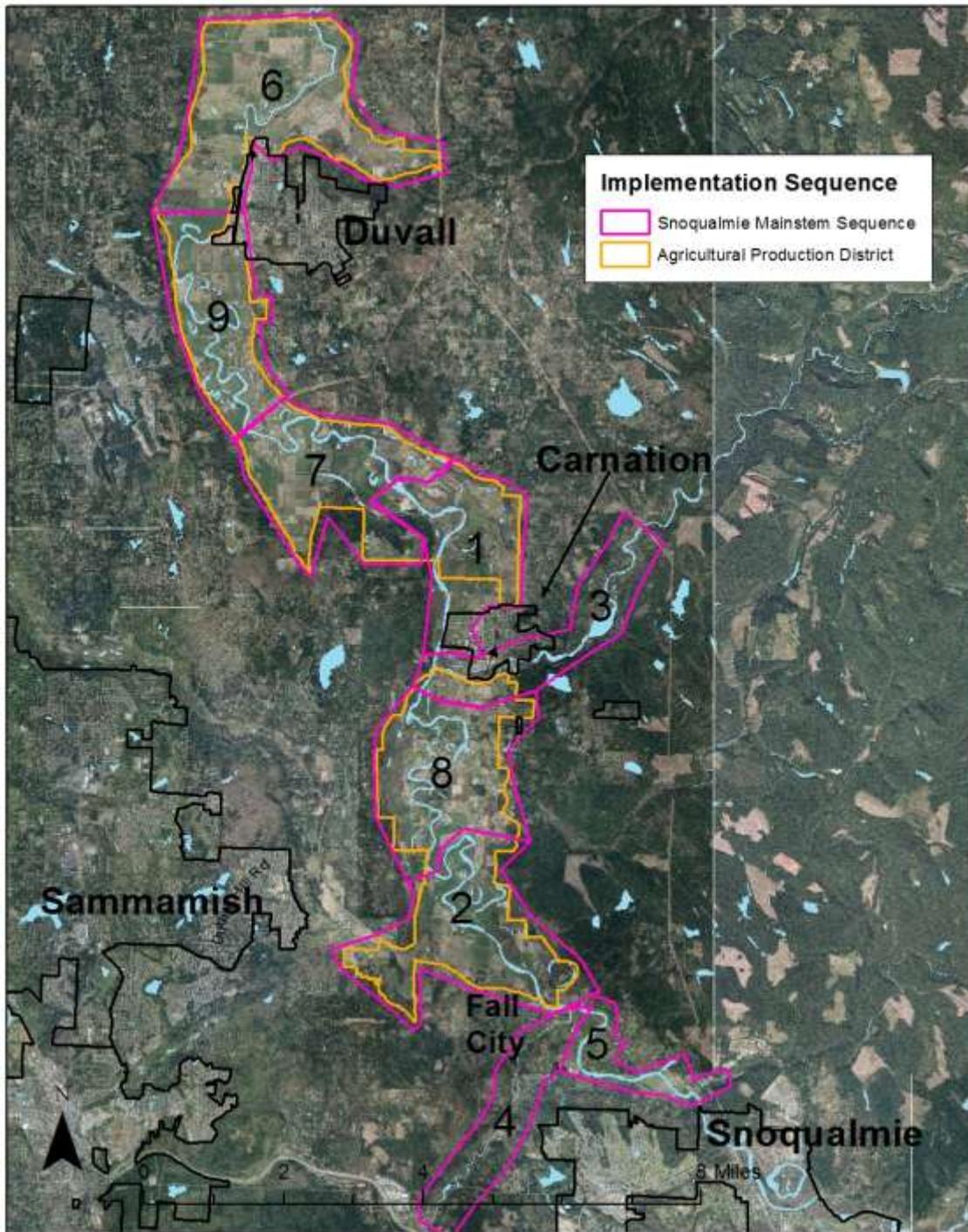


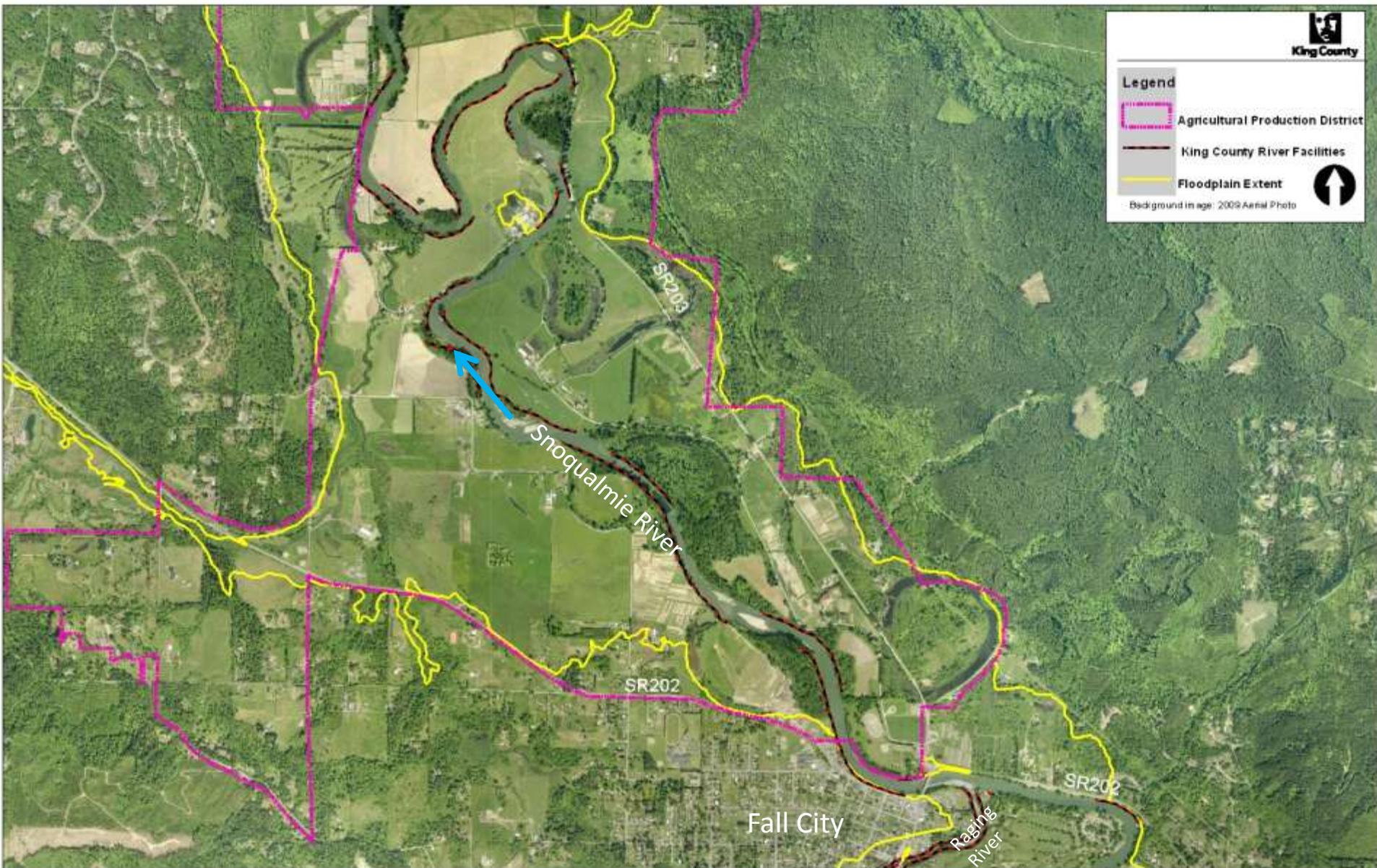
Snoqualmie at Fall City (SAFC) Project Discussion

- Discussion purpose
- SAFC reach background
- SAFC project proposals
- Committee discussion about project impacts/benefits for Farm, Fish, Flood

