

Wapato Access Feasibility Study

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AECOM

Lower Columbia River Estuary Partnership (LCREP)

- Non-profit two state public-private initiative
- Primary Responsibility: Comprehensive Management Plan for the Lower Columbia River (LCR)
- Mission: Rehabilitate, Enhance, Protect, Conserve, Create, and Restore Tidal Wetlands and Related Key Habitats In the LCR
- Project Funding by Bonneville Power Administration (BPA)

Columbia River Basin

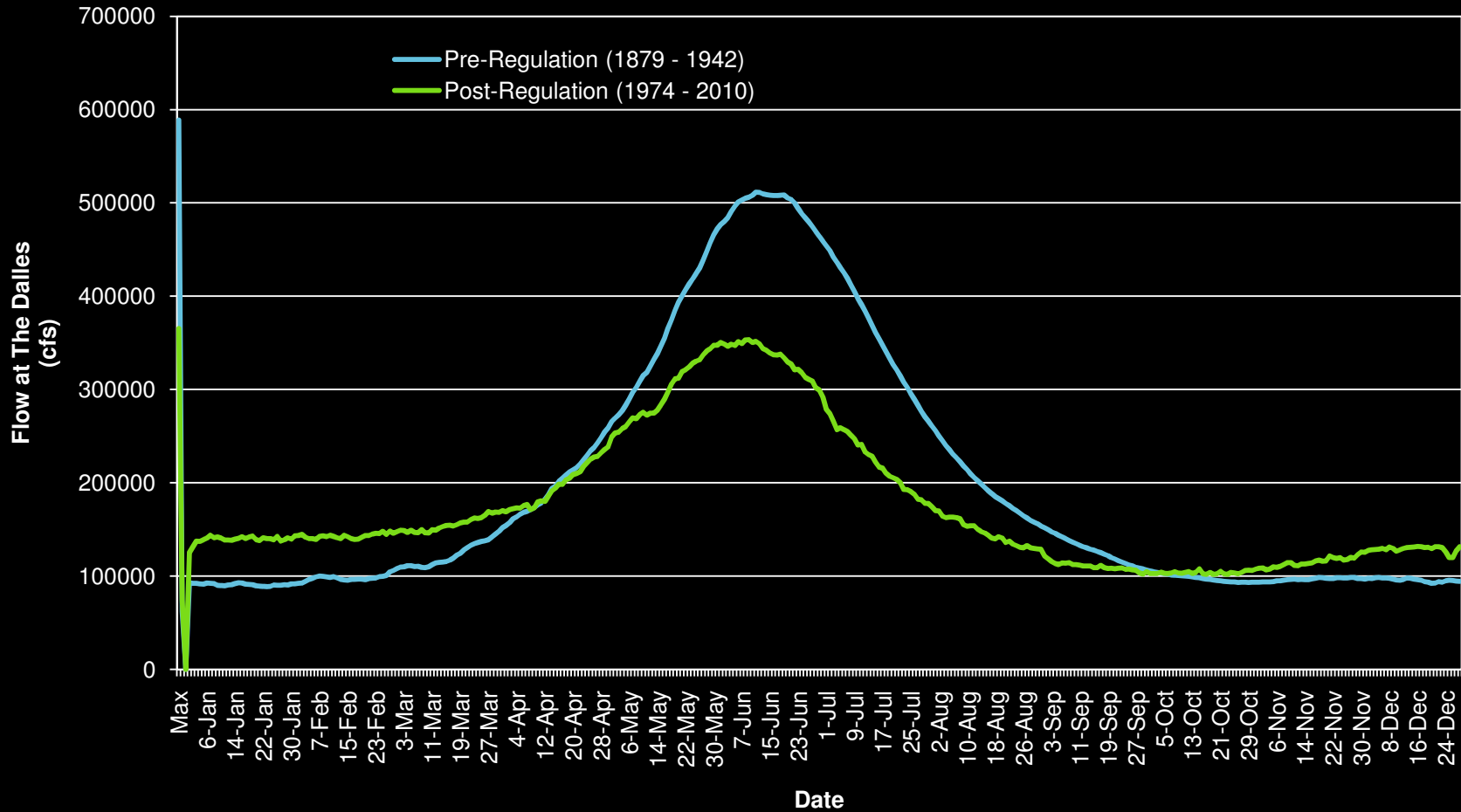
Basin Map



Basin Statistics

- Basin Area is 258,000 Sq. Miles
- Drains 7 States and BC
- 1243 Miles Long
- Largest River Flowing to Pacific from North America
- Supports Many Species of Anadromous Fish

