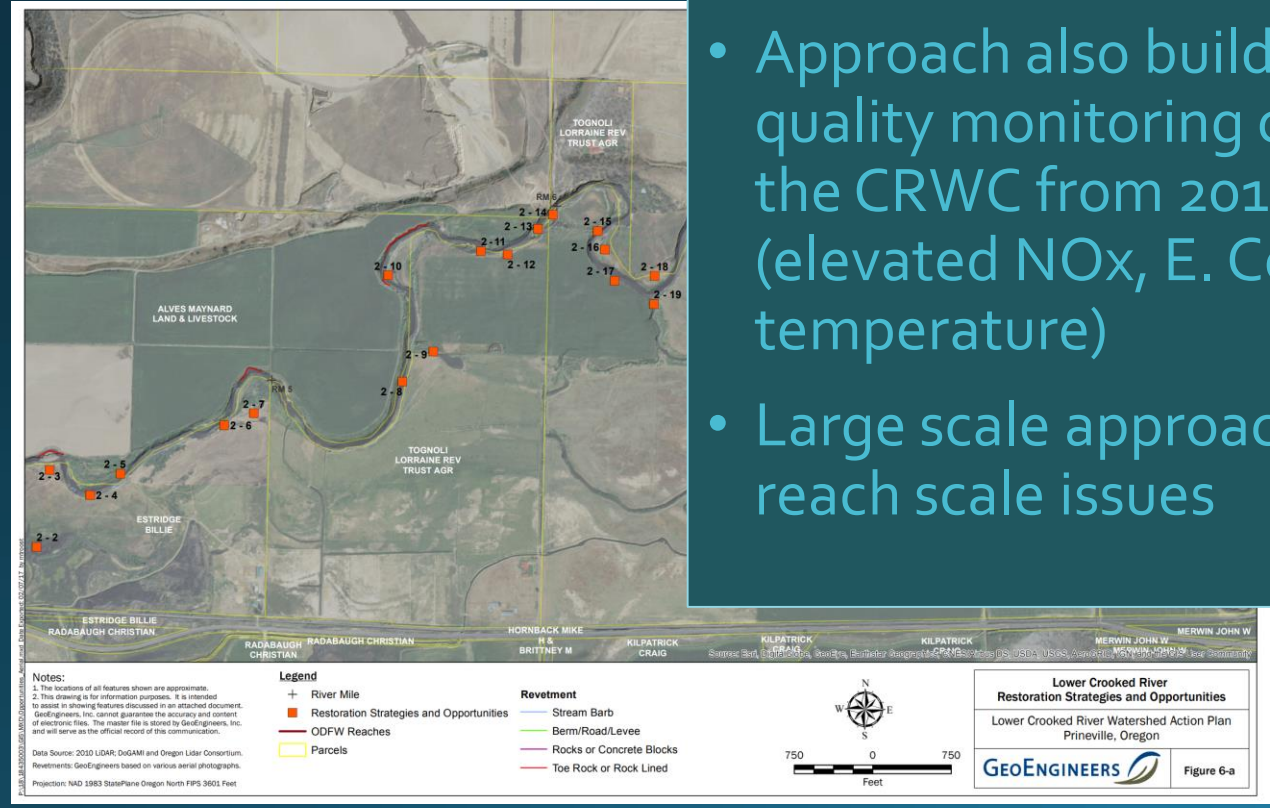
Bebs McCall riding herd on Holstein dairy cattle beside Crooked River at low water.

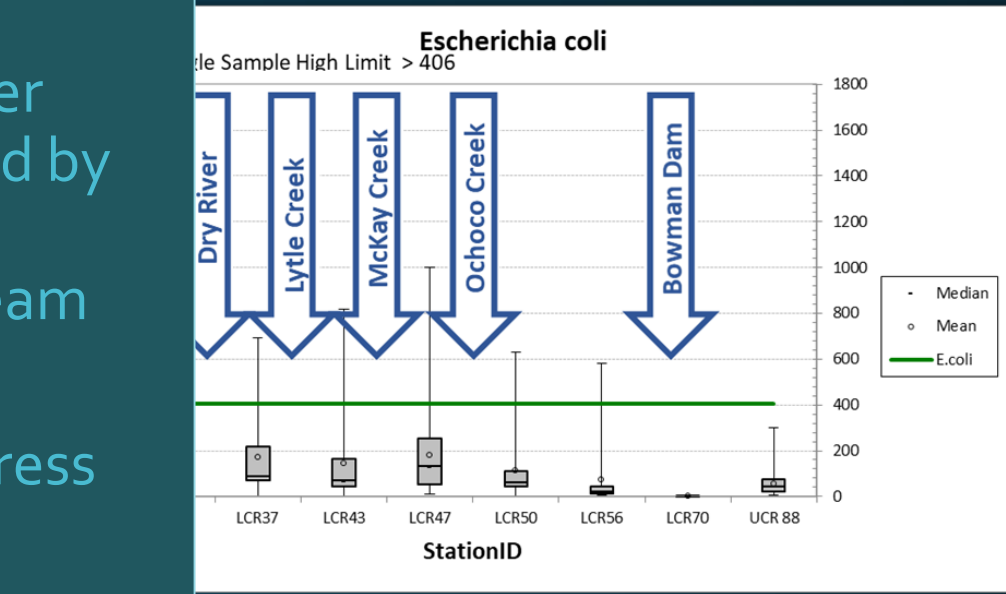
How do we get out of here: restoration actions?