Habitat Restoration Implementation Sequence



Snoqualmie at Fall City Reach



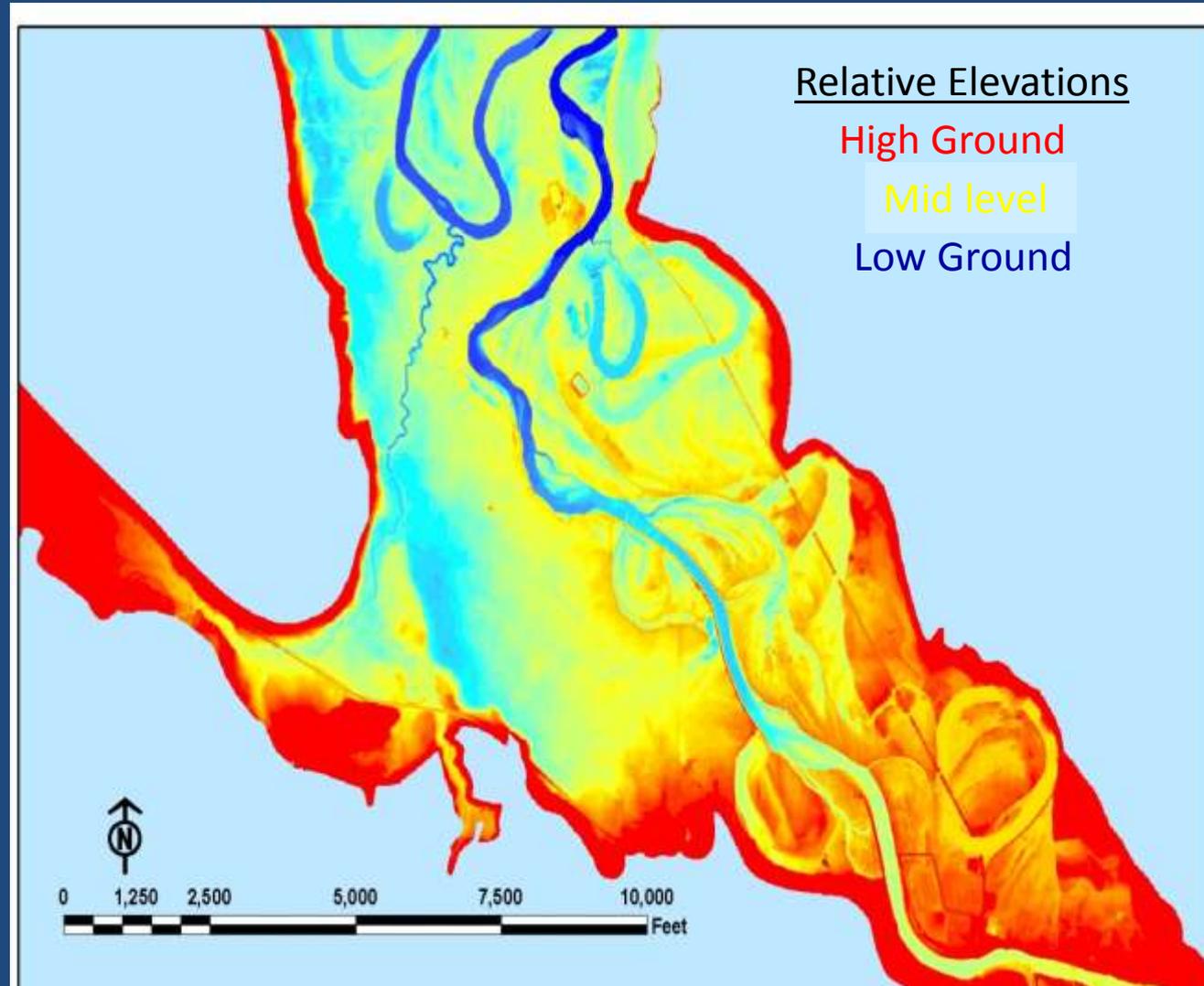
Landscape Setting

Deep, broad
floodplain

Raging River
influence: steeper
gradient, more
sediment – important
for salmon
spawning/rearing

High risk of channel
migration and fast/
erosive flows

Higher ground for
farming



FLOOD: Why is SAFC important?

- Allow river more space with less risk to adjacent properties – sediment, channel migration
- Reduce velocity and erosive forces on facilities and neighbors
- Allow more room for floodwater conveyance – for smaller events
- New facilities meet modern standards



FISH: Why is SAFC important?

- Snoqualmie Chinook population is ~ 5.7% of historic abundance
- One of two core Chinook spawning areas on the Snoqualmie
- Reach very constrained; it is a major habitat bottleneck
 - Short term, reach has high potential for rapid improvement
 - Long term these projects would allow the river to act like a river again, restoring the natural processes necessary for recovery of Chinook habitat (sediment deposition, channel migration, ongoing creation of low velocity habitats)

FARM: Why is SAFC Important?

- Land is higher and better drained than most of APD; floods recede more quickly
- Few drainage challenges – less tiles and beavers (fewer waterways)
- Not subject to small alluvial fan deposits
- Farmable land that could be impacted by proposed projects is actively farmed
- Primarily class 3 and 4 soils
- Farms affected by proposed projects have houses (not in project footprint)
- Adjacent to mass transit and state highway

Snoqualmie at Fall City Feasibility Study

- Study to inform and prioritize habitat restoration in 6 mile reach
- Completed in August 2011
- Extensive internal coordination across FFF

Snoqualmie at Fall City Reach Restoration Assessment

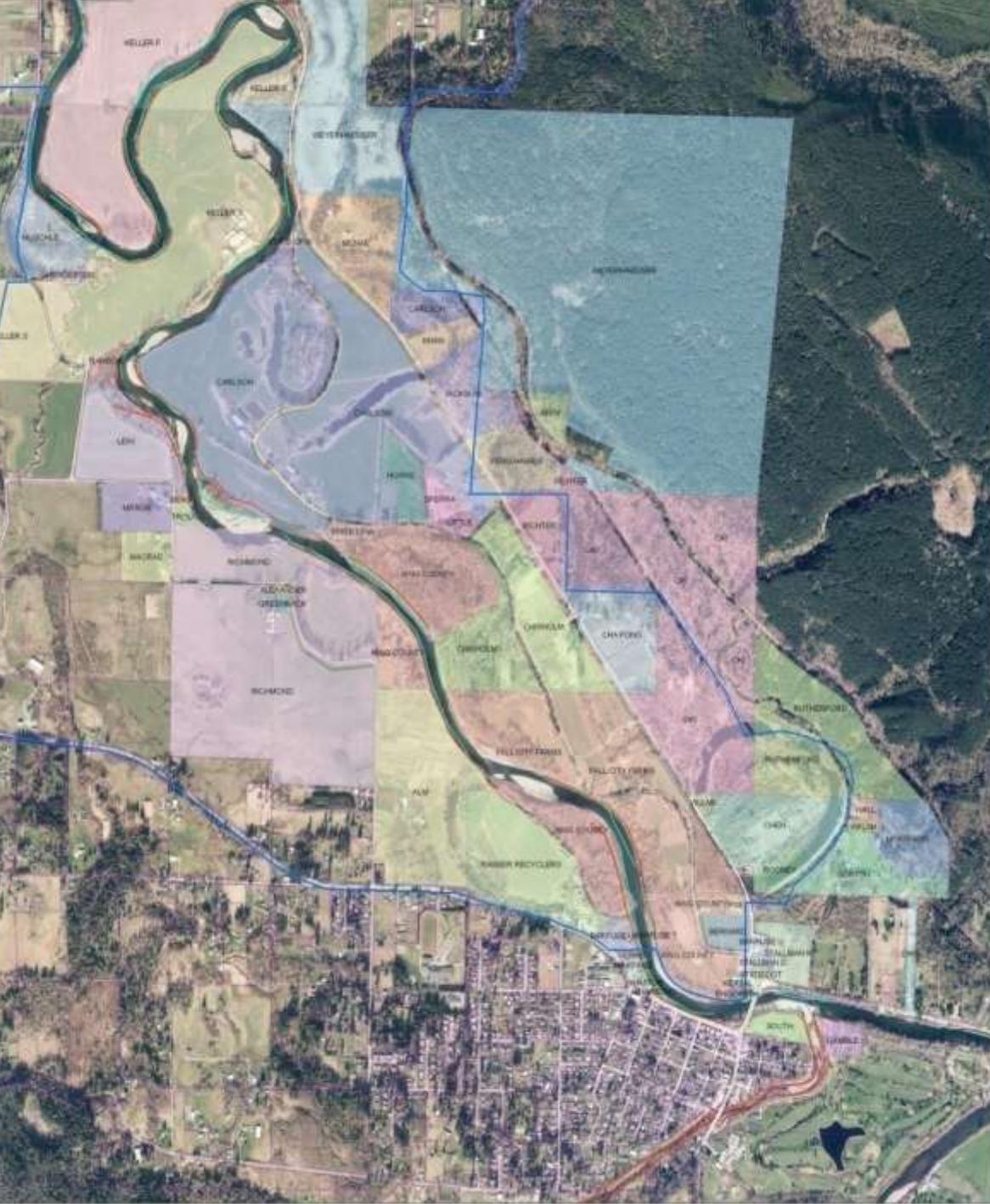


Prepared by

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**Water and Land Resources Division
Department of Natural Resources
King County**