Columbia River Average Daily Flow at The Dalles, Oregon



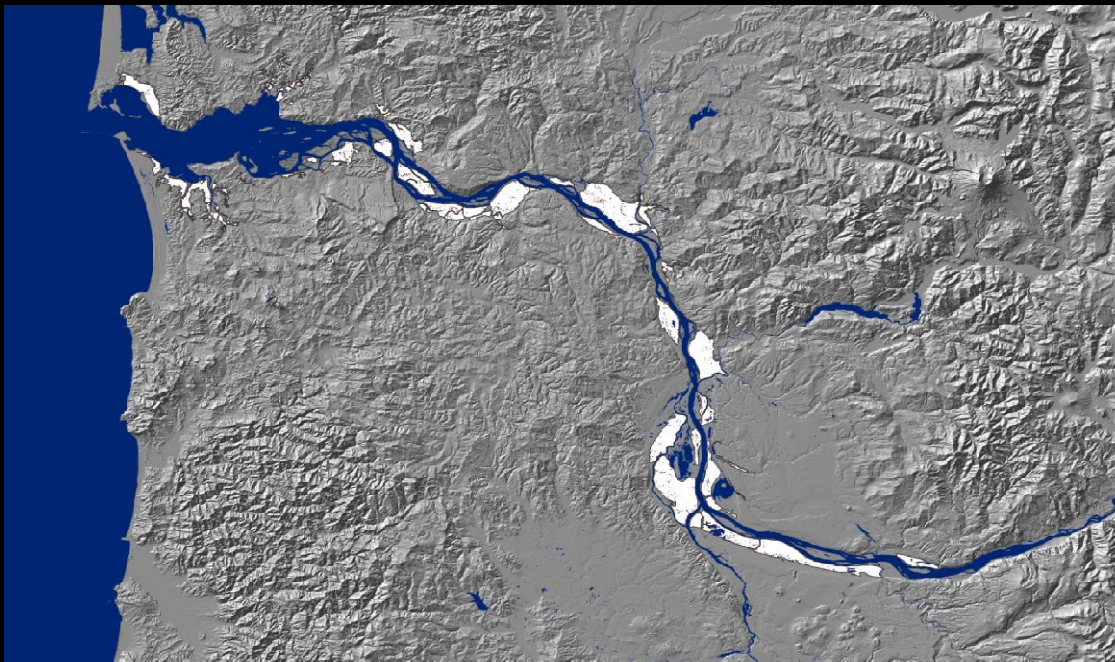
Cumulative Impacts to Columbia River ESA Listed Anadromous Fish Habitat

- Harvest
- Dams
 - Migration Obstacle
 - Upstream Passage
 - Downstream Passage
 - Increased predation
 - Flow Regulation
 - Reduced Peak Flows
 - Increased Low Flows
- Habitat Loss
 - Diking, Draining, Development
- Hatcheries



Historic Ecosystem Losses in the Lower Columbia River Estuary – Last 150 Years

- 52,000 acres wetland/marsh habitats
- 3,800 acres of riparian forest habitat
- 27,000 acres of forested wetland



Percentage Change in Columbia River Estuary Habitat Types

Habitat Type	Change
• Deep Water	-7%
• Medium Depth Water	-25%
• Shallow Tidal Flats	+10%
• Tidal Marsh	-43%
• Tidal Swamp	-77%

