Chehalis Basin Strategy Overview of Land Cover and Uses within the Chehalis Basin

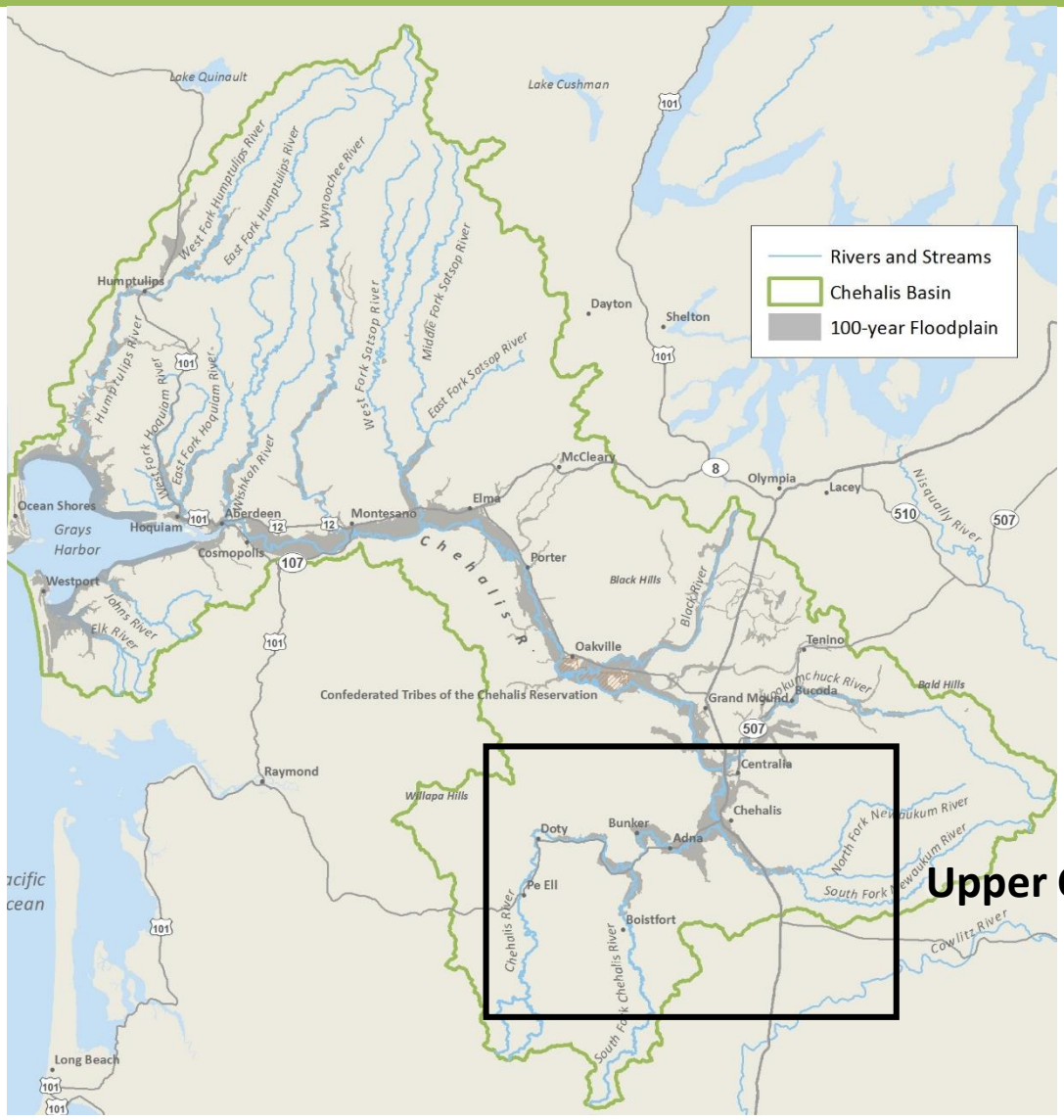
Chehalis Basin Board Meeting

November 2, 2017

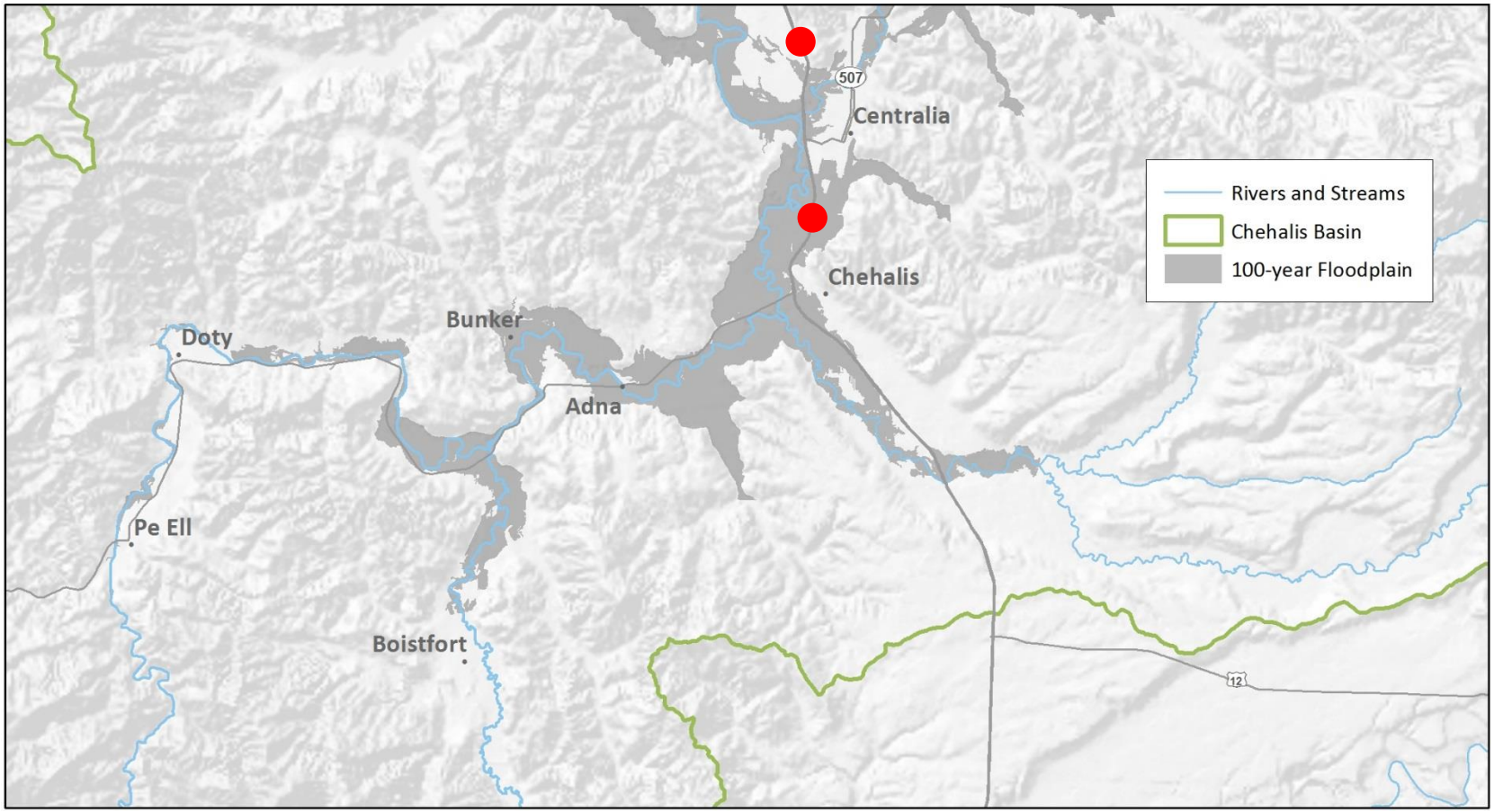
Presentation Overview

- Overview of Upper Chehalis Basin
- Historic land uses (excerpted from *Changes in the Chehalis Floodplain – 1938-2013*, Pierce et al. 2017)
- Potential future land uses (from *Draft Build Out Analysis*, Anchor QEA 2016)