May 2011



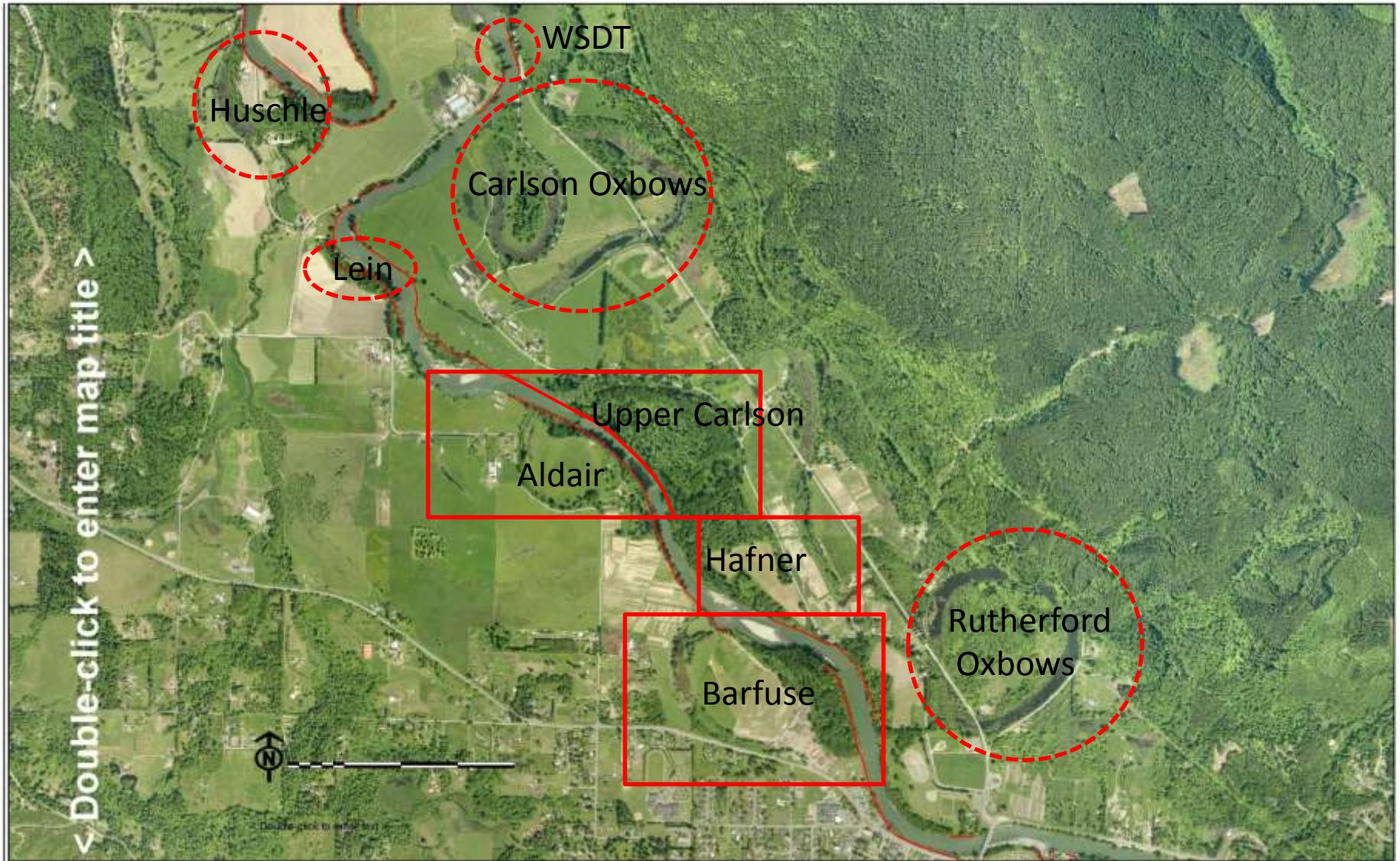
Landowner Outreach

Round 1 = 20+ landowners

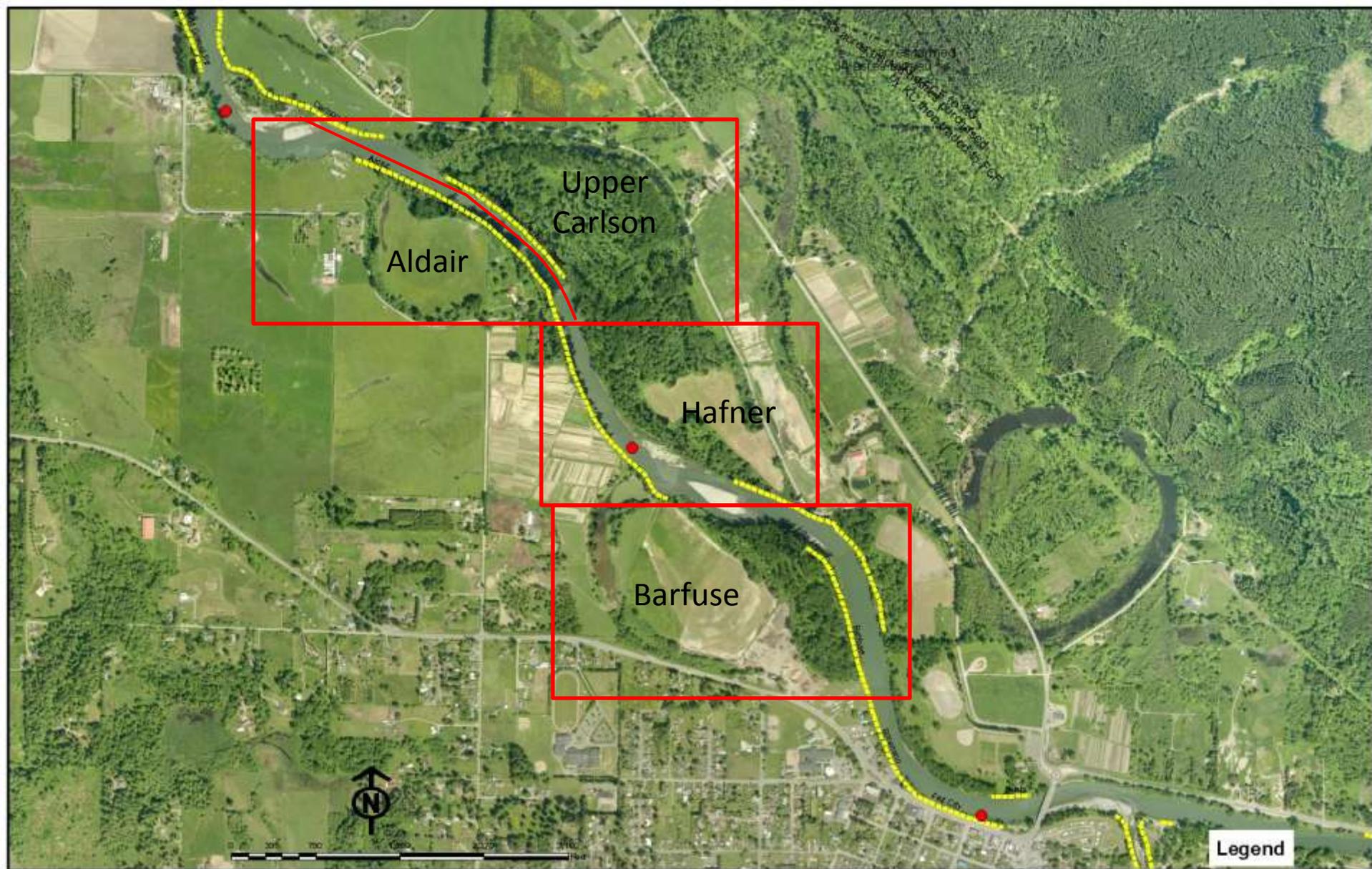
Round 2 – 6 key ones

Individual projects – affected land owners

Where are the opportunities??