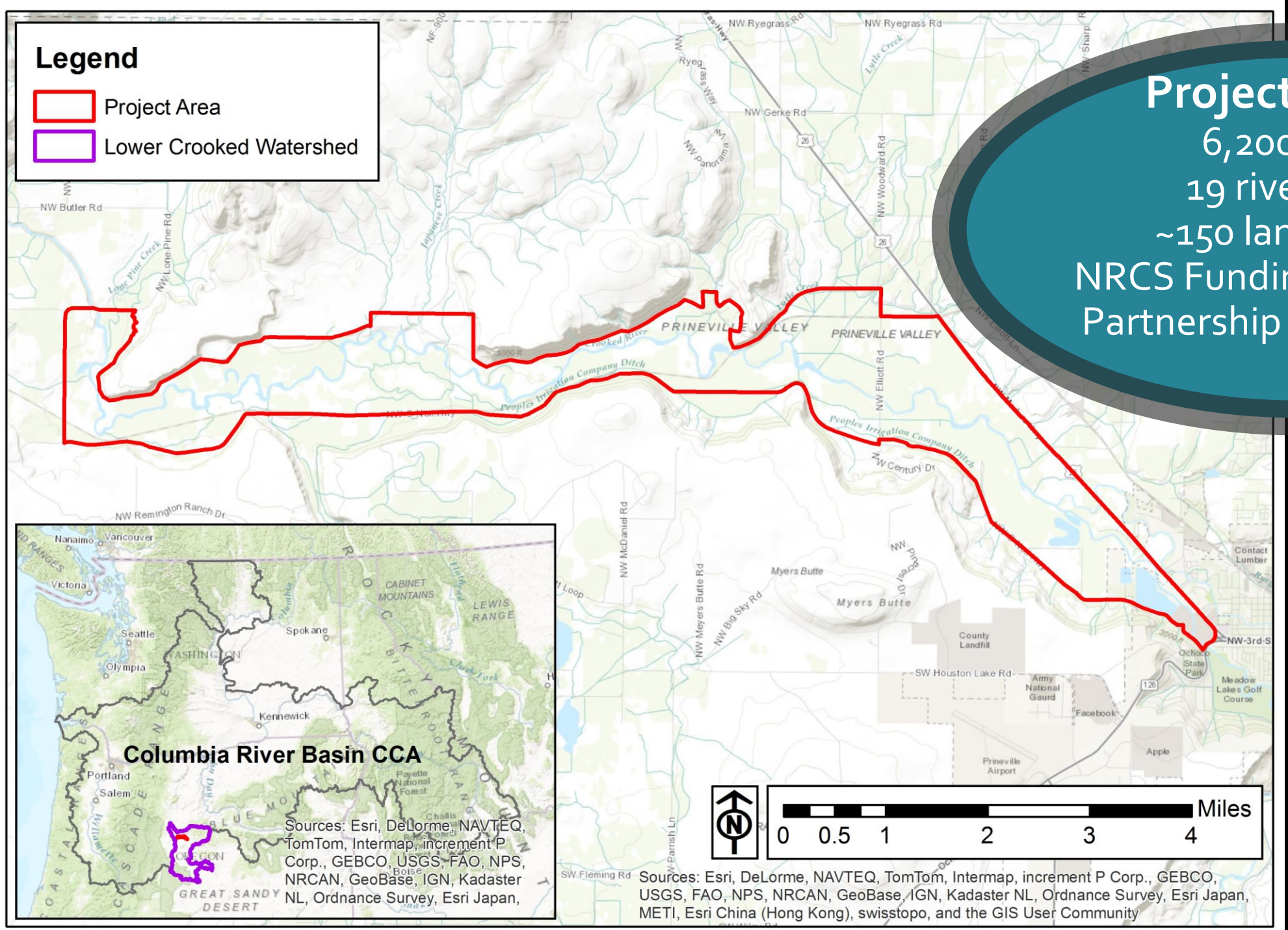




- Restoration approach incorporates feedback from the Pelton Fund 2013 review process and OWEB review team input
- Approach also builds on water quality monitoring conducted by the CRWC from 2010-2014 (elevated NOx, E. Coli, instream temperature)
- Large scale approach to address reach scale issues







Project Details

6,200 acres

19 river miles

~150 landowners

NRCS Funding of $6.7 MM

Partnership through 2023

NRCS Eligible Conservation Practices

- Herbaceous Weed Control (315)
- Critical Area Planting (342)
- Fencing (382)
- Riparian Herbaceous Cover (390)
- Riparian Forest Buffer (391)
- Aquatic Organism Passage (396)
- Access Control (472)
- Tree/Shrub Site Preparation (490)
- Livestock Pipeline (516)
- Stream Habitat Improvement and Management (395)
- Stream Crossing (578)
- Streambank and Shoreline Protection (580)
- Prescribed Grazing (528)
- Pumping Plant (533)
- Range Planting (550)
- Heavy Use Area Protection (561)
- Channel Bed Stabilization (584)
- Structure for Water Control (587)
- Tree Shrub Establishment (612)
- Watering Facility (614)
- Water Well (642)
- Restoration and Management of Rare and Declining Habitat (643)
- Structures for Wildlife (649)
- Constructed Wetland (656)
- Wetland Restoration (657)
- Wetland Creation (658)
- Wetland Enhancement (659)