FCRPS Biological Opinion

- **Biological Opinion Issued by NOAA Fisheries 2008**

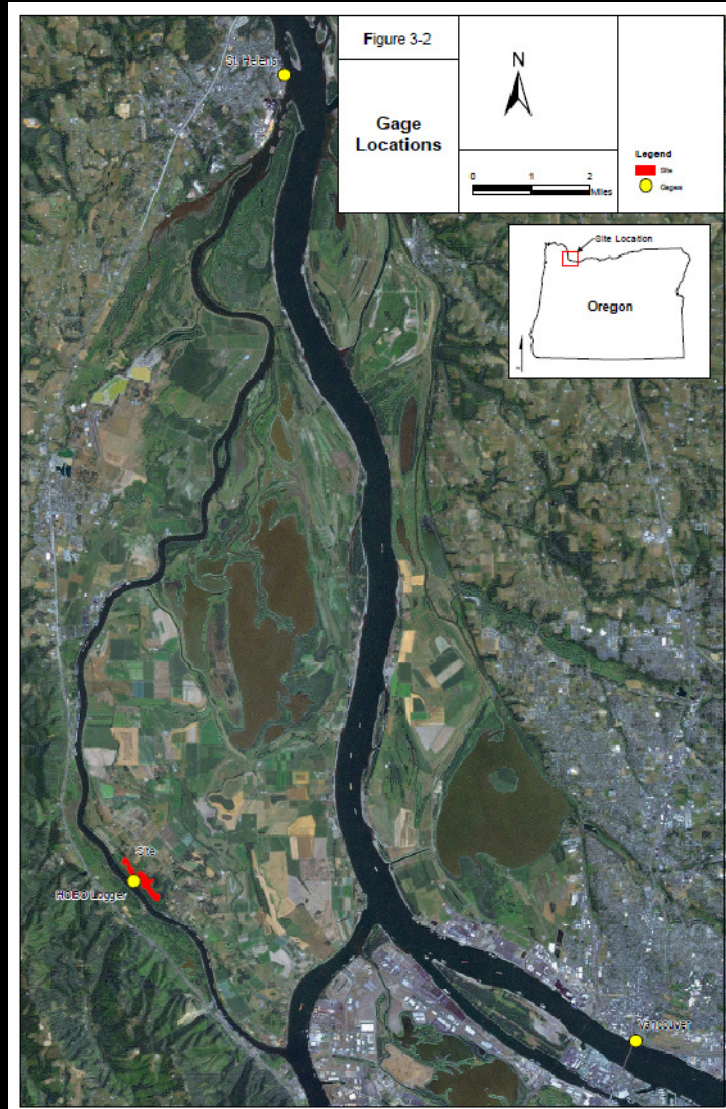
Action Agencies Concluded Operation of These Projects Without Further Mitigation, Would Jeopardize 13 Listed Species of Fish

- **Mitigation Measures Include 73 Detailed Reasonable and Prudent Alternatives (RPA)**
- **RPA Alternative 37:**
 - Identify and Implement Estuary Habitat Restoration Projects That Yield High Survival Benefits

Wapato Access Floodplain Reconnection Feasibility Study

- Objectives
 - Collect and Analyze Baseline Data
 - Determine Habitat Enhancement Alternatives
 - Develop Planning Level Analysis of Alternatives
 - Develop Conceptual Design of Preferred Alternative
 - Develop Planning Level Cost Estimate

Wapato State Access Area Description



- Located on Sauvie Island
- Owned by Oregon State Parks
- Confluence of Willamette and Columbia
- 156 Acres with 41 Acres of Wetland
- Separated from Multnomah Channel by Levees