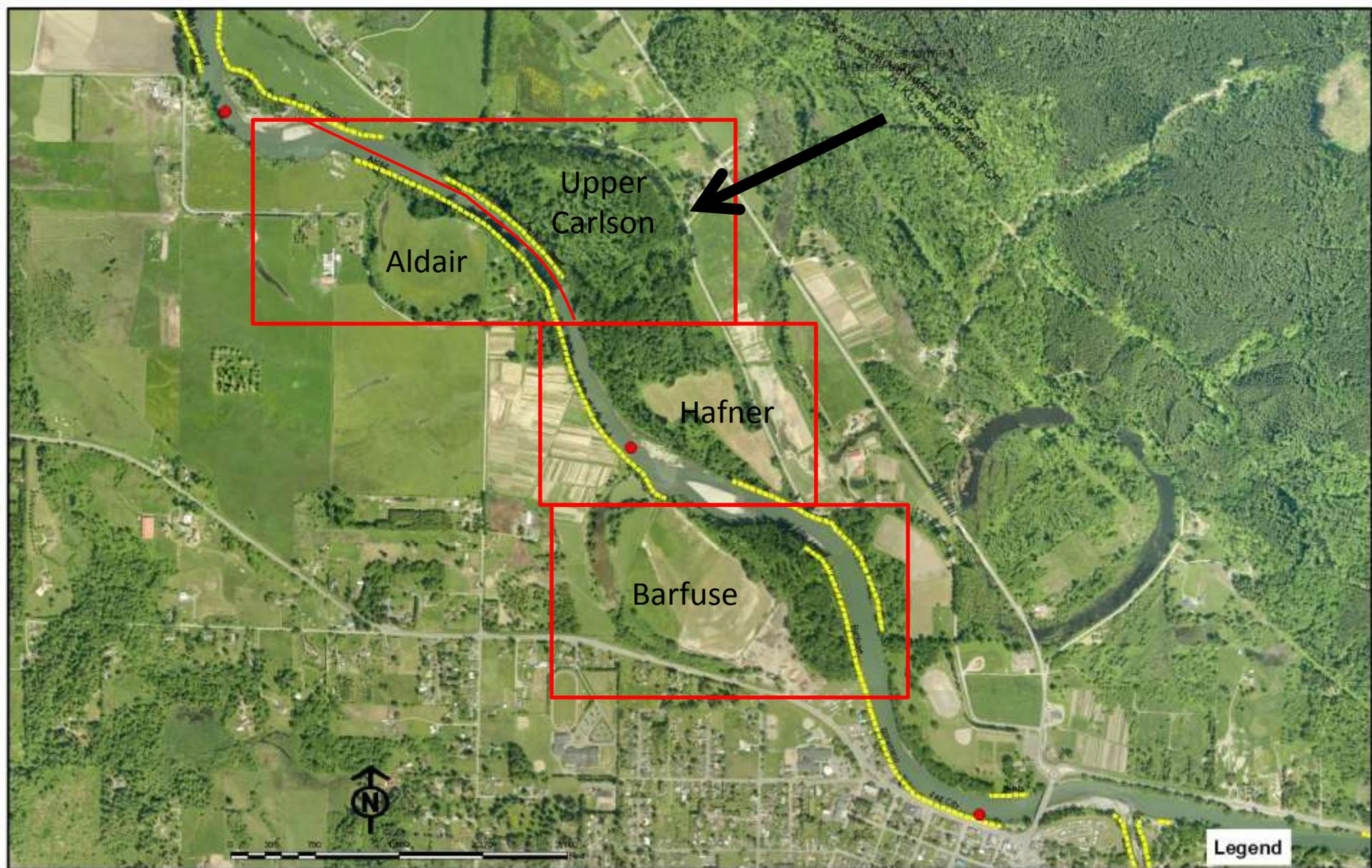
Focus Reach



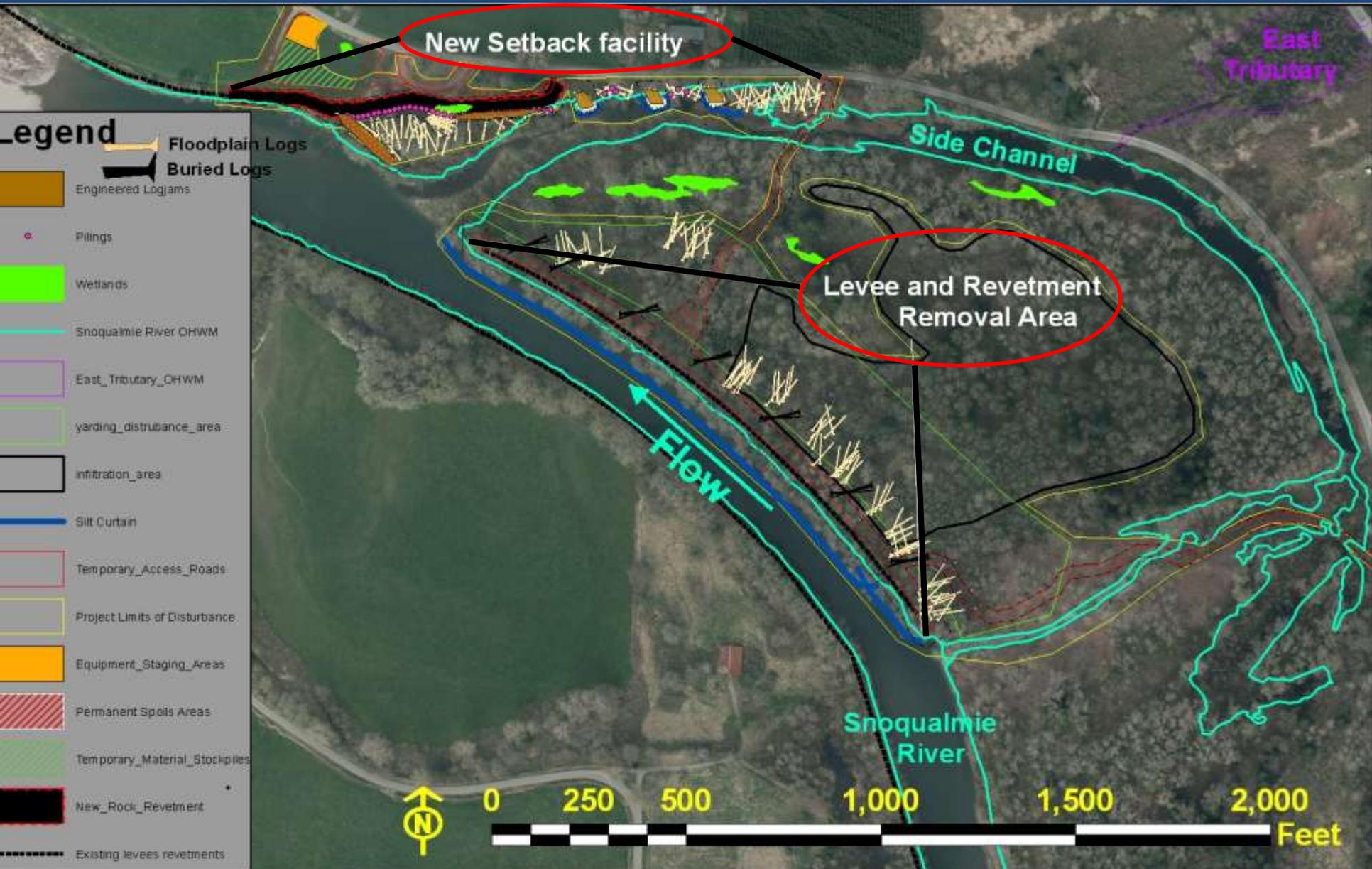
4 SAFC Projects

- Short term (0-3 years) right bank:
 - Upper Carlson
 - Hafner
- Near term (4 – 10 years) proposed left bank projects:
 - Aldair
 - Barfuse

First Project: Upper Carlson



Upper Carlson Facility Setback



Fish

&

Flood

- Expect channel width to increase from 200 to 400 ft thru quick lateral migration into trees
- Will create complex edge habitat and slow water habitats
- Increase sediment deposition and spawning habitat quality
- Modest benefit – new facility to protect Neal Road
- Channel widening will improve sediment storage and could reduce erosion downstream
- Fill from facility removal for farm pads reduces risk to other farmers

Farm: Impacts and Benefits

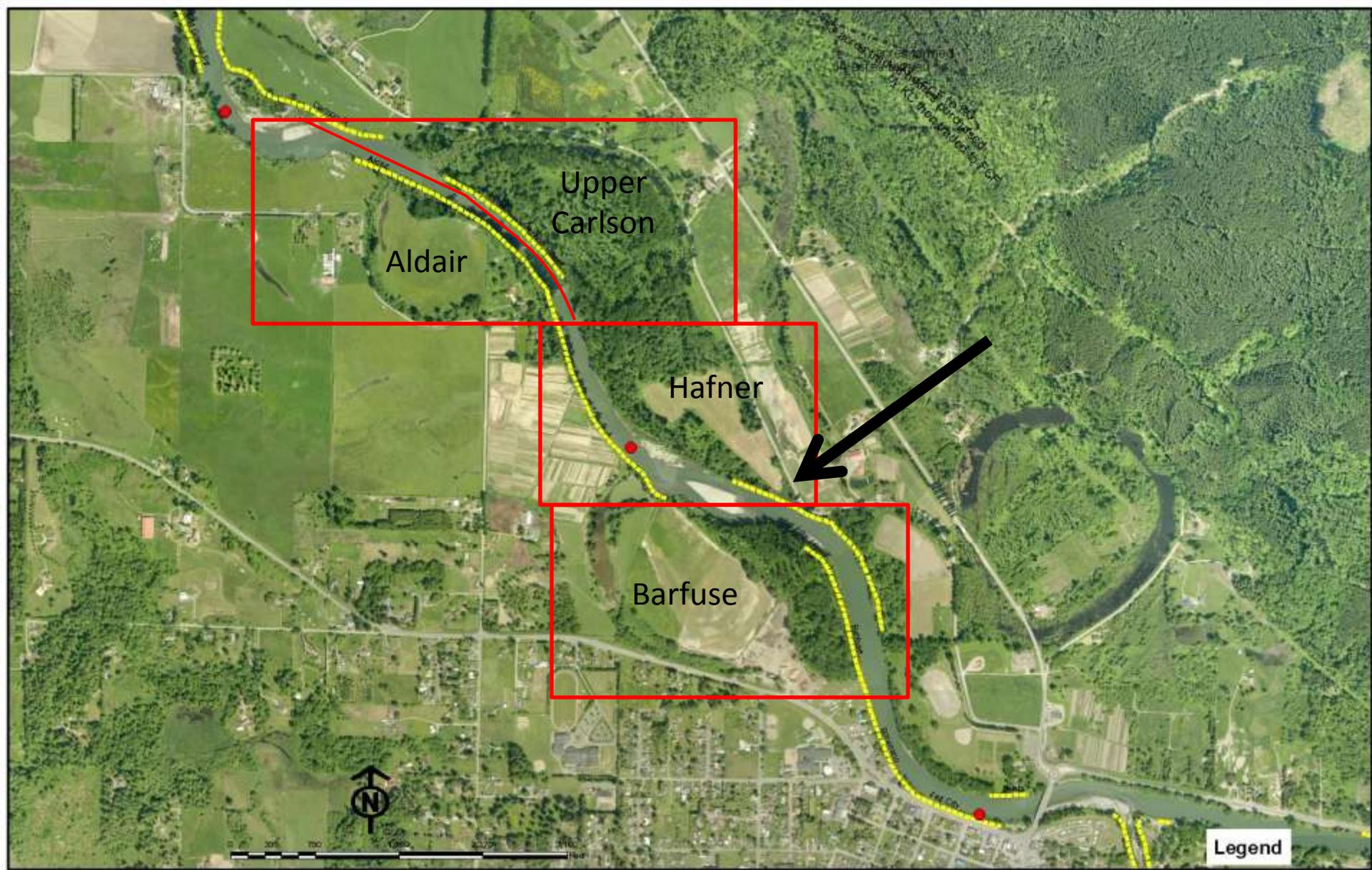
Impacts:

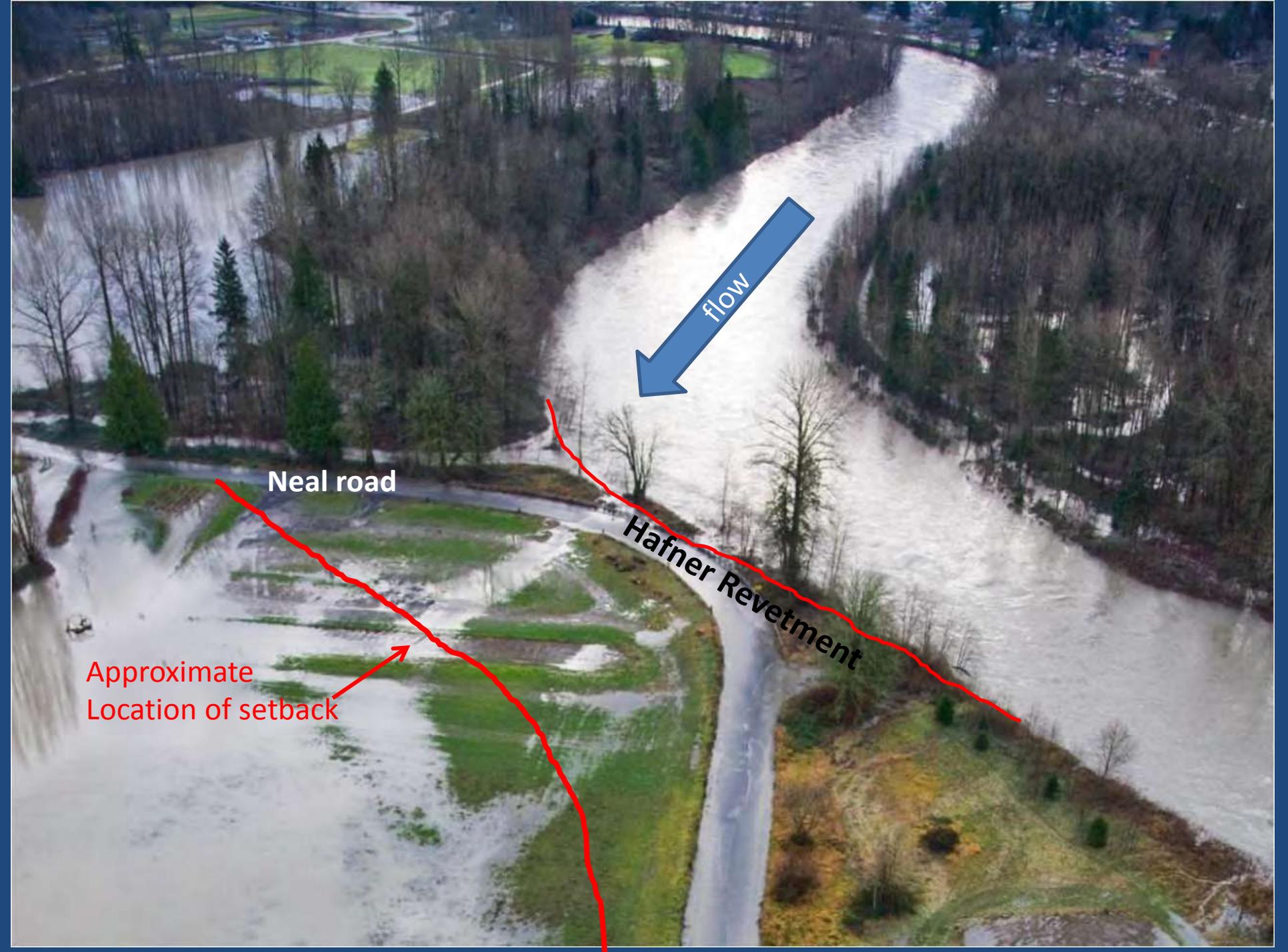
- Loss of approximately 1 acre of farm land

Benefits:

- Possible reduction of erosion on the Richmond farm
- Flood fence will reduce flood debris in Carlson field
- Fill from construction is available to build farm pads
- Enhancement of revetment, protecting field

Second Project: Hafner (Fall City Farm)





flow

Neal road

Hafner Revetment

Approximate
Location of setback



Flood and Erosion Risks January 2009

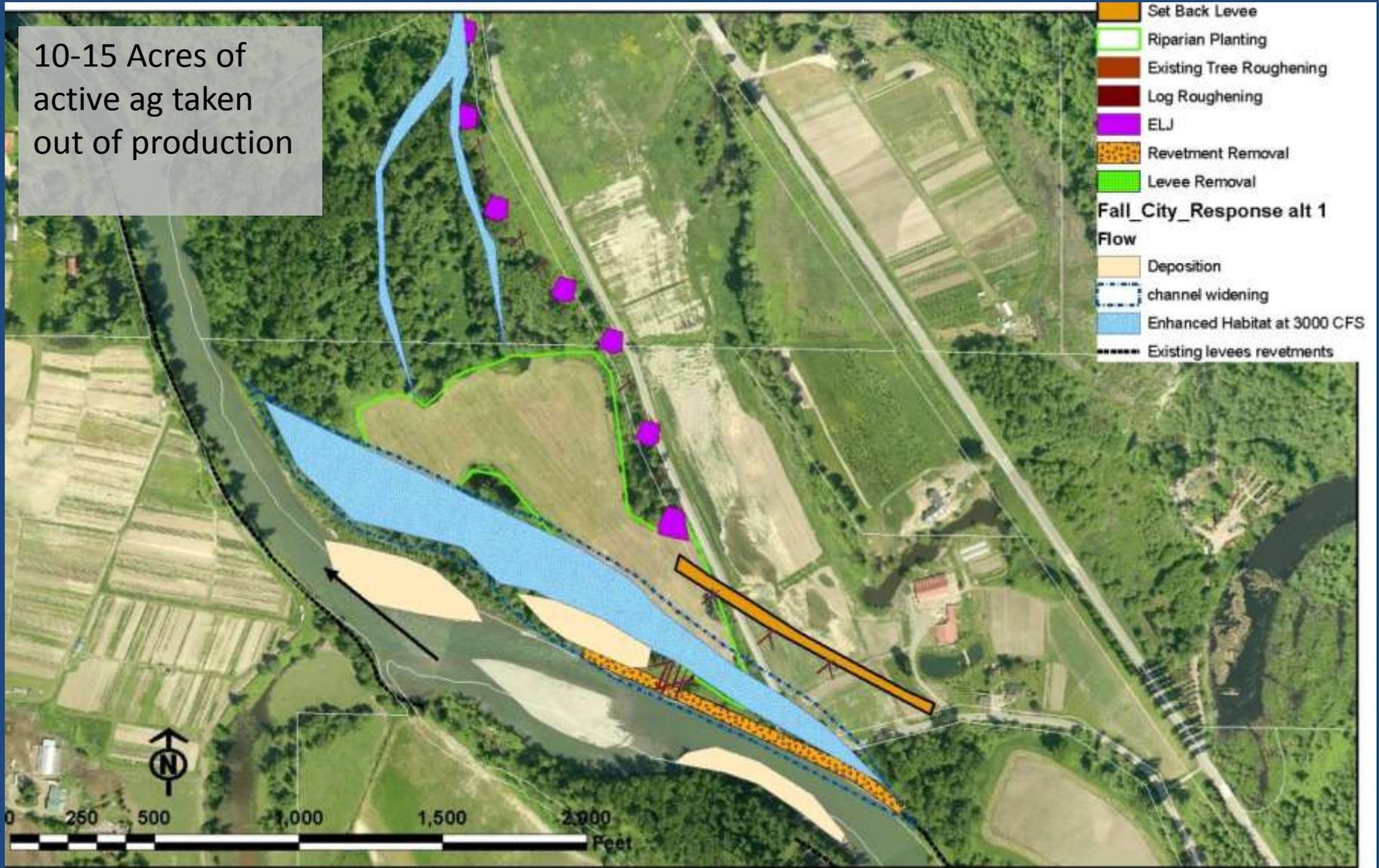
Neal Road damage @ Fall City Farms



Fall City Farms Erosion

Hafner

10-15 Acres of active ag taken out of production



Fish

&

Flood

- Expect channel width to increase from 250 to 350 ft and sediment deposition thru quick lateral migration
- Will create complex edge habitat and slow water habitats
- Long term it increases habitat quality in the Carlson project area
- Significant reduction in erosion risk to road (multiple past damages)
- Reduction in erosion risk to field downstream of road

Farm: Impacts and Benefits

Impacts:

- Takes 10-15 acres out of permanent production
 - Leaves enough acreage for a viable farm (feedback from current farmers)

Benefits:

- Increased certainty against losing soil
- Improve access for several farms
- Excavated material could be used for farm pads

Project considerations could enhance viability of remaining farm

Proposed Project Alternative

Ag Impact Areas

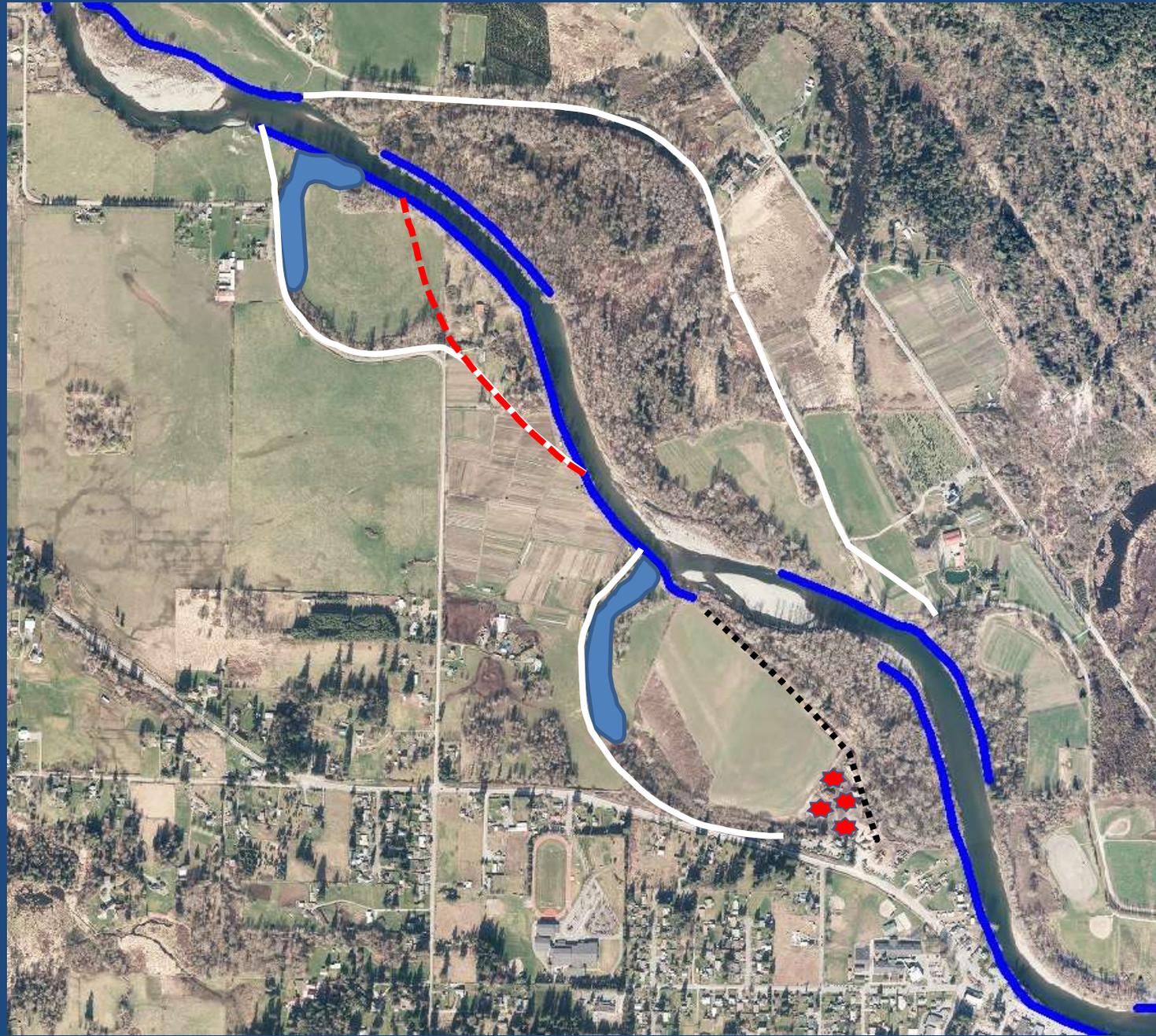
Carlson
0.5 - 1 Acre

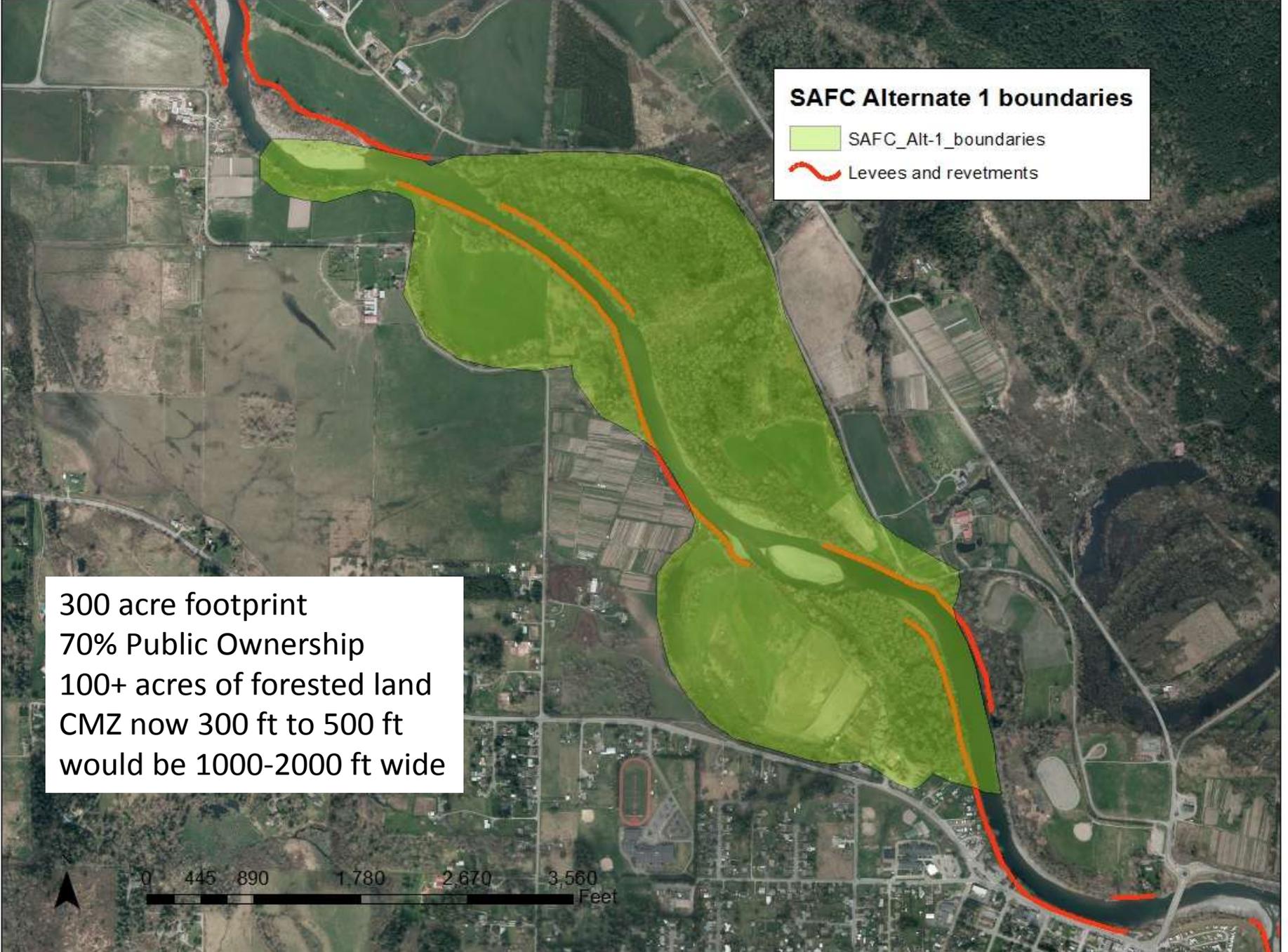
Hafner
10 - 15 acres

Aldair
3 - 24 Acres

Barfuse
5 - 42 Acres

Total
19 - 82 Acres





SAFC Alternate 1 boundaries

- SAFC_Alt-1_boundaries
- Levees and revetments

300 acre footprint
70% Public Ownership
100+ acres of forested land
CMZ now 300 ft to 500 ft
would be 1000-2000 ft wide



Potential Ag “Dials” – Initial thoughts

- Expand the APD by adding new land
 - E.g., Tall Chief Golf Course & KC owned property near Raging River mouth
- Increase long-term protection of existing farm land base
 - E.g., Farmland Preservation Program easements
- Enhance productivity of existing farms
 - E.g., drainage, home & barn elevation
- Protect existing farms from river migration
 - SE 19th Street revetment re-build near Keller Dairy