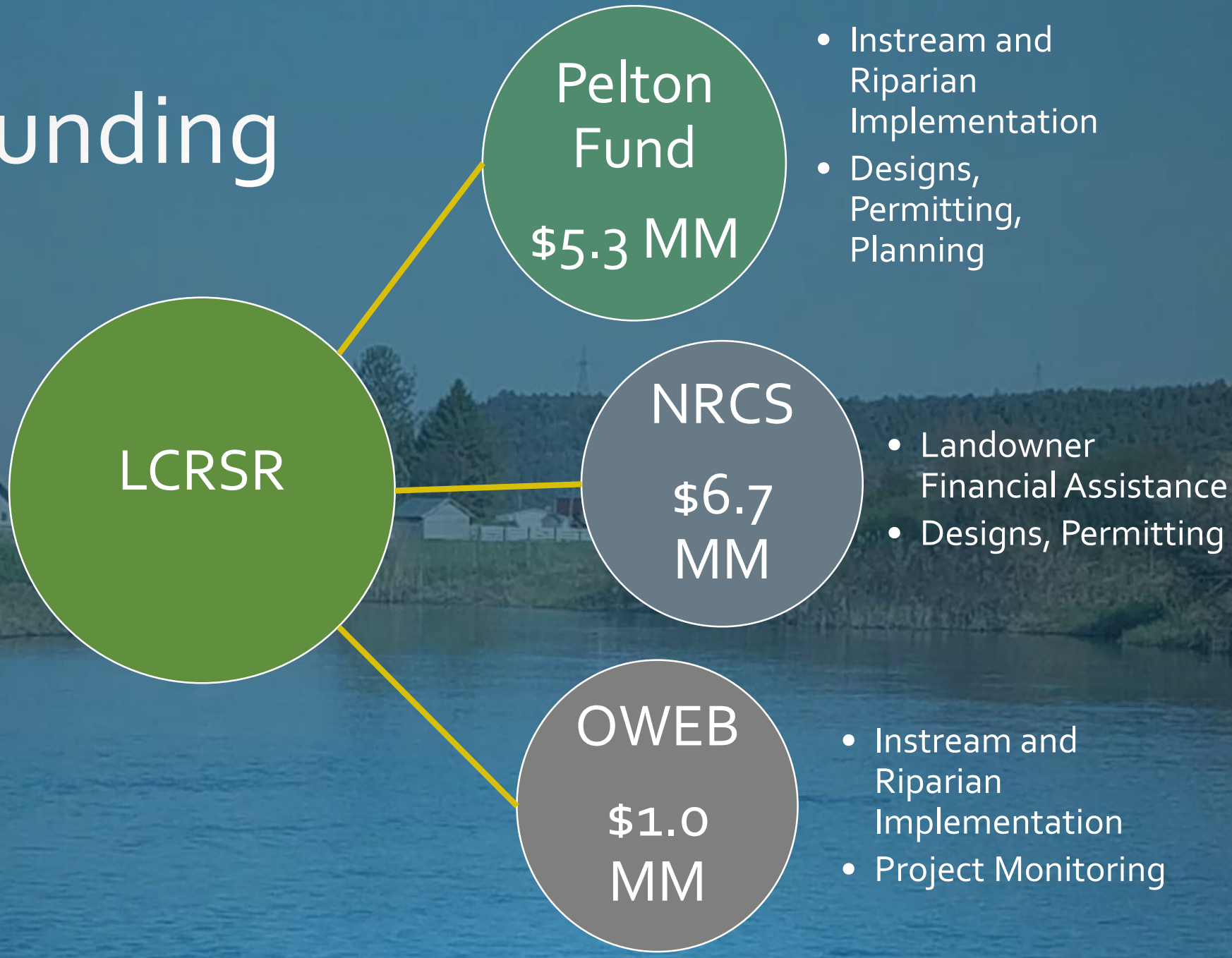
Restoration Approach

Give the river space where possible
Allow river processes to occur
Create instream and riparian habitat complexity
Protect areas of high value
Treat or re-use poor water quality inputs

Planned Project Metrics To Date

- 77 acres of floodplain restoration
- 6 roughened riffles
- 21 engineered log jams
- 4,600’ of channel restoration
- 4,000’ of new side channel
- 9,000’ of bank log jams
- 33 acres of wetland restoration
- 15,600’ of irrigation pipeline
- 133 acres of irrigation reconfiguration

