

Restoring Floodplain Processes on the Upper Willamette River

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Acknowledgements

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 - Meyer Memorial Trust
 - Bonneville Power Administration
- Project Sponsors
 - McKenzie River Trust
 - Long Tom Watershed Council
 - Greenbelt Land Trust
- Property Owners
 - U.S. Fish & Wildlife Service
 - Oregon Parks and Recreation Department
 - Sponsors and private landowners

Floodplain Changes



Willamette River Limiting Factors

- Impaired physical habitat
- Impaired access to off-channel habitat
- Reduced macrodetrital inputs – channel disconnected from floodplain
- Reduced peak flows leading to decreased channel complexity and diversity of fish habitat

Spring Chinook



Winter Steelhead



Tie Goals to Limiting Factors

- Goals
 - Increase floodplain habitat connectivity
 - Increase quality of floodplain habitats
 - Improve fish passage at crossings
 - Floodplain reforestation



Off-channel Habitat Use

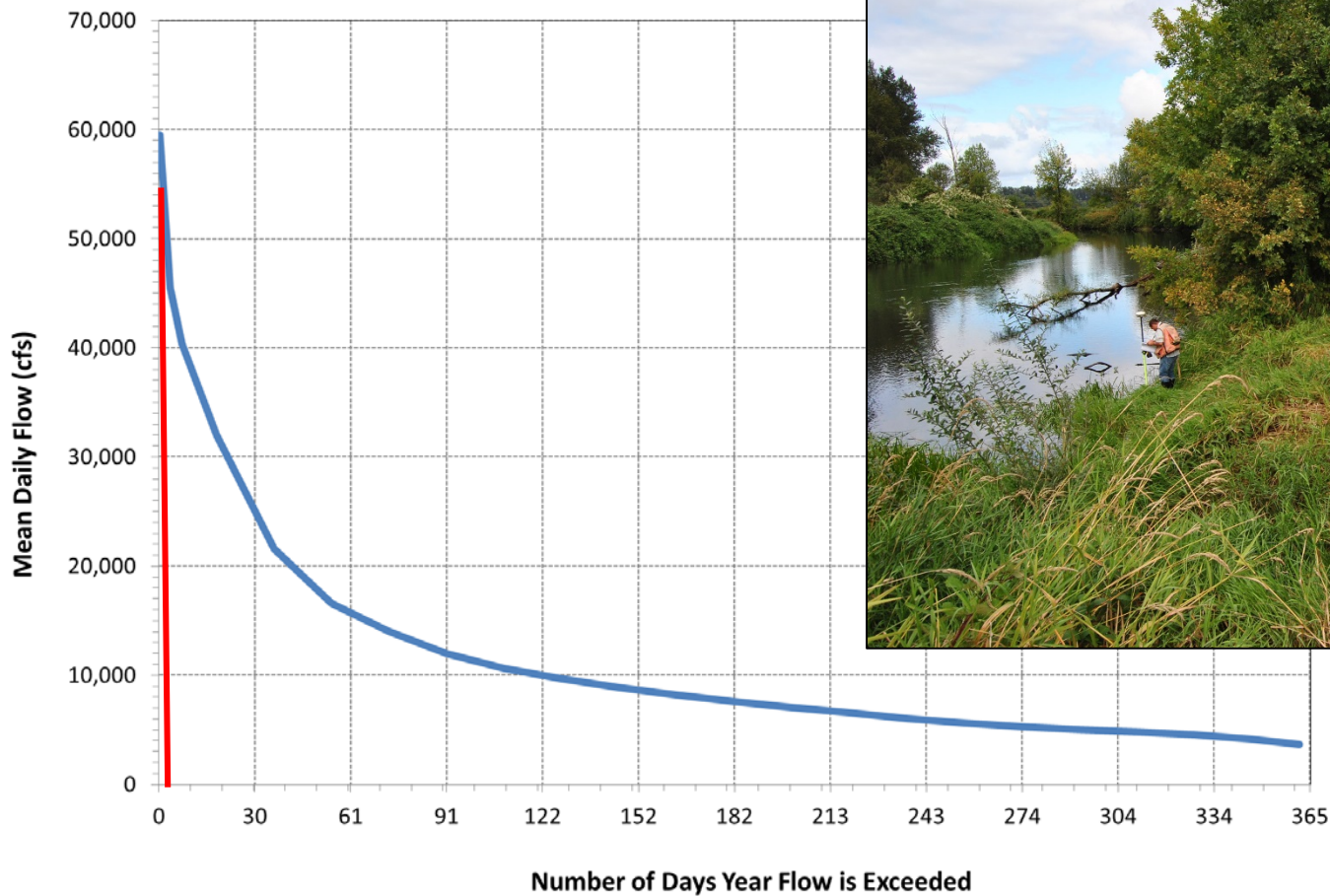
- Fish use off-channel habitats for:
 - Summer refuge - cold water
 - Winter refuge - velocity
 - Predator avoidance
 - Resource availability