Aldair Alternatives

2 year flood event

Lines = revetment or setback structure

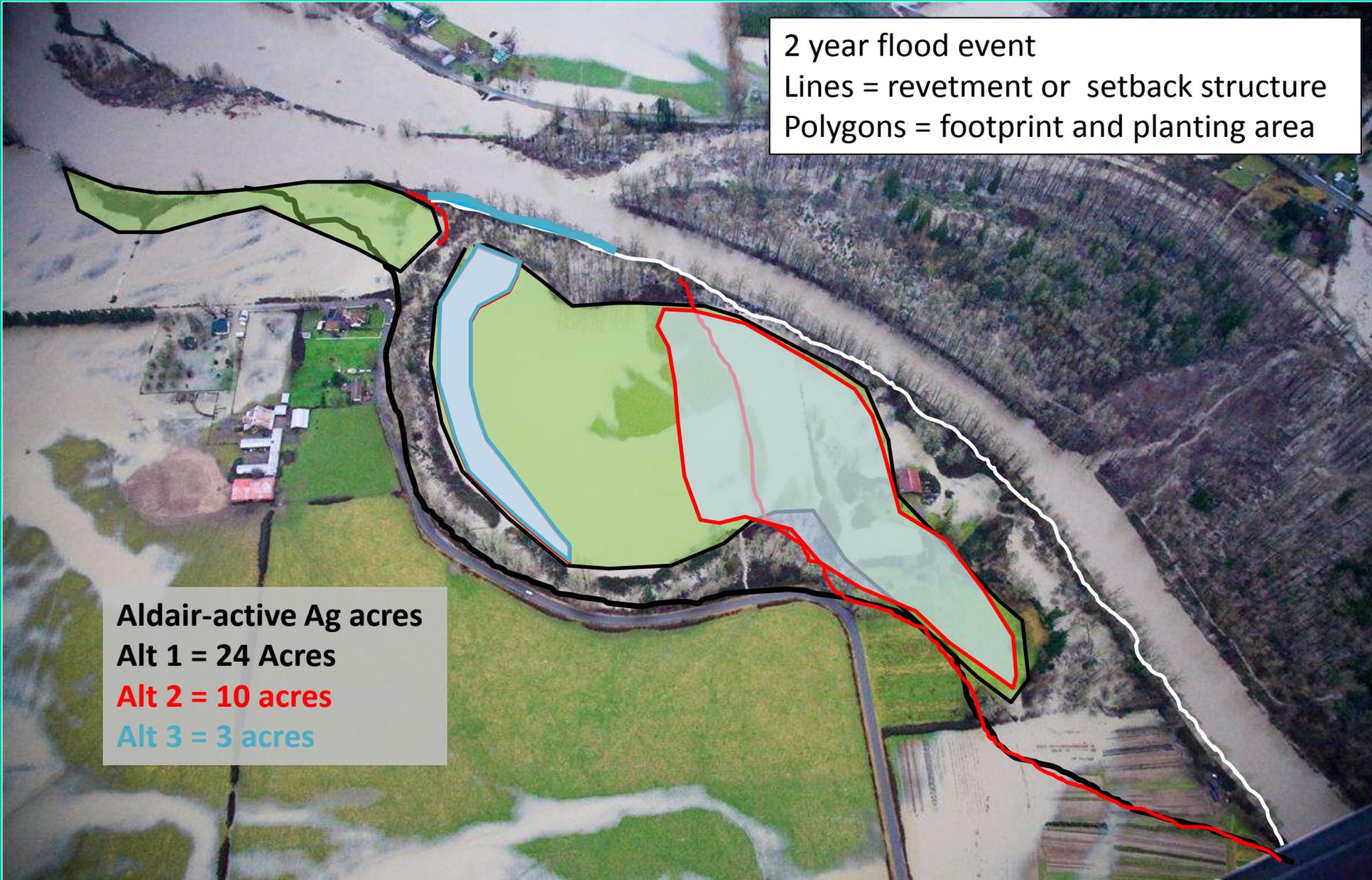
Polygons = footprint and planting area

Aldair-active Ag acres

Alt 1 = 24 Acres

Alt 2 = 10 acres

Alt 3 = 3 acres



Flood Considerations

- Levee has structural concerns, repeated damages (geotech analysis underway)
- Purchased property in 2008; leasing for ag
- Alt 1 and 2 would improve protection to buildings, road, land



Fish Considerations

Mainstem

- Alt 1 and 2 similar short term benefits
- Alt 1 has much higher long term habitat value as it allows 50% more area to be restored
- Alt 3 is improvement over existing, but small benefits compared to Alts 1 & 2

Oxbow

- In longer term, Alt 1 highly likely there will be a flow thru side channel-Alt 2 does not allow this to occur
- Alt 3, Current condition traps fish as flood waters recede, Alts 1/2/3 create downstream connectivity with mainstem

Farm: Aldair Impacts and Benefits

Impacts:

- Removes 3-24 acres out of permanent production
- Alt 1 and 2 removes barn from the site (could relocate)
- Alt 1 removes access, Alts 2 and 3 retain access

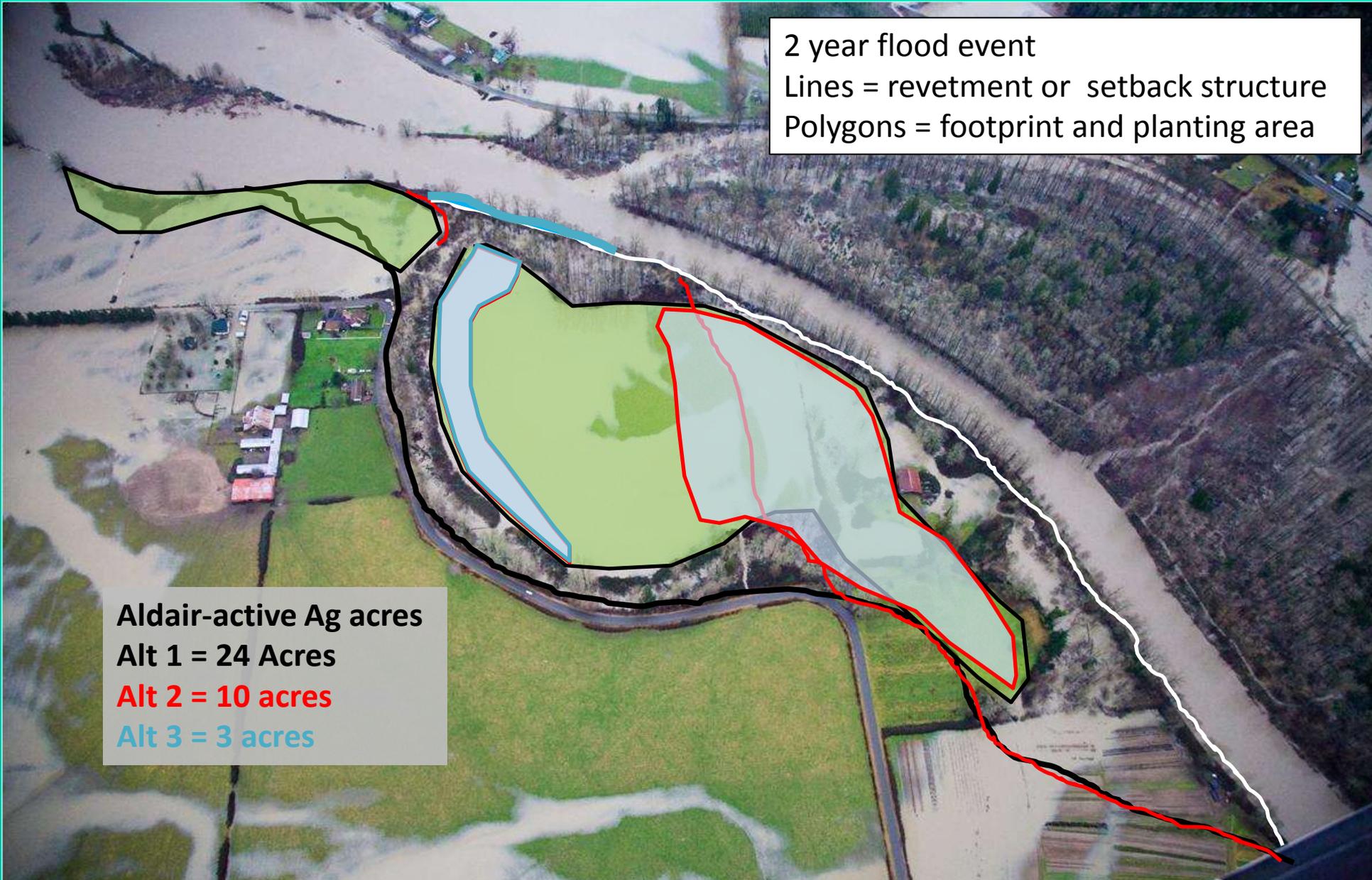
Benefits:

- Alt 1 and 2 could reduce erosion risk to downstream landowners and leasers
- Alts 2-3 likely improve drainage
- Excavated material could be used for farm pads

Aldair Discussion

2 year flood event
Lines = revetment or setback structure
Polygons = footprint and planting area