Chehalis Basin Overview Map



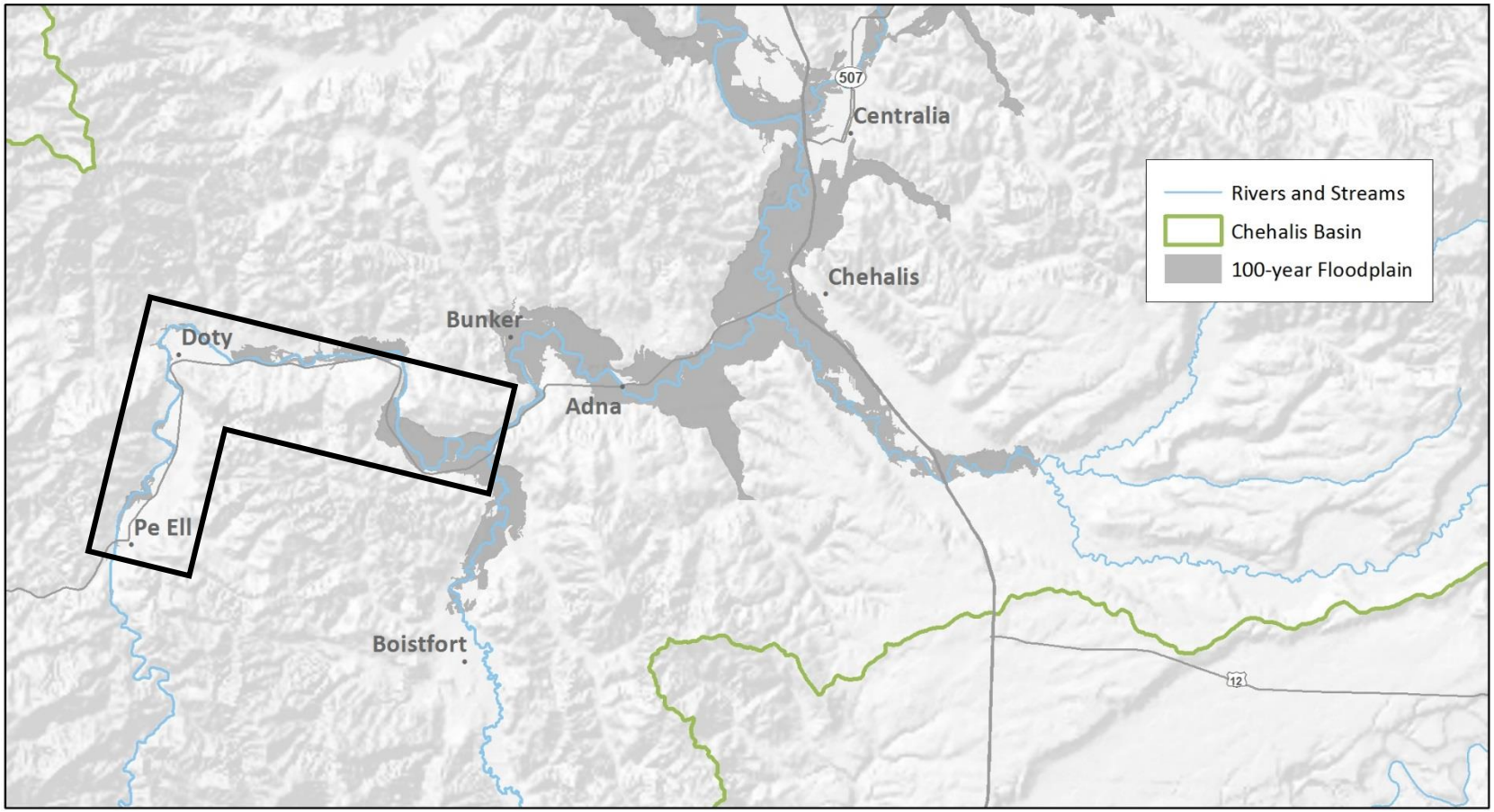
Upper Basin Land Use
I-5 Corridor