Project Funding



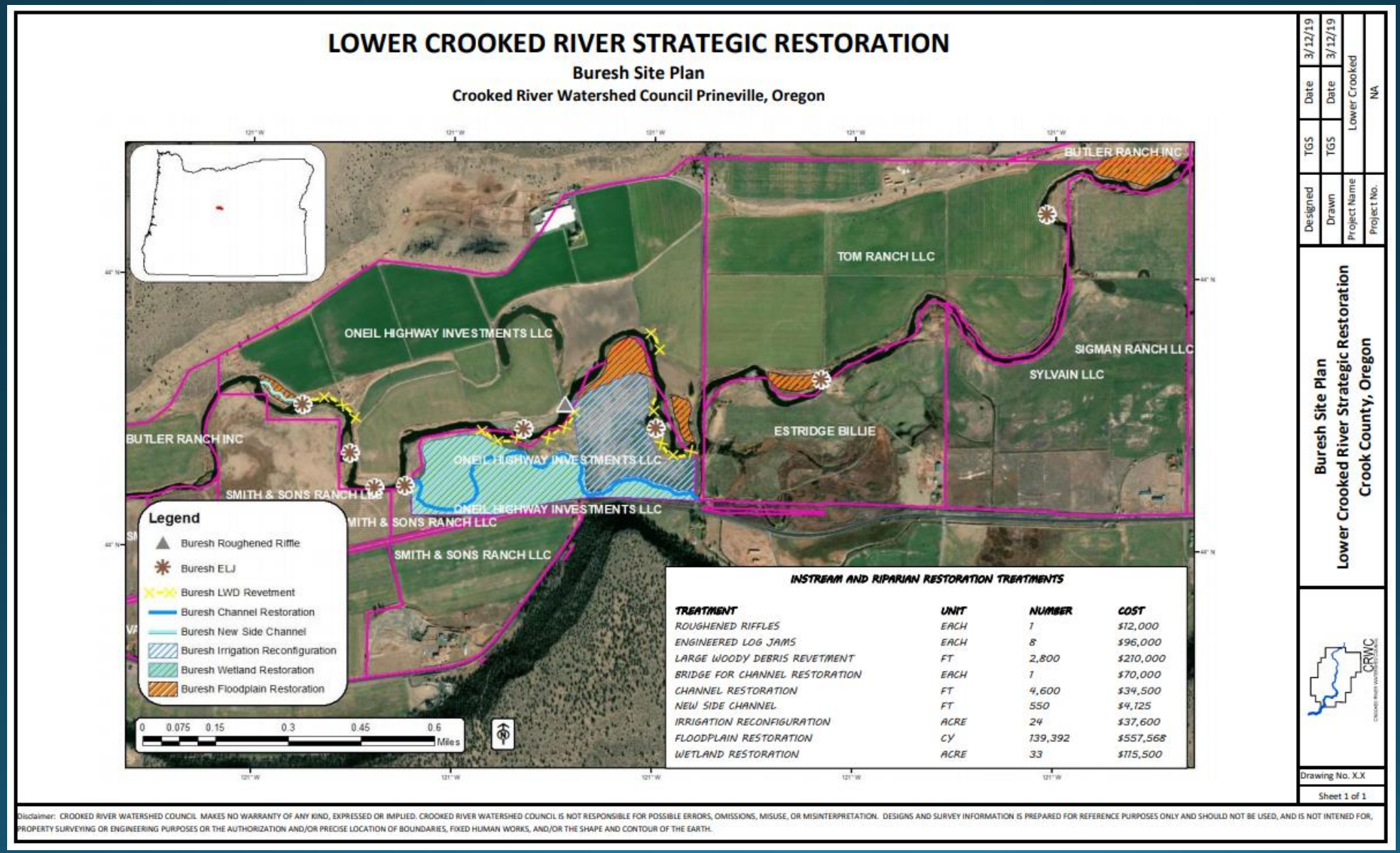
Project Progress

Appendix C – Project Schedule

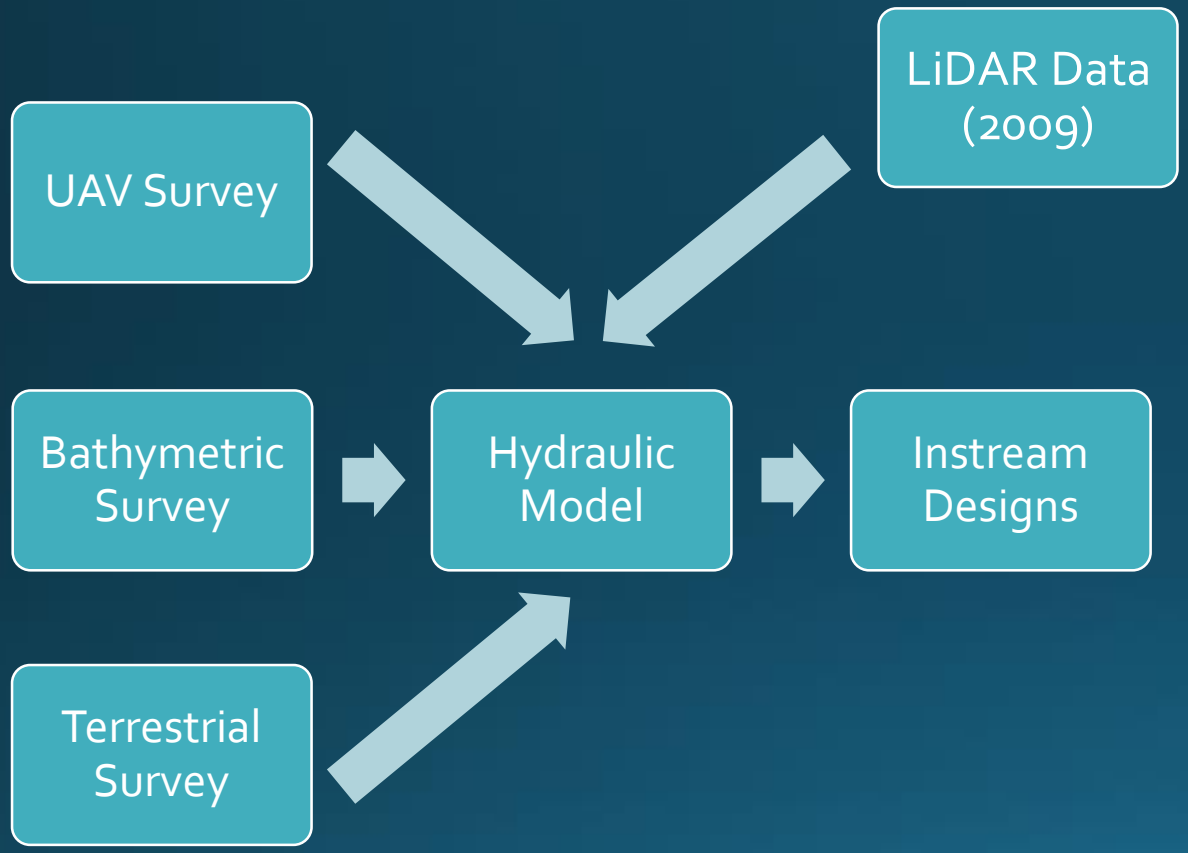
Project Element	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Sign Pelton Fund Grant Agreement																			
Complete Landowner Agreements																			
Design Contracting																			
Complete Site Surveys																			
Develop 30% Designs																			
Develop 60% Designs																			
Project Permitting																			
Implementation Contracting																			
Develop 90% Designs																			
Project Implementation																			
Project Inspection																			
Project Completion																			