Aldair-active Ag acres
Alt 1 = 24 Acres
Alt 2 = 10 acres
Alt 3 = 3 acres



Barfuse Alternatives

2 year flood event

Lines = revetment or setback structure

Polygons = footprint and planting area

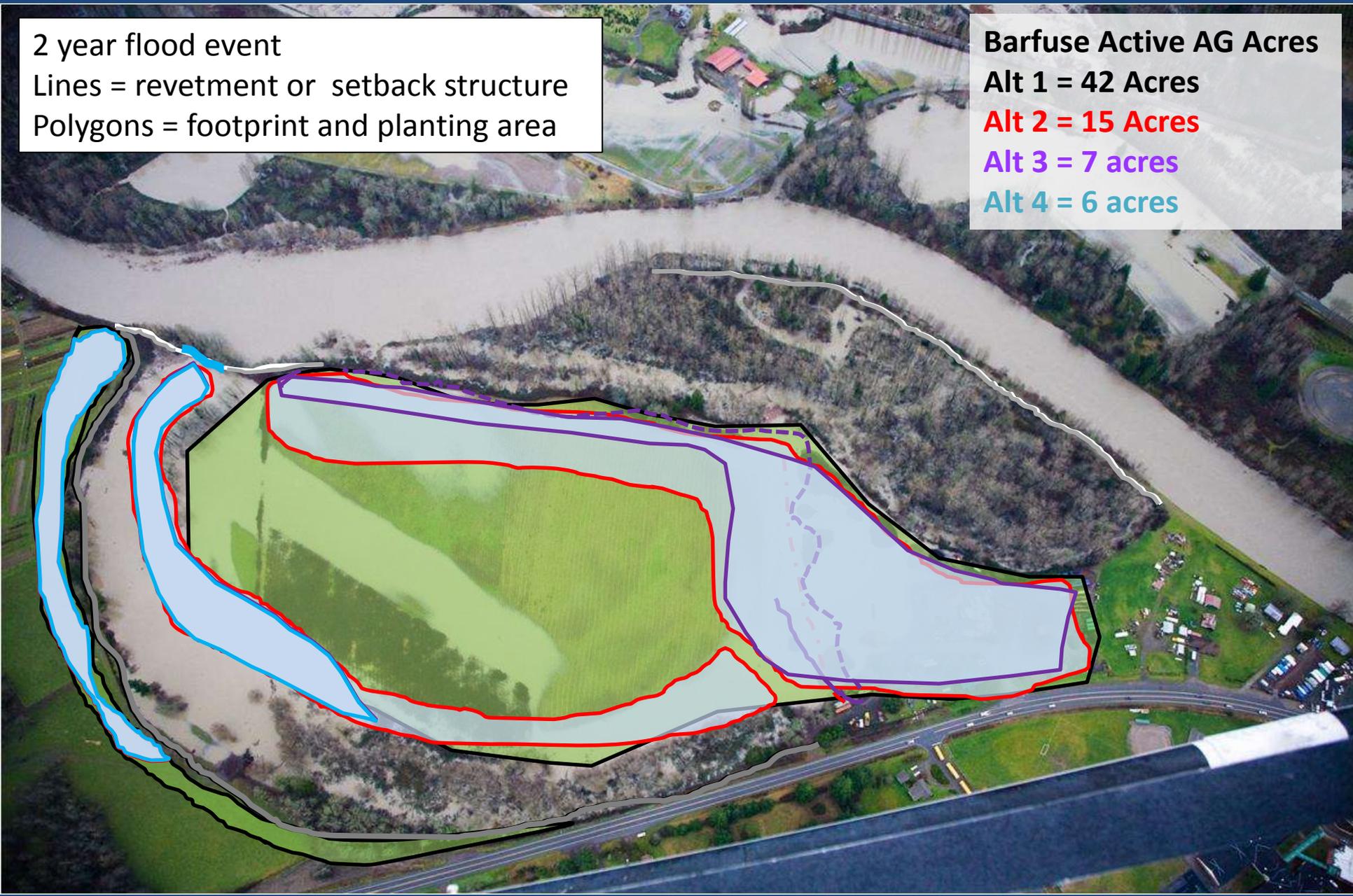
Barfuse Active AG Acres

Alt 1 = 42 Acres

Alt 2 = 15 Acres

Alt 3 = 7 acres

Alt 4 = 6 acres



Flood Considerations

- Fewer damages to facility
- Alt 1 could reduce erosion on farm to west
- Mostly county owned land – broad community interest in multi-use



Fish Considerations

- Alt 1 creates more habitat opportunities (especially slow water off-channel) because it allows 50% more area to be restored
- Alts 1-3 create numerous side channels through forested area
- Alt 2 Cost is very high compared to modest habitat benefits
- Alt 3 Cost is extremely high compared to lower habitat benefits than Alt 2
- Alt 4-small amount of habitat improvement but improves current condition that traps fish as flood waters recede

Farm: Barfuse Impacts and Benefits

Impacts

- Removes 6-42 acres from permanent production; County currently leases it to a farmer
- Alt 1 eliminates access to farmable area (Alt 2-4 retain access)
- Alt 1,2 and 3 eliminate existing parking area and building area (portion is outside floodplain) available for farm business (Alt 4 maintains these)

Benefits:

- Alt 3 and 4 likely improve drainage of oxbow area

Barfuse Discussion

2 year flood event

Lines = revetment or setback structure

Polygons = footprint and planting area

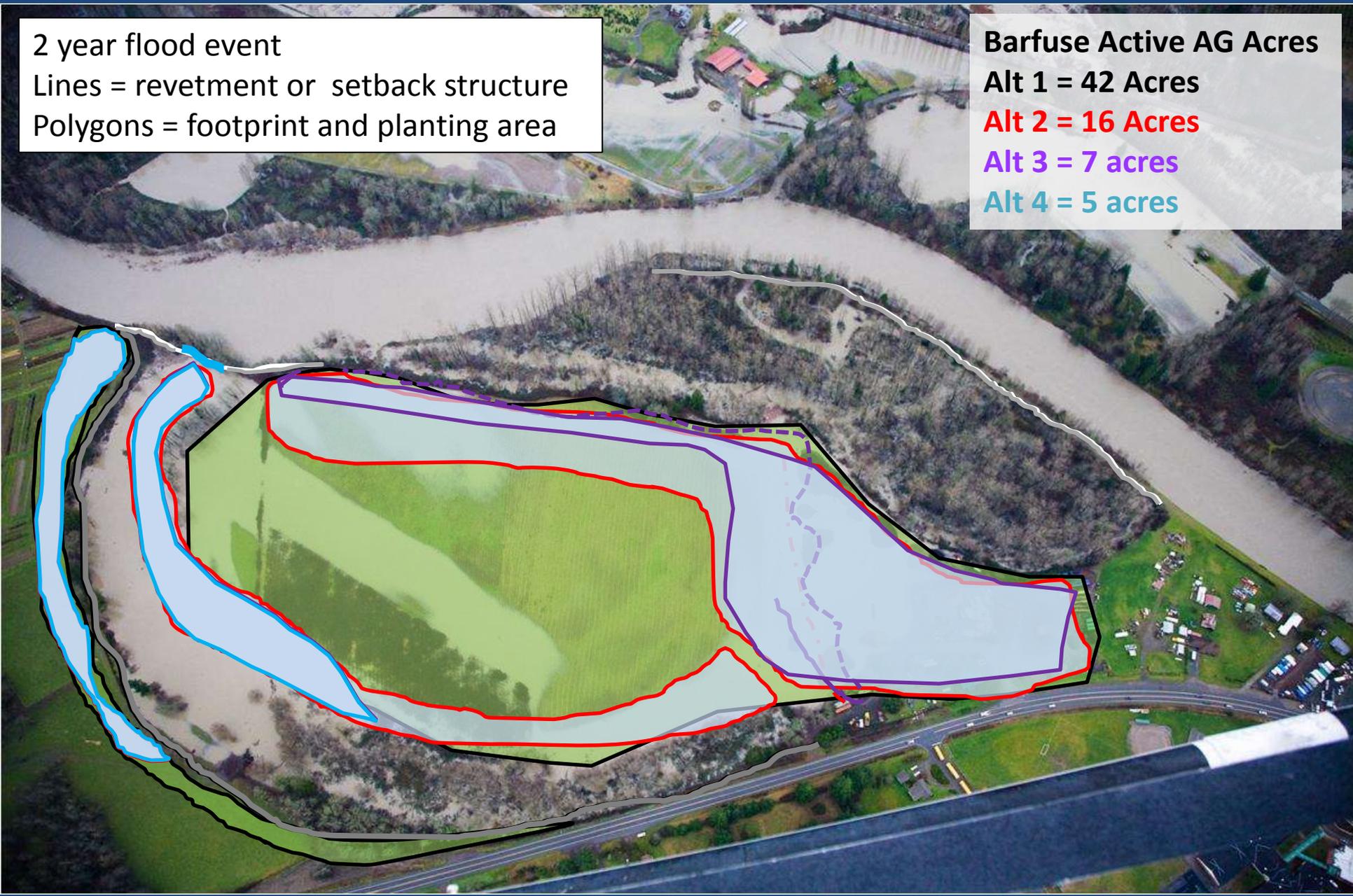
Barfuse Active AG Acres

Alt 1 = 42 Acres

Alt 2 = 16 Acres

Alt 3 = 7 acres

Alt 4 = 5 acres



Wrap up

- What additional information do you need on SAFC proposed projects?
- Next meeting we will revisit CIPs, specifically, other potential habitat/flood CIPs in the APD