Aerial of Wapato State Access



Site Vicinity



Study Approach

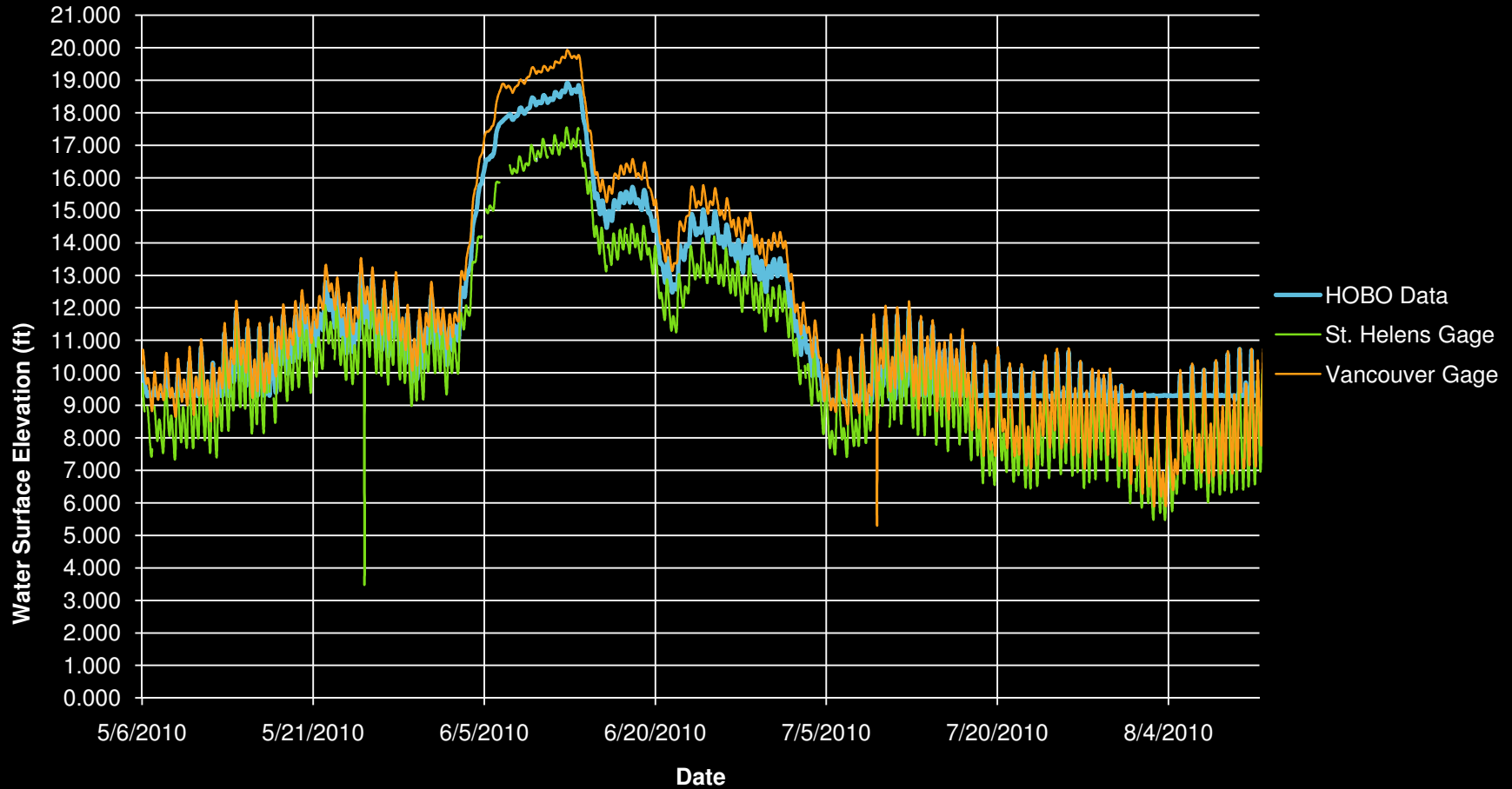
- Water Surface Elevation Development
 - Inundation Study
- Vegetation Survey and Wetland Delineation
- Review Outmigration Data