I-5 through Centralia

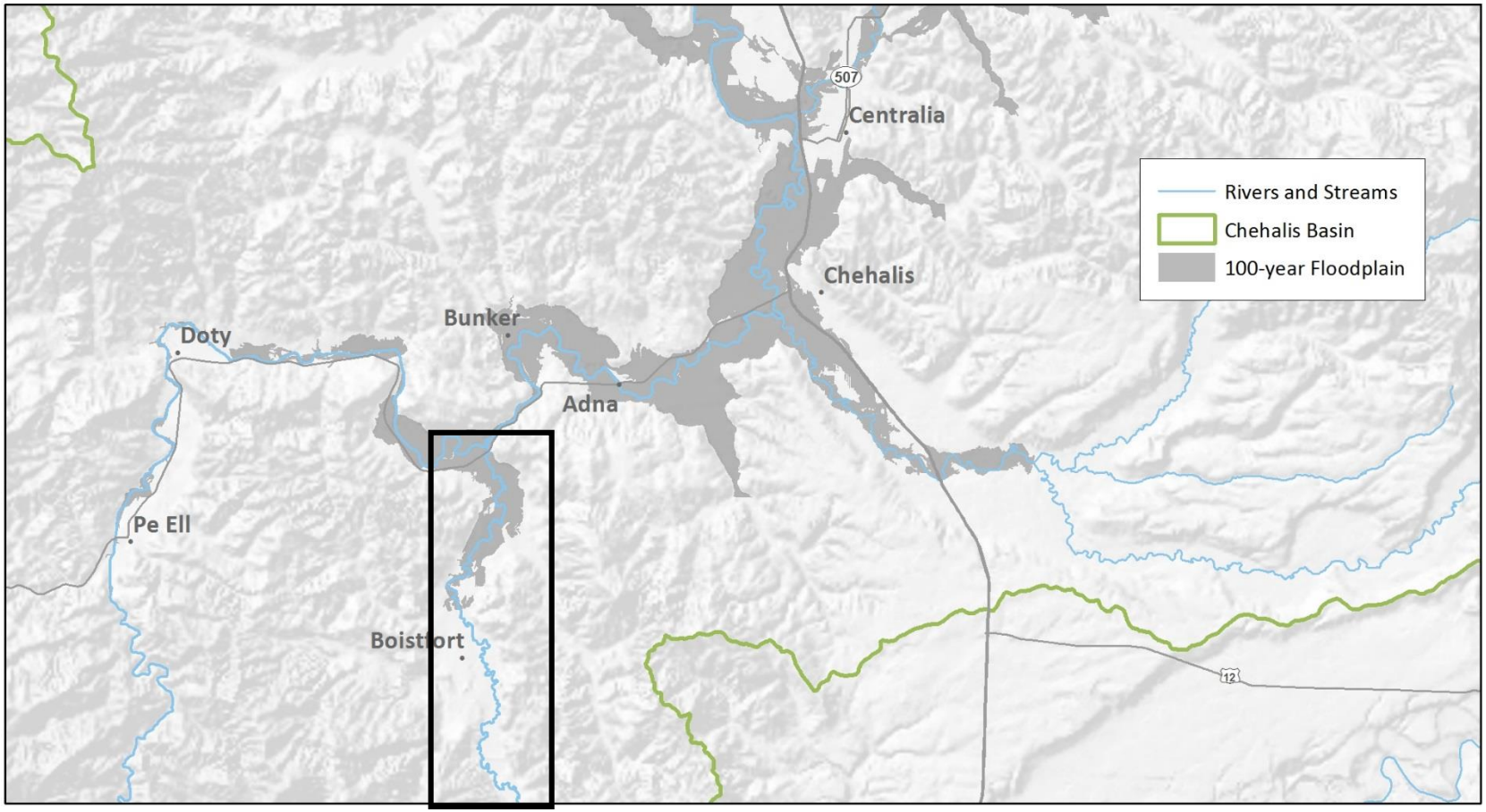
I-5 through Chehalis

Pe Ell to South Fork Chehalis