Winter Connections

- Remove blockages to improve access

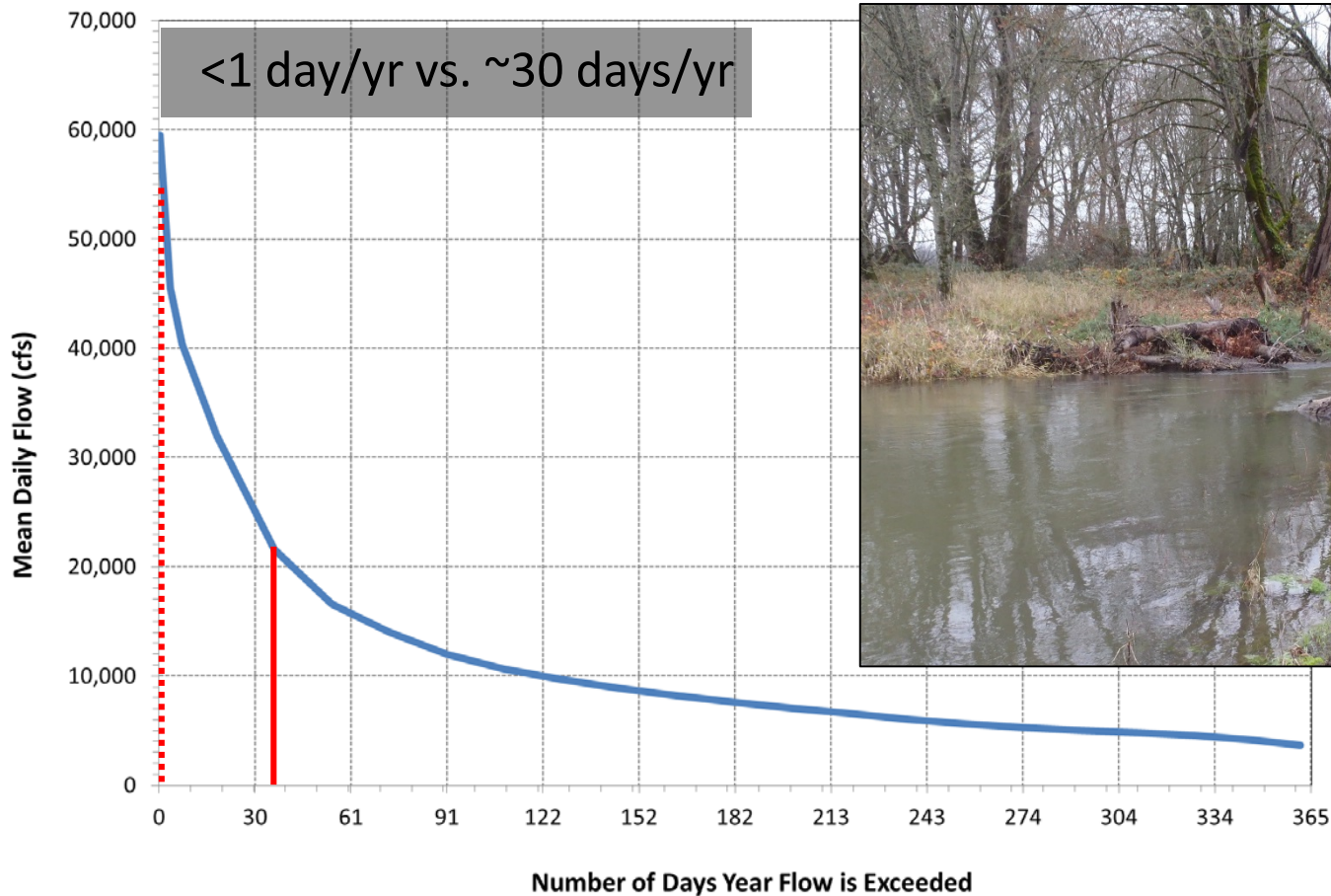
USGS Harrisburg Gage (#14166000) Flow Duration