Water Surface Elevation Development



- Used HOBO Data Logger
- Recorded Data from May to August 2010

HOBO Data vs. Gage Data



Water Surface Elevation Development

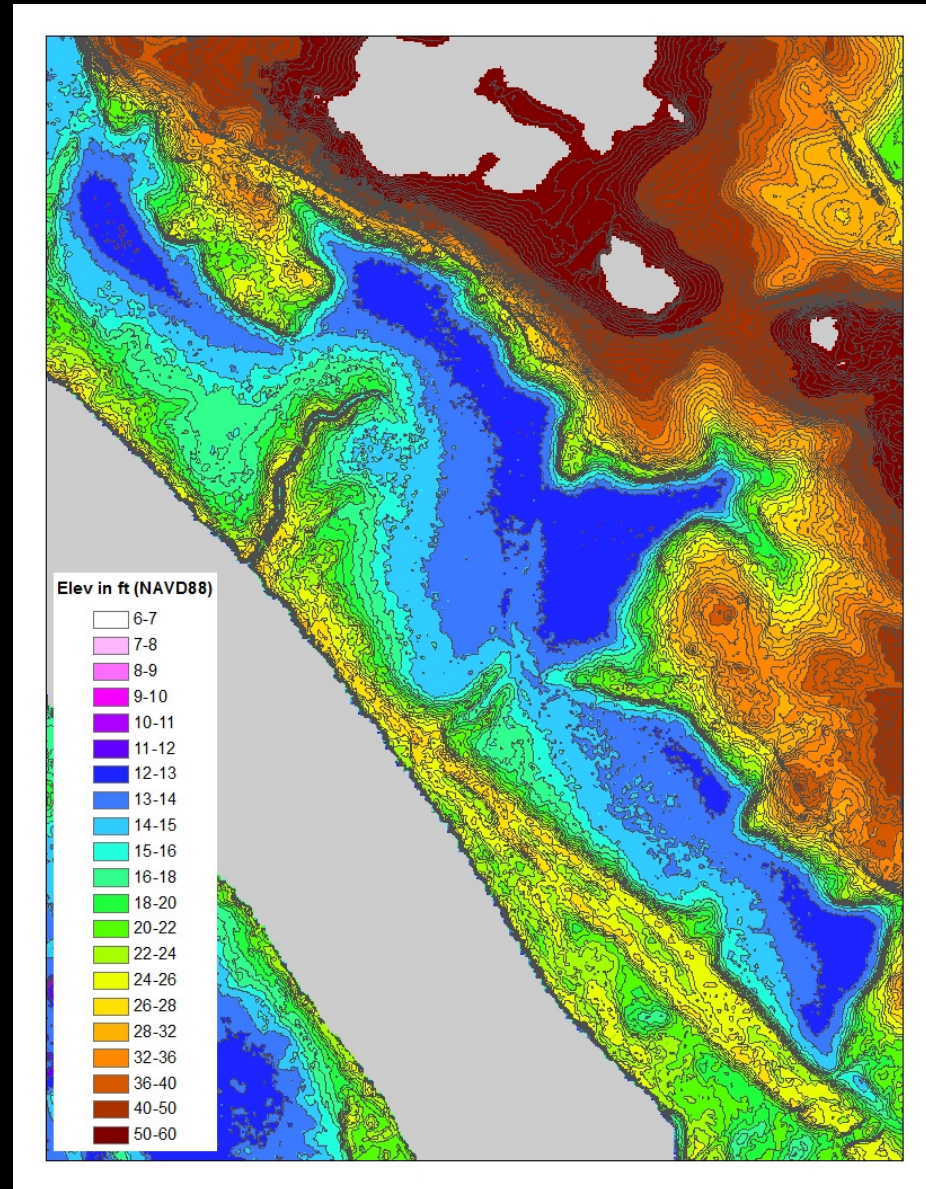
- Developed Long Term Water Level Record
 - St. Helens Gage
 - Adjusted Calibration to Variations in Water Level Differential
 - Long Term Record (1986-2010)