- Bathymetric survey complete
- Hydraulic model in development
- Landowner site surveys in progress (1 complete, ~7 in progress)

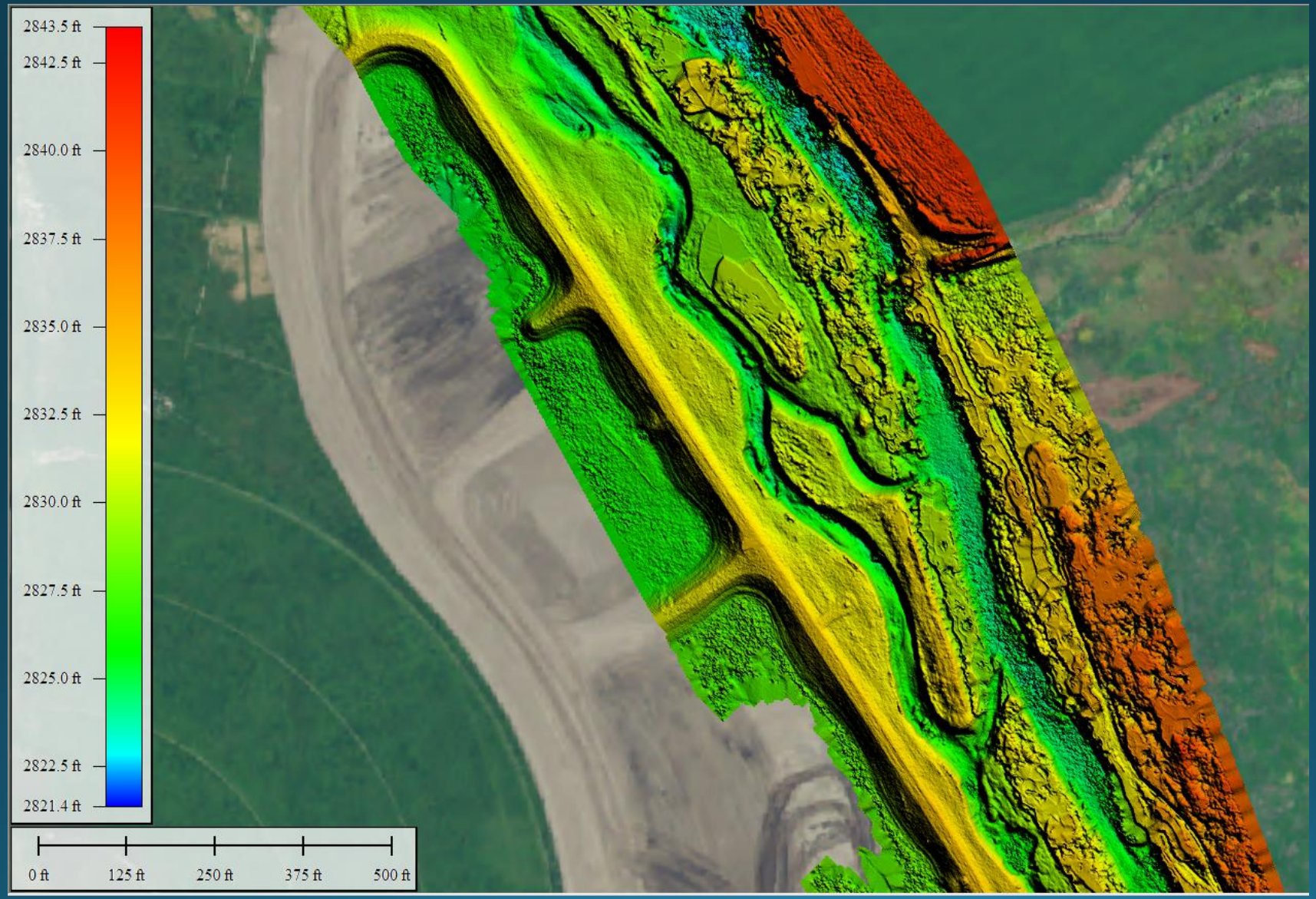
Landowner Restoration Plans



Project Area Surveying and Hydraulic Model



UAV Data Example: CoP Wetland