Winter Connections

- Remove blockages to improve access

USGS Harrisburg Gage (#14166000) Flow Duration



Project Workflow

Project Identification

Inundation
Mapping



Property and
Site Analysis



Hydrologic
Analysis

Project Design & Permitting

Site
Engineering
Design



Proposed
Condition
Modeling



Regulatory
Review and
Permitting

Implementation & Monitoring

Construction



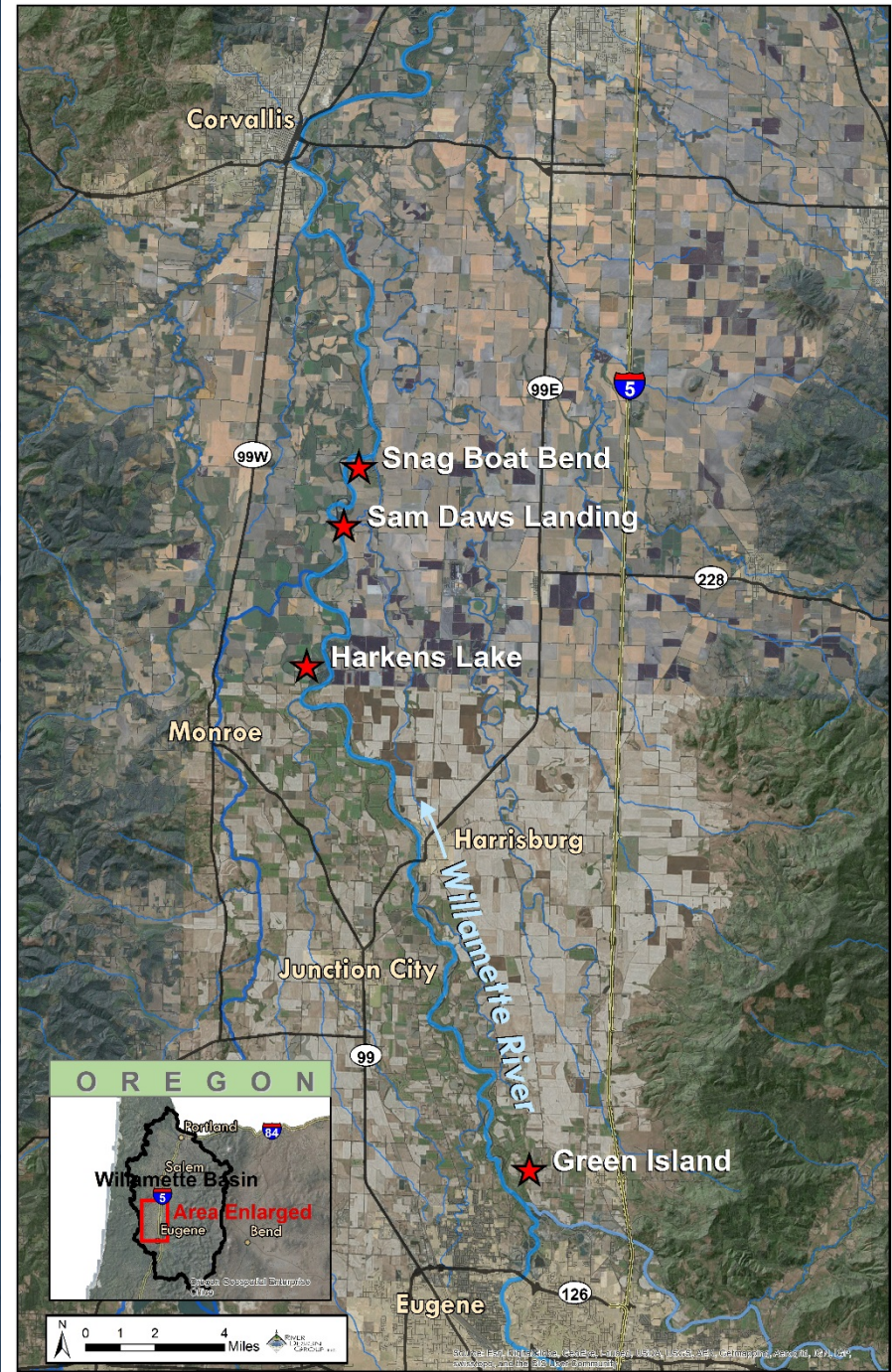
Monitoring



Adaptive
Management

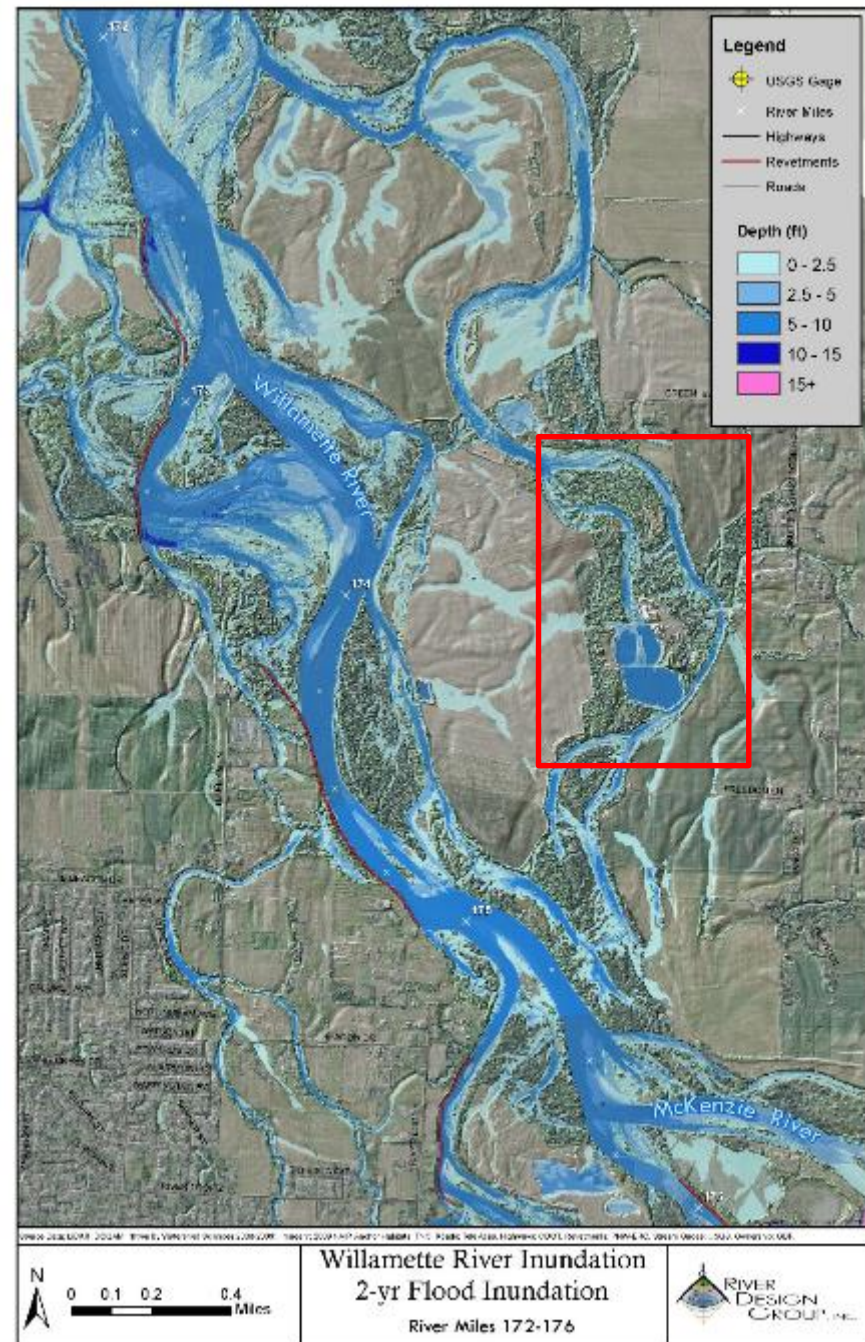
Project Area

- Green Island
- Harkens Lake
- Sam Daws Landing
- Snag Boat Bend



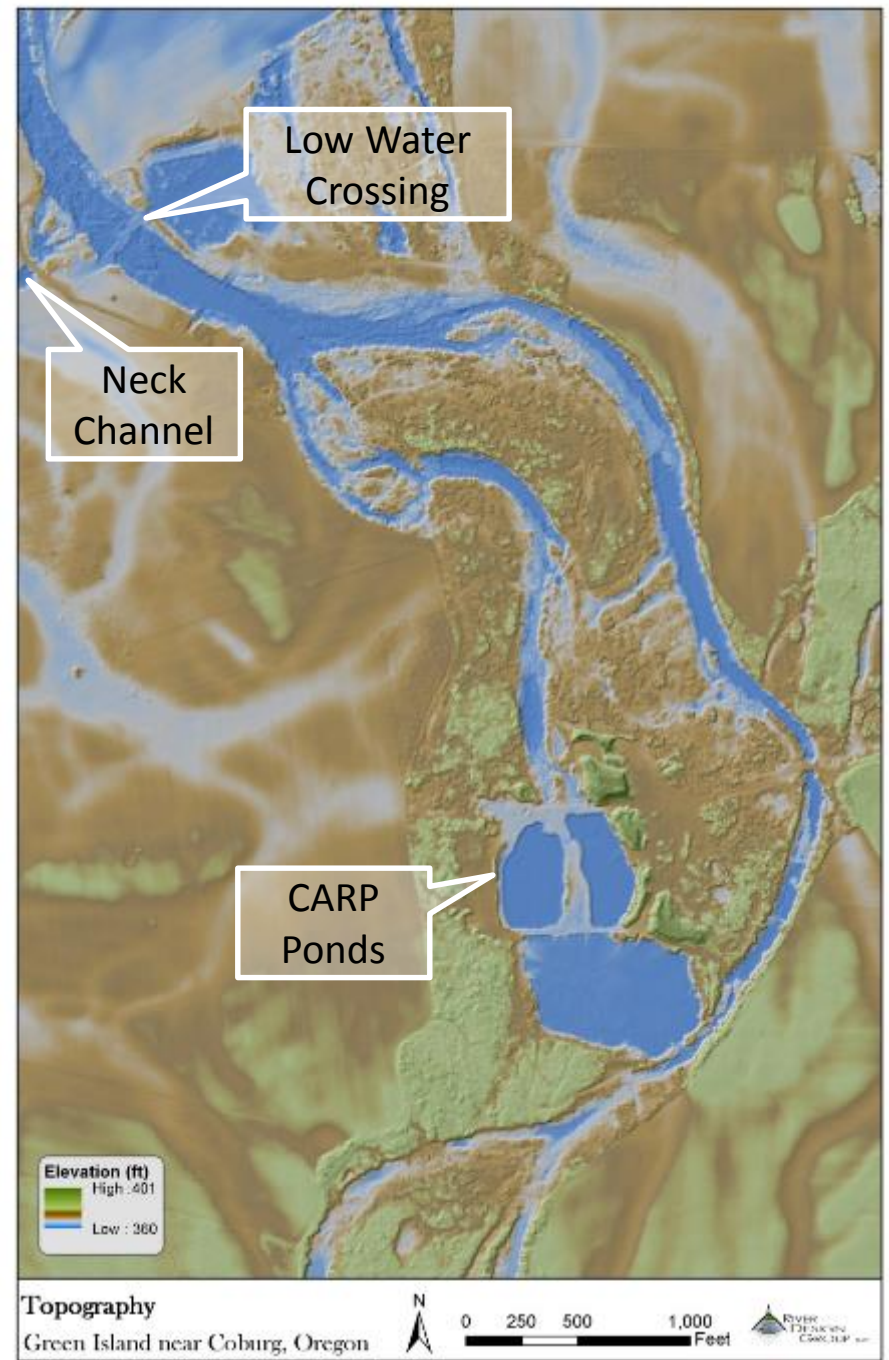
Green Island

- Historical Willamette - McKenzie confluence
- 1,055 ac property purchased 2003
- 56 ac CARP parcel purchased in 2010
- Formerly agriculture, gravel mining



Project Elements

- Coburg Aggregate Reclamation Project (CARP)
- Neck Channel
- Low Water Crossing

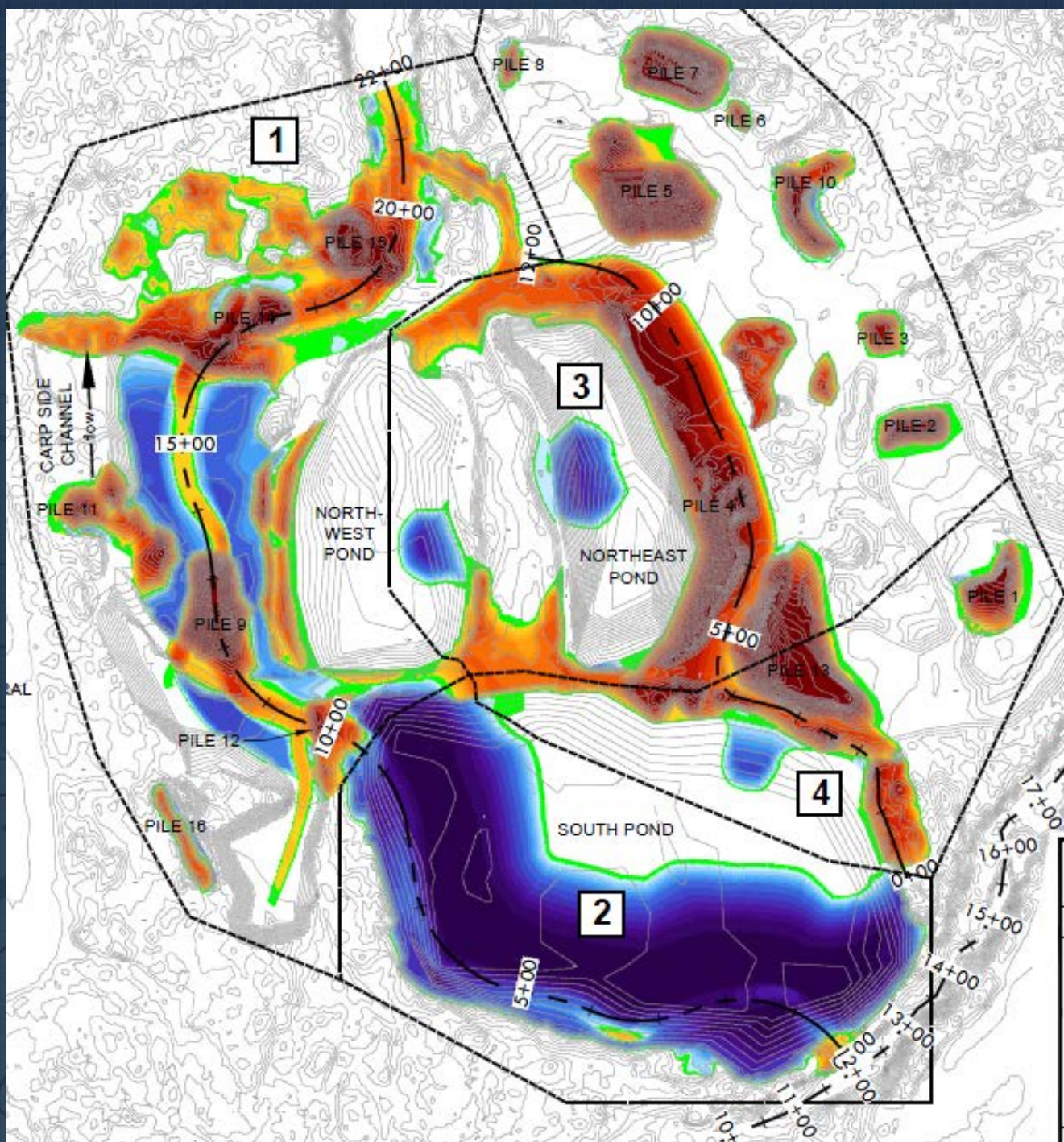


CARP

- 3 moderate size ponds
- Disturbed floodplain
- Stranding and predation concerns











Existing Condition



Construction 2014



December 2015

Neck Channel

- Remove fill to increase connectivity
 - >60,000 cfs vs. 21,500 cfs
 - <1 d/yr vs. ~30 d/yr





Existing Condition



As-built



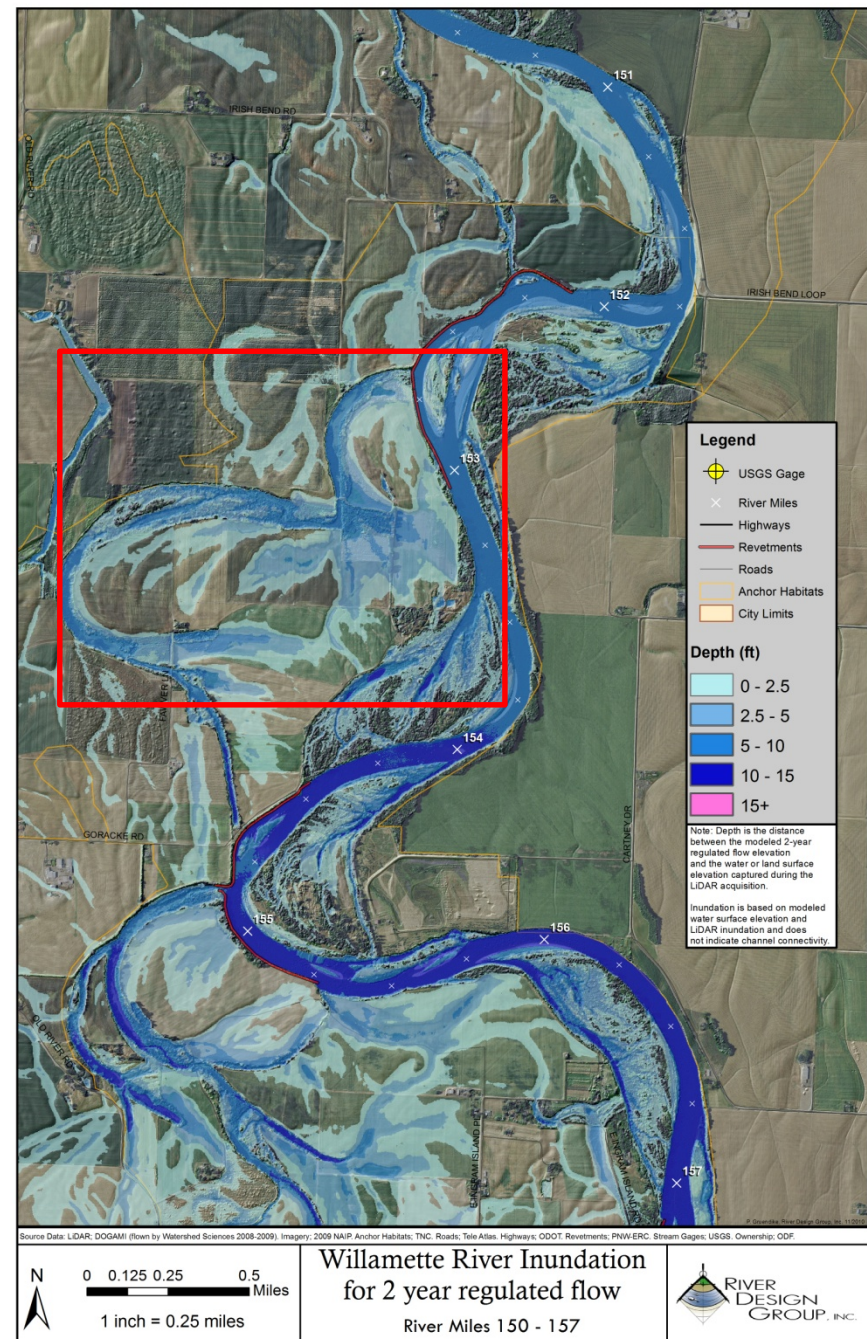
December 2015



December 2015

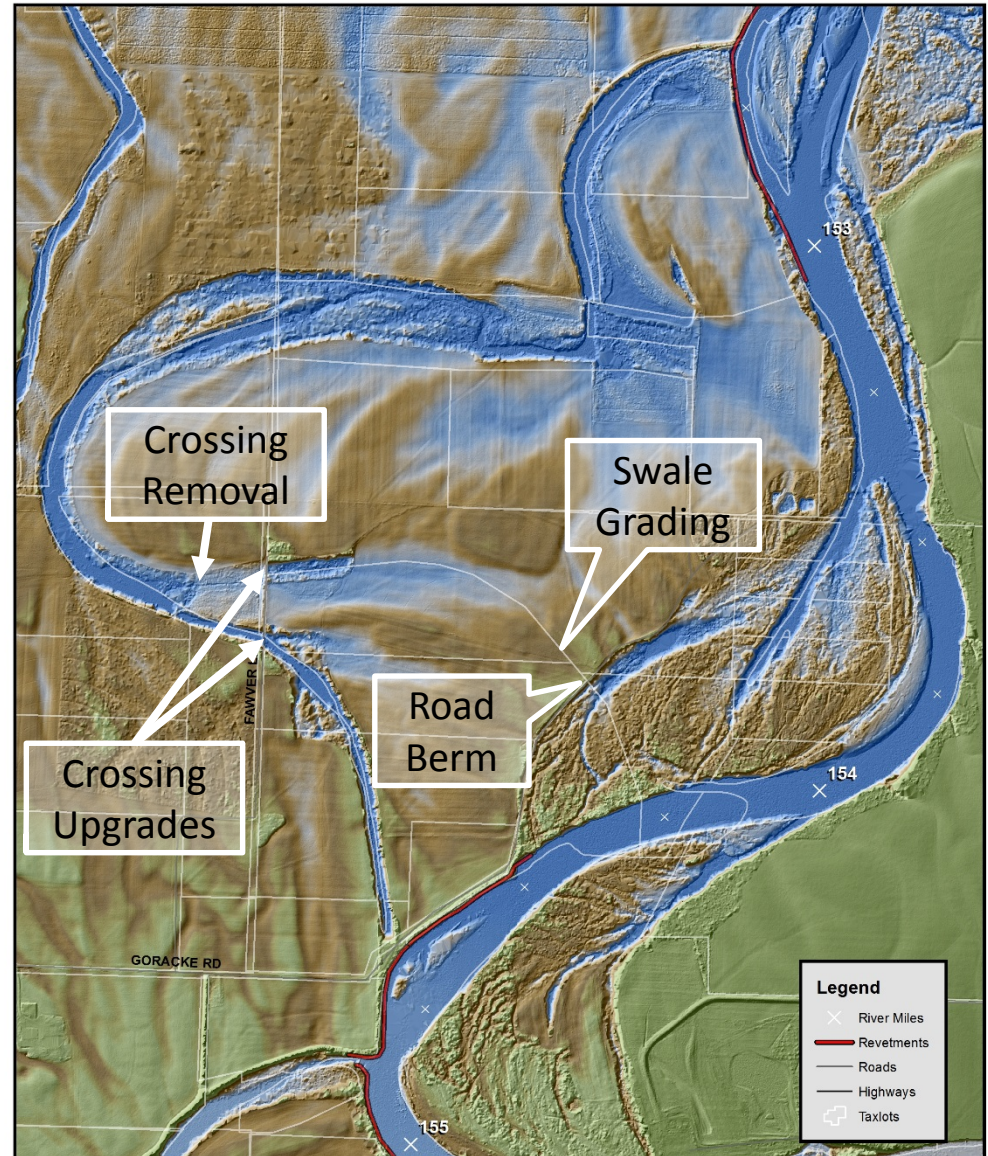
Harkens Lake

- Relic side channel
- Conservation easement
- Floodplain reforestation

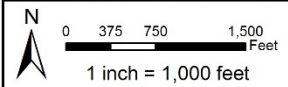


Project Elements

- 3 crossings
- Road berm and swale



Source Data: LIDAR, DOGAMI (flown by Watershed Sciences 2008-2009), Imagery: 2012 NAIP, Roads: Tele Atlas, Highways: ODOT, Revetments: PNW-ERC, Taxlots: Linn County



Project Scoping Map
Harkens Lake

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 greenbelt land trust
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Crossings



Road Berm and Swale

- Remove berm and grade floodplain swale
 - >75,000 cfs vs. 30,000 cfs
 - <1 d/yr vs. ~21 d/yr
- Improved flow-through conditions - 2 mi of channel



Former Berm/New Inlet



Road Berm



As-built



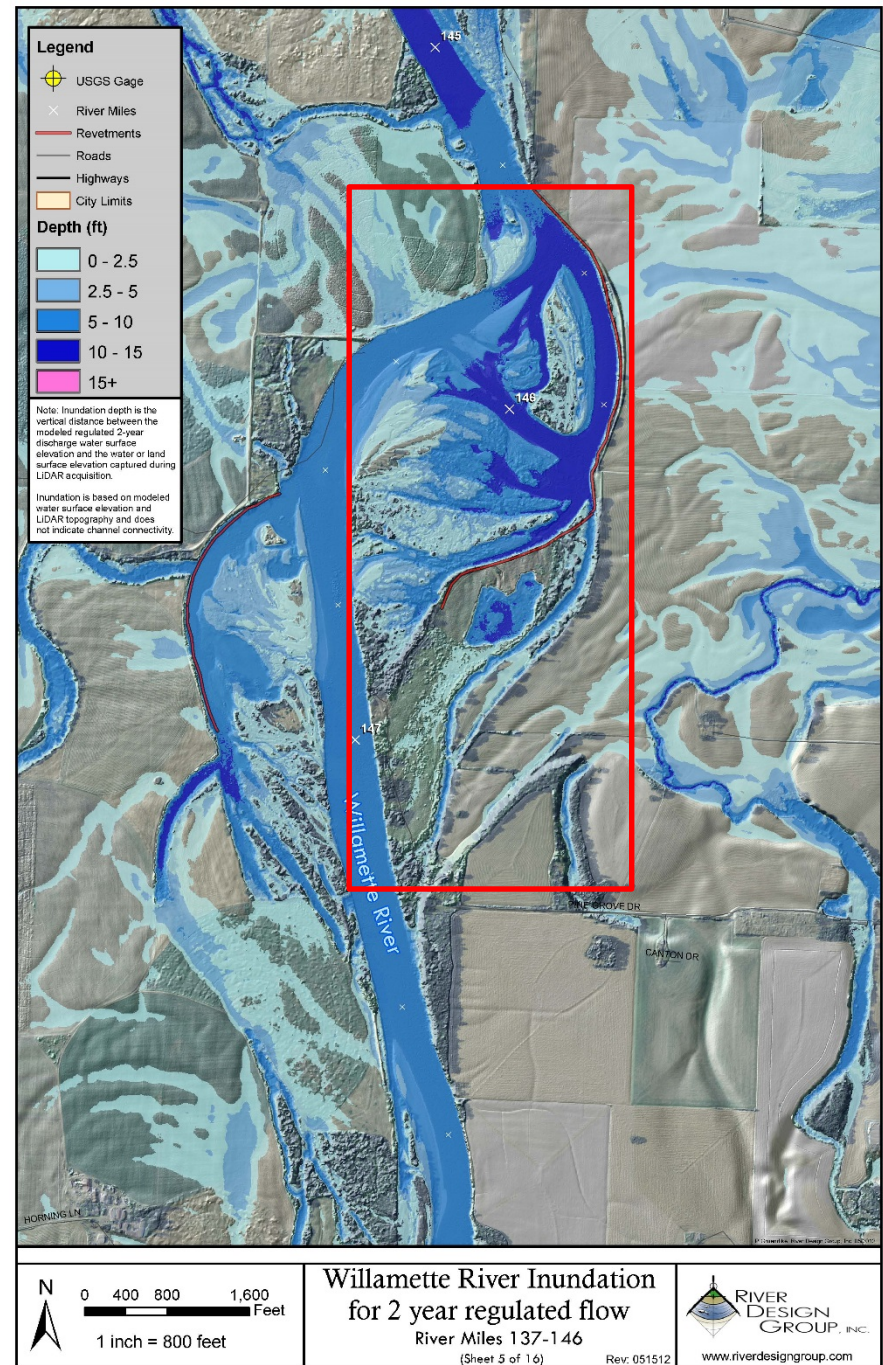
December 205



Swale Location

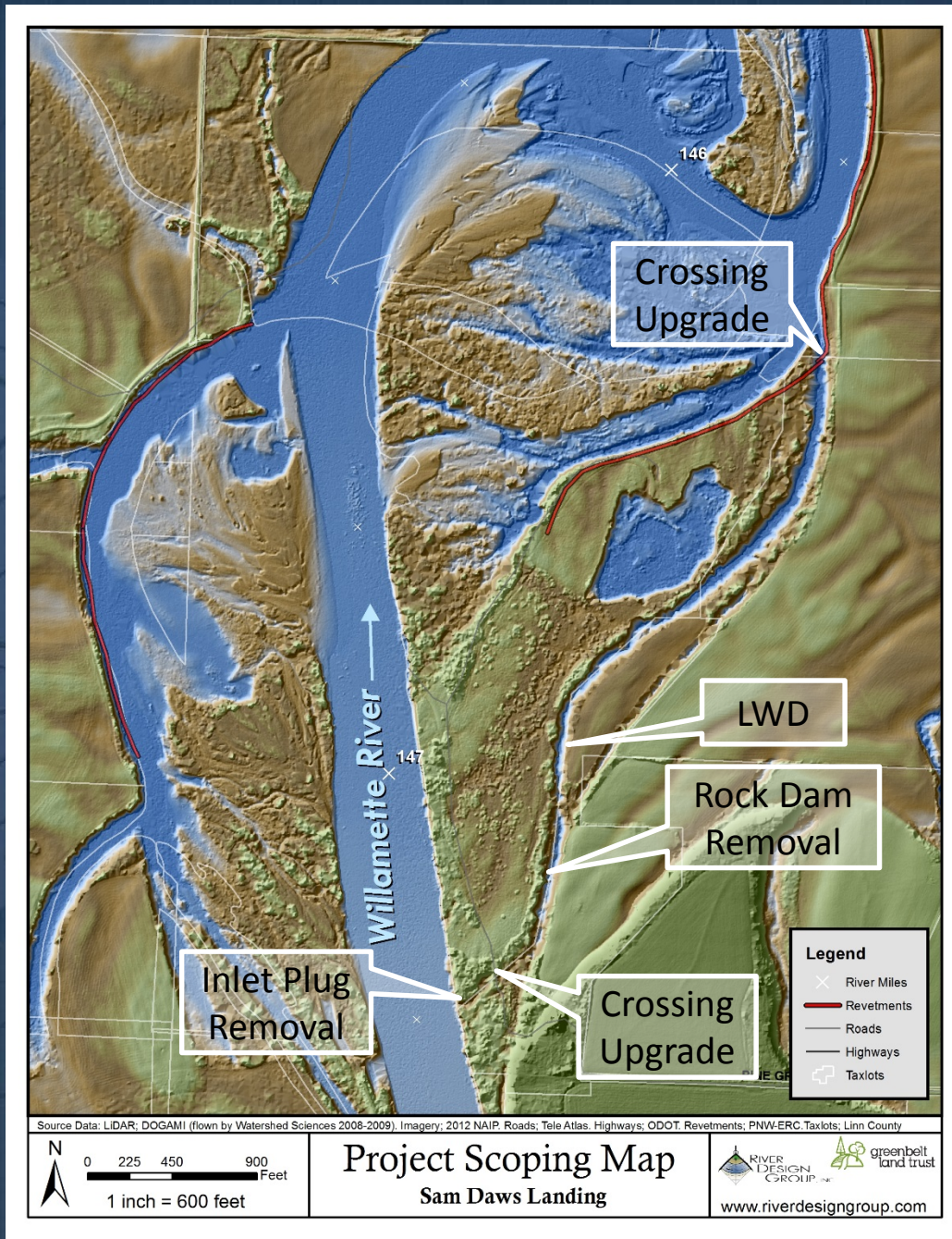
Sam Daws Landing

- Floodplain channel network
- 172 ac OPRD park
- Channel fills for historical agriculture
- 9.4 ac & 0.9 miles of side channel disconnected



Project Elements

- Inlet plug removal
- Low water crossing upgrades
- Rock dam removal
- Large wood structures

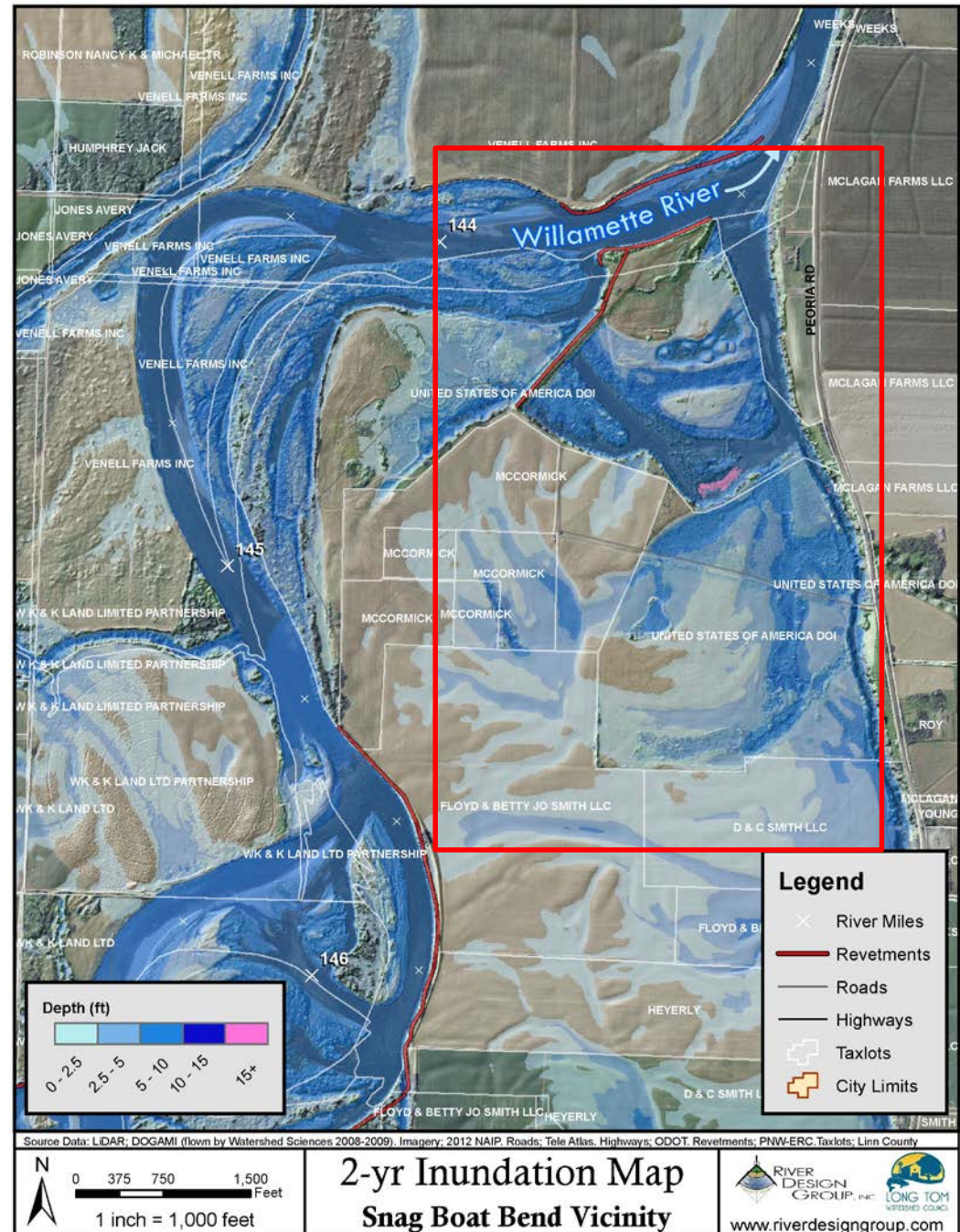


Side Channel Connection



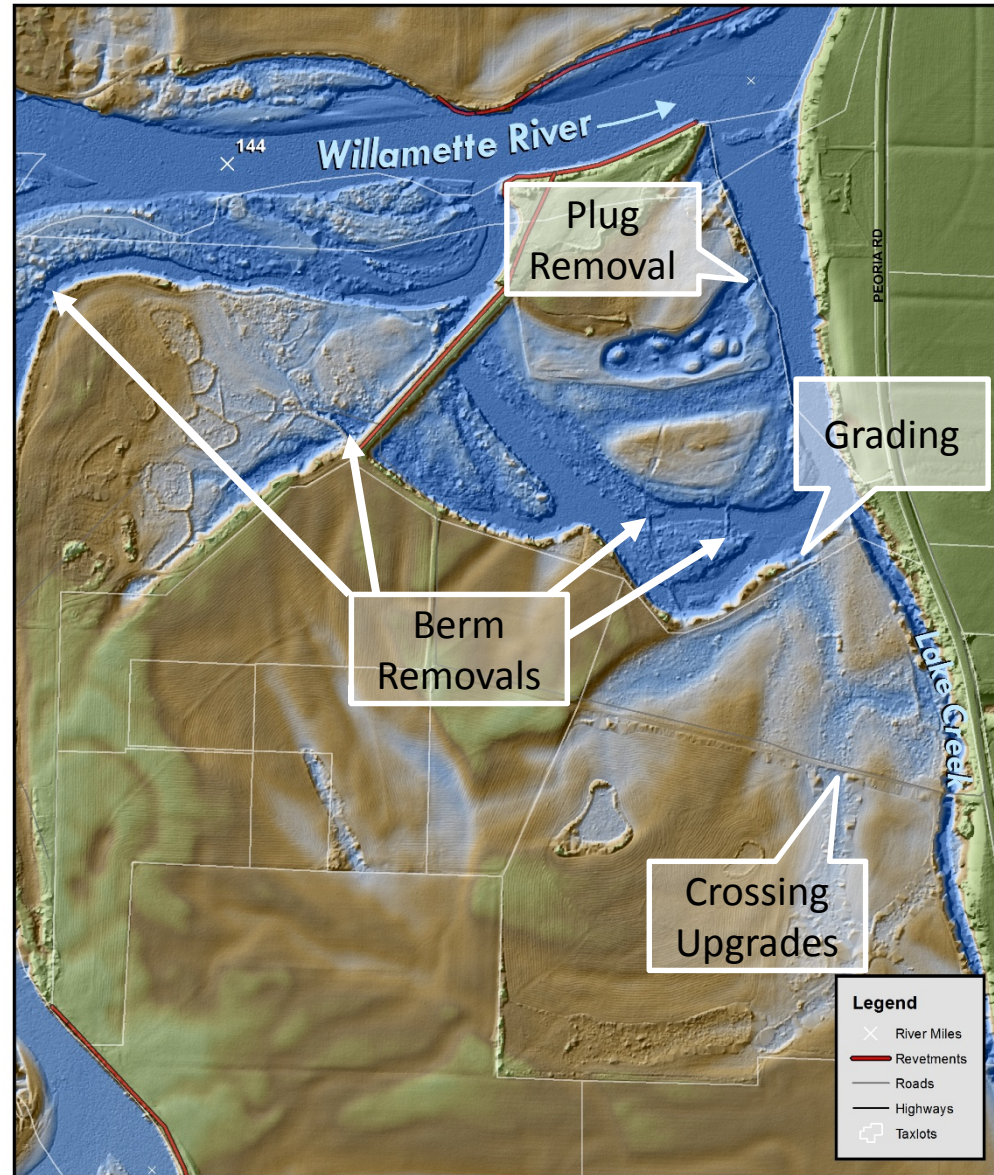
Snag Boat Bend

- Floodplain channel network
- 340 ac USFWS refuge
- Channel fills from historical agriculture
- 52 ac & 2.4 miles of side channel disconnected
- >40,000 cfs vs. 21,000 cfs
- <7 d/yr vs. ~40 d/yr

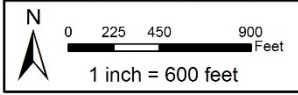


Project Elements

- Crossing upgrade
- 9 berm removals



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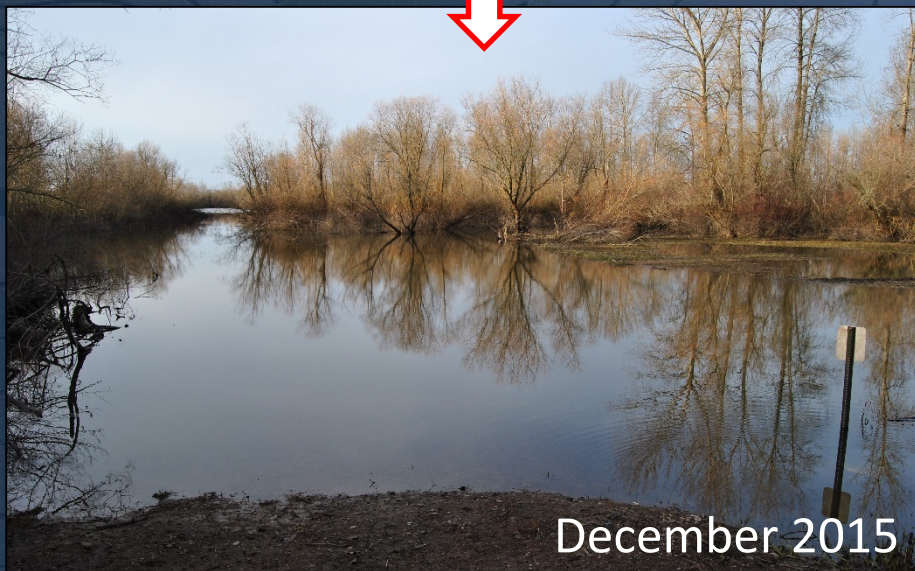


Project Scoping Map
Snag Boat Bend

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Berm Removal & Grading



Summary

- Goals address channel connectivity and expected juvenile fish use
- Projects include fill removals and crossing upgrades
- Need for biological monitoring

Communication, Brokers in Information



**Oregon Chapter
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