Inundation Mapping

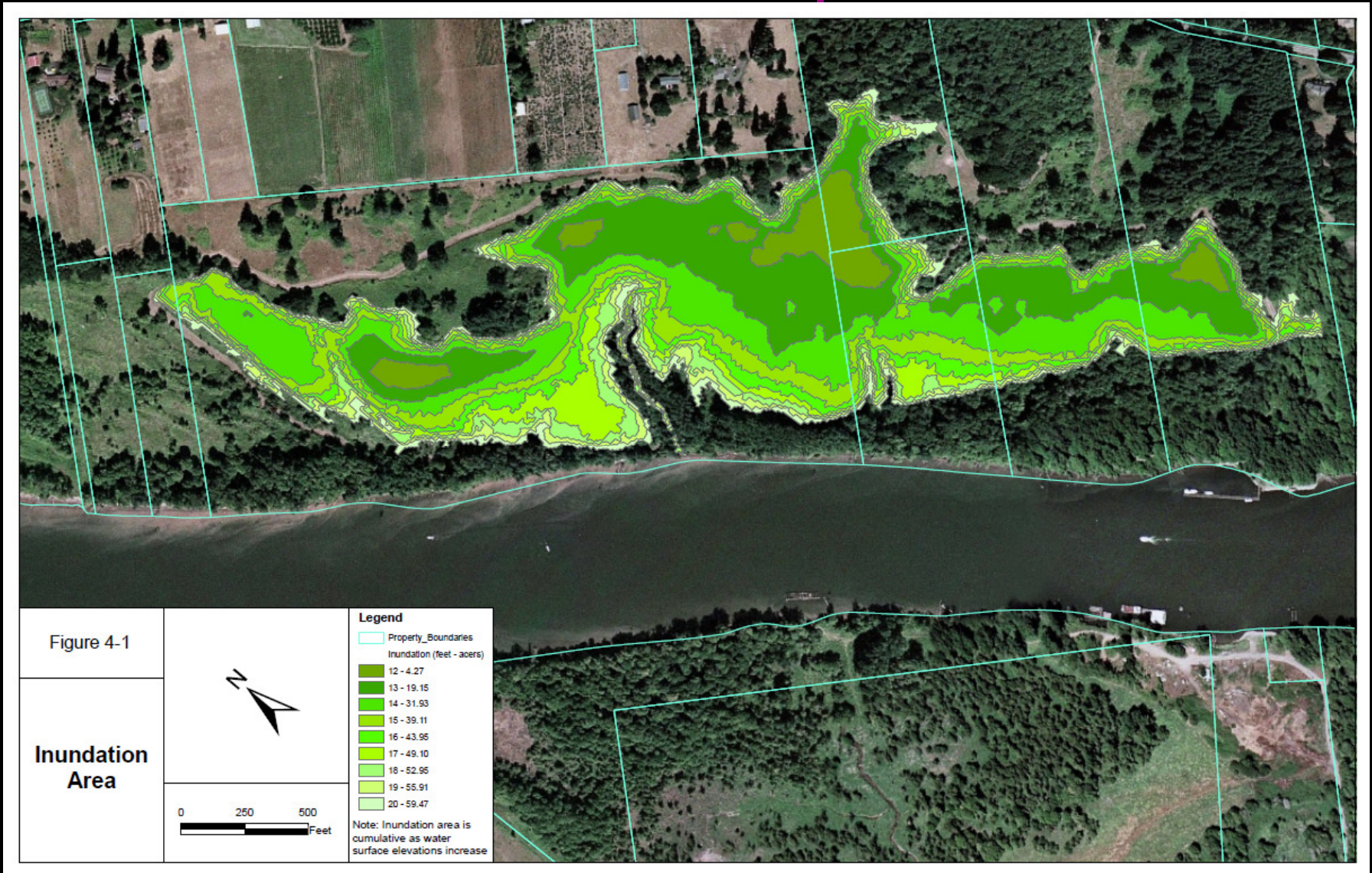
- Questions
 - How much area is inundated?
 - Where does the water accumulate?
 - Where can potential entrapment take place?
 - Is there potential to flood neighboring properties?