Bathymetric Survey – Methods to the Madness

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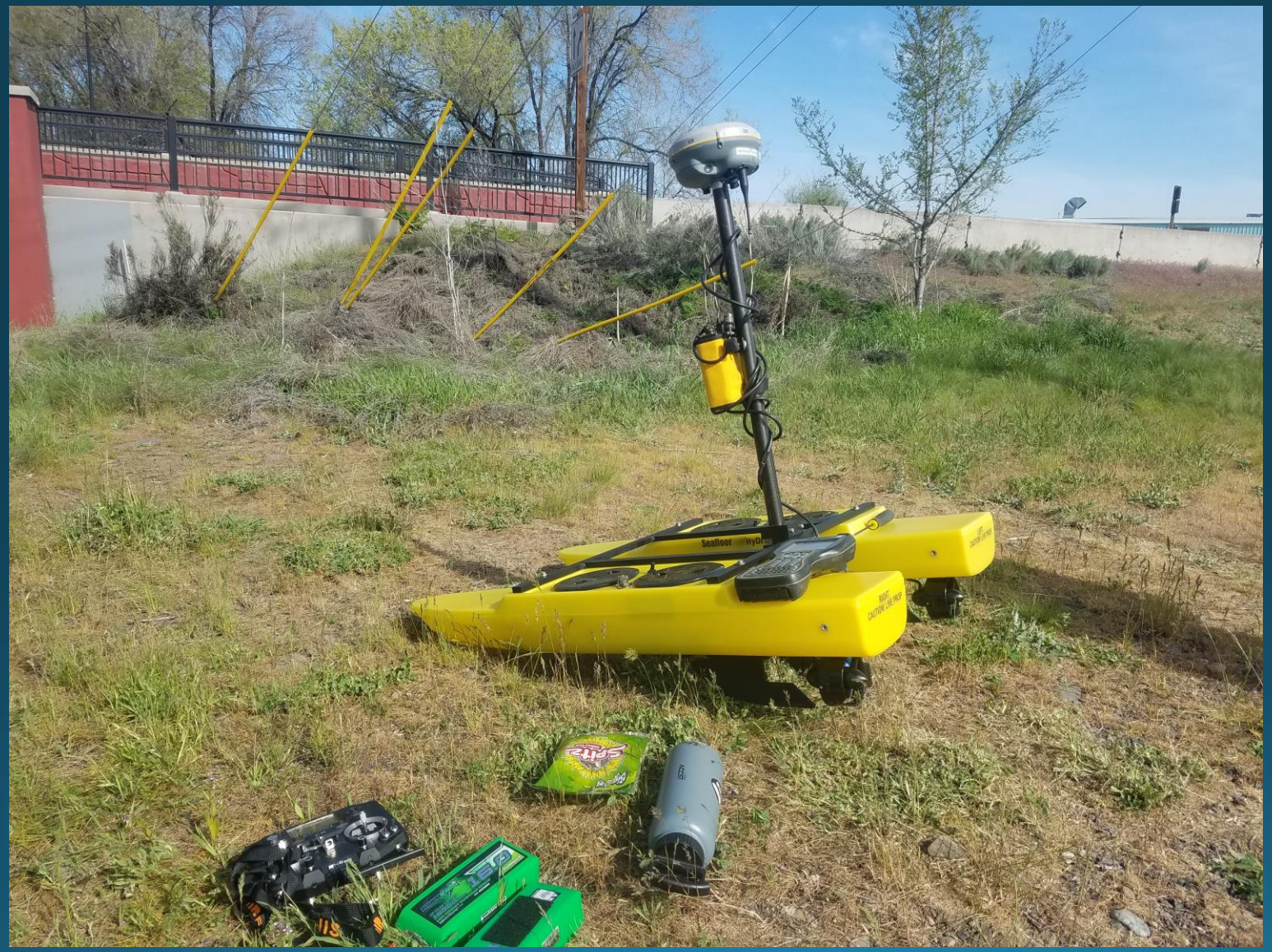

Bathymetric Survey – Methods to the Madness

The Good, The Bad, and The Ugly

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What has worked previously?

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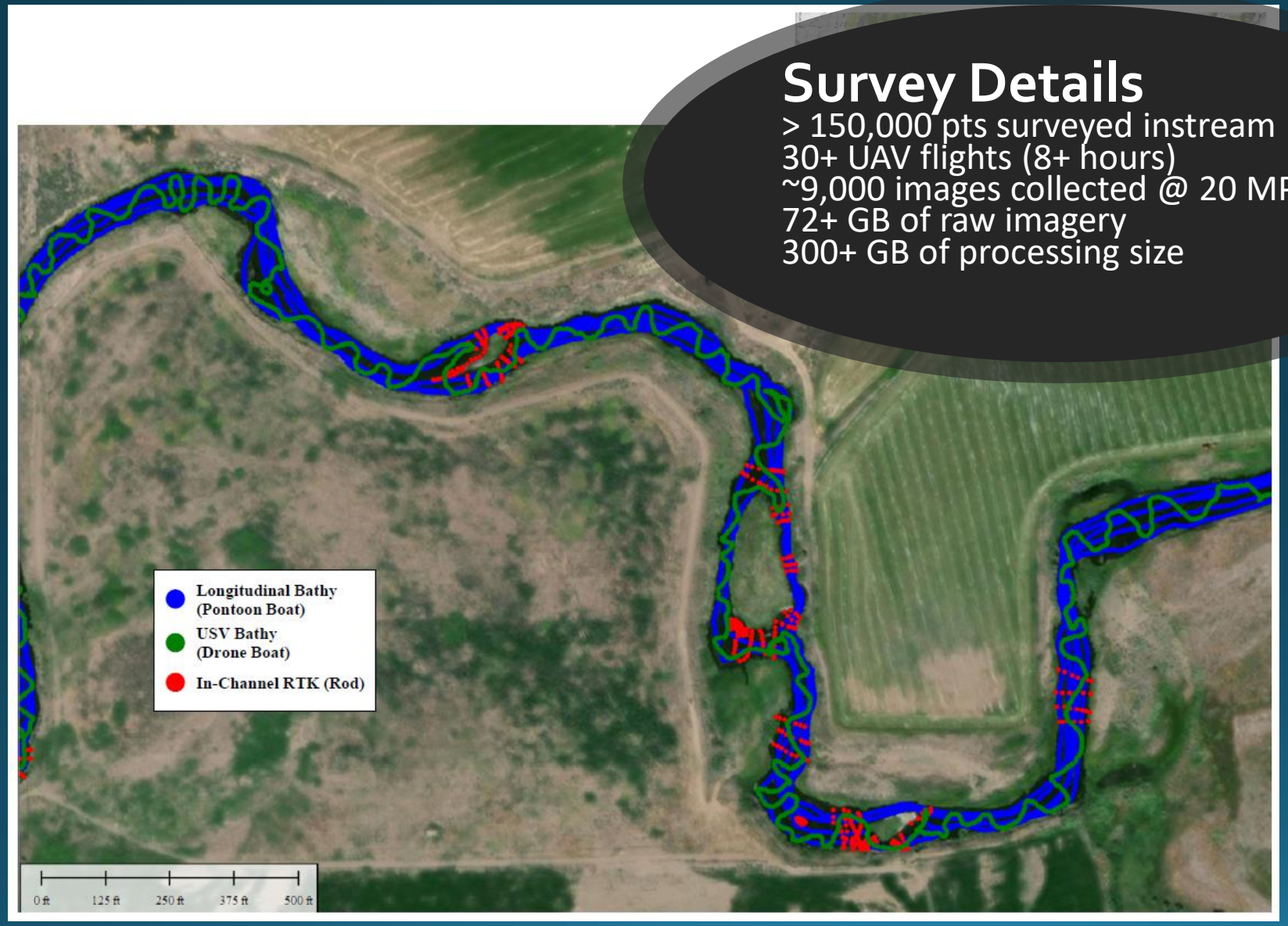

Survey Details

> 150,000 pts surveyed instream
30+ UAV flights (8+ hours)
~9,000 images collected @ 20 MP
72+ GB of raw imagery
300+ GB of processing size

Design/Monitoring Tool

- Use complete hydraulic model to estimate flow velocities, shear stress, etc. for design and engineering purposes
- Compare LiDAR (2009) and UAV (2018 and 2019) data to look for erosion
- Use hydraulic model to estimate fish habitat based on velocity and depth

UAV/Lidar Comparison

Red areas are areas where the elevation has decreased from 2009-2018 = EROSION

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UAV/Lidar Comparison

Questions?