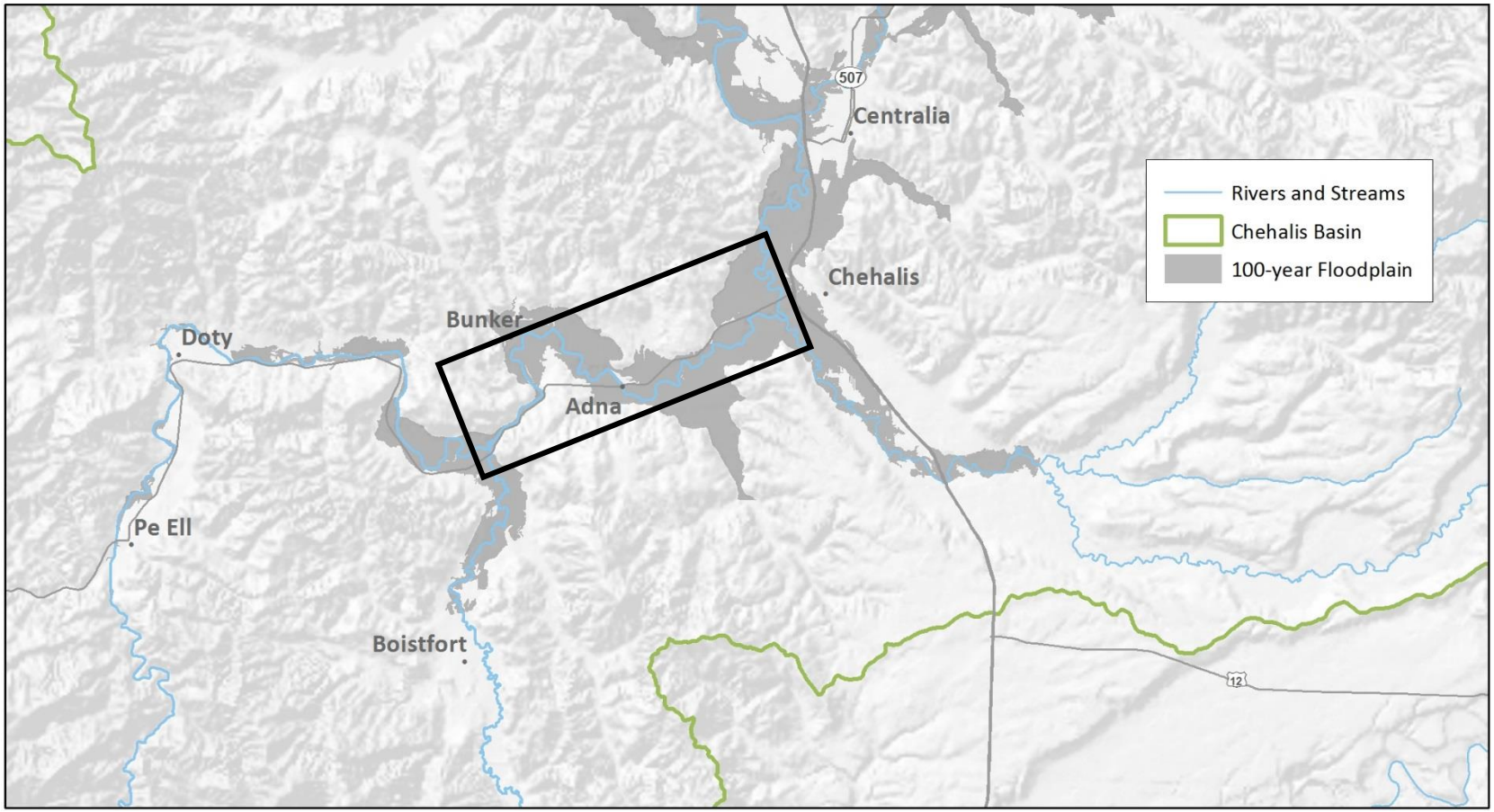
Pe Ell to South Fork Chehalis

South Fork Chehalis