LiDAR Topographic Data

- LIDAR data with site specific survey used to develop inundation maps



Extent of Inundation and Water Depth



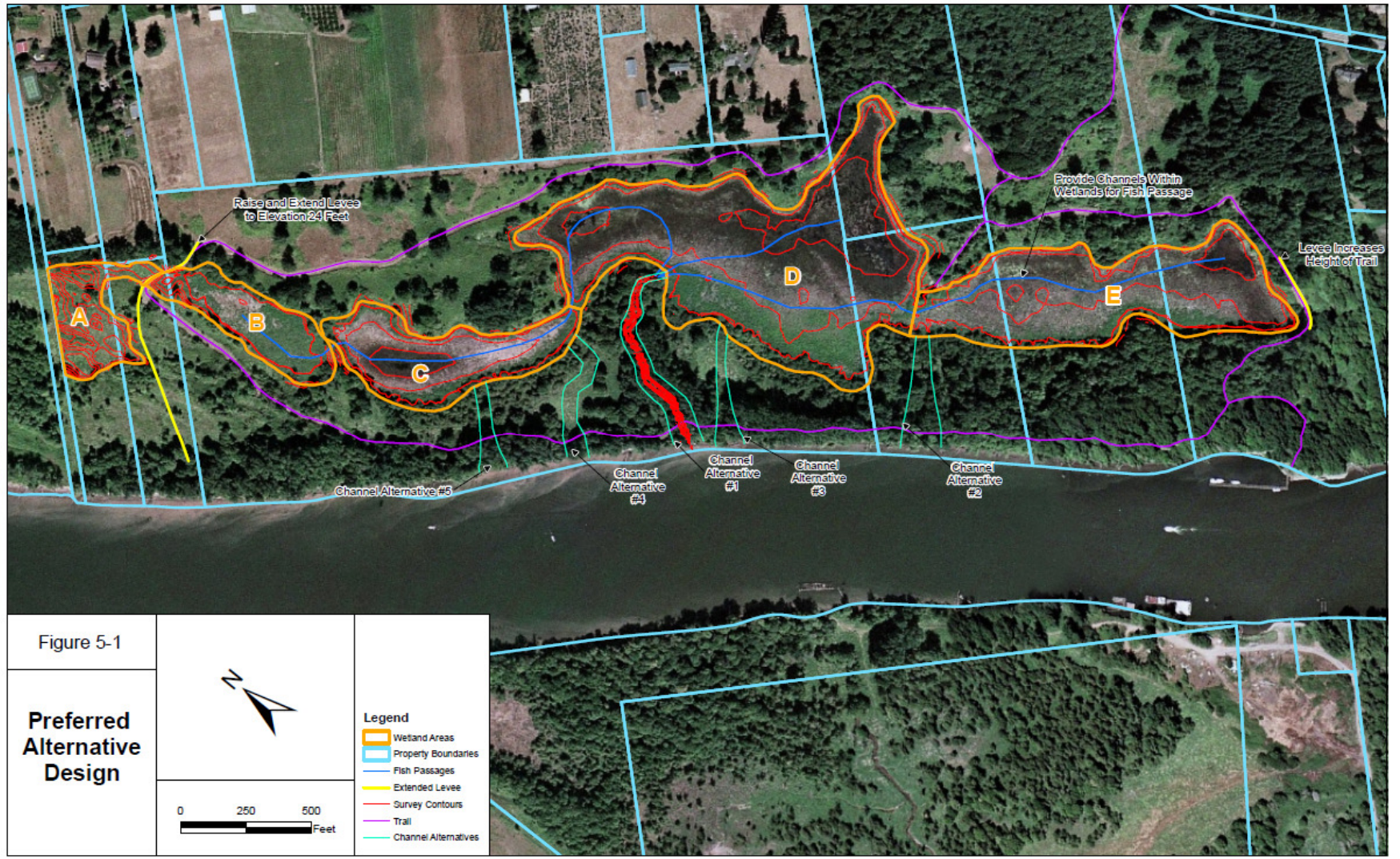
Outmigration Study

- Chinook
 - January – May
- Coho
 - April - June
- Steelhead
 - November - May

Monthly Percent of Time Above WSE

	January	February	March	April	May	June	November	December
>11.3 feet	42.0%	30.8%	30.8%	36.0%	58.7%	52.9%	14.4%	31.0%
>12 feet	32.4%	21.9%	20.3%	24.2%	43.9%	43.1%	8.9%	21.5%
>13 feet	22.3%	13.6%	11.4%	12.7	28%	31.9%	4.4%	12.6%
>14 feet	13.9%	7.8%	5.1%	6.6%	17.5%	22.4%	2.0%	8.0%
>15 feet	8.2%	4.8%	3.5%	3.6%	12.2%	13.0%	0.8%	5.5%
>16 feet	5.7%	2.9%	2.1%	2.3%	8.7%	8.8%	0.4%	3.7%
>17 feet	3.8%	1.3%	1.2%	2.1%	6.4%	6.2%	0.3%	2.8%
>18 feet	3.6%	1.2%	1.1%	2.0%	6.0%	6.1%	0.2%	2.6%
>19 feet	1.8%	0.5%	0.1%	1.9%	4.0%	3.5%	0.2%	1.9%
>20 feet	1.1%	0.3%	0.0%	1.1%	1.8%	2.7%	0.2%	1.0%

Preferred Alternative Design



Preferred Alternative

- Restore areas B, C, D, and E
- Excavate Channel
- Installation of a Trail Crossing
- Construct Internal Channel to Prevent Entrapment
- Raise Levees to Prevent Flooding of Neighboring Properties
- Restore Wetland Areas with Native Plantings

Next Steps

- Collect additional data on local hydrology
- Discuss specific Design and Criteria with Stakeholders
- Complete 1D and 2D modeling of site and channels
- Complete Final Design of Channels, Levees, and Planting Plan
- Complete Construction Cost Estimate

Thank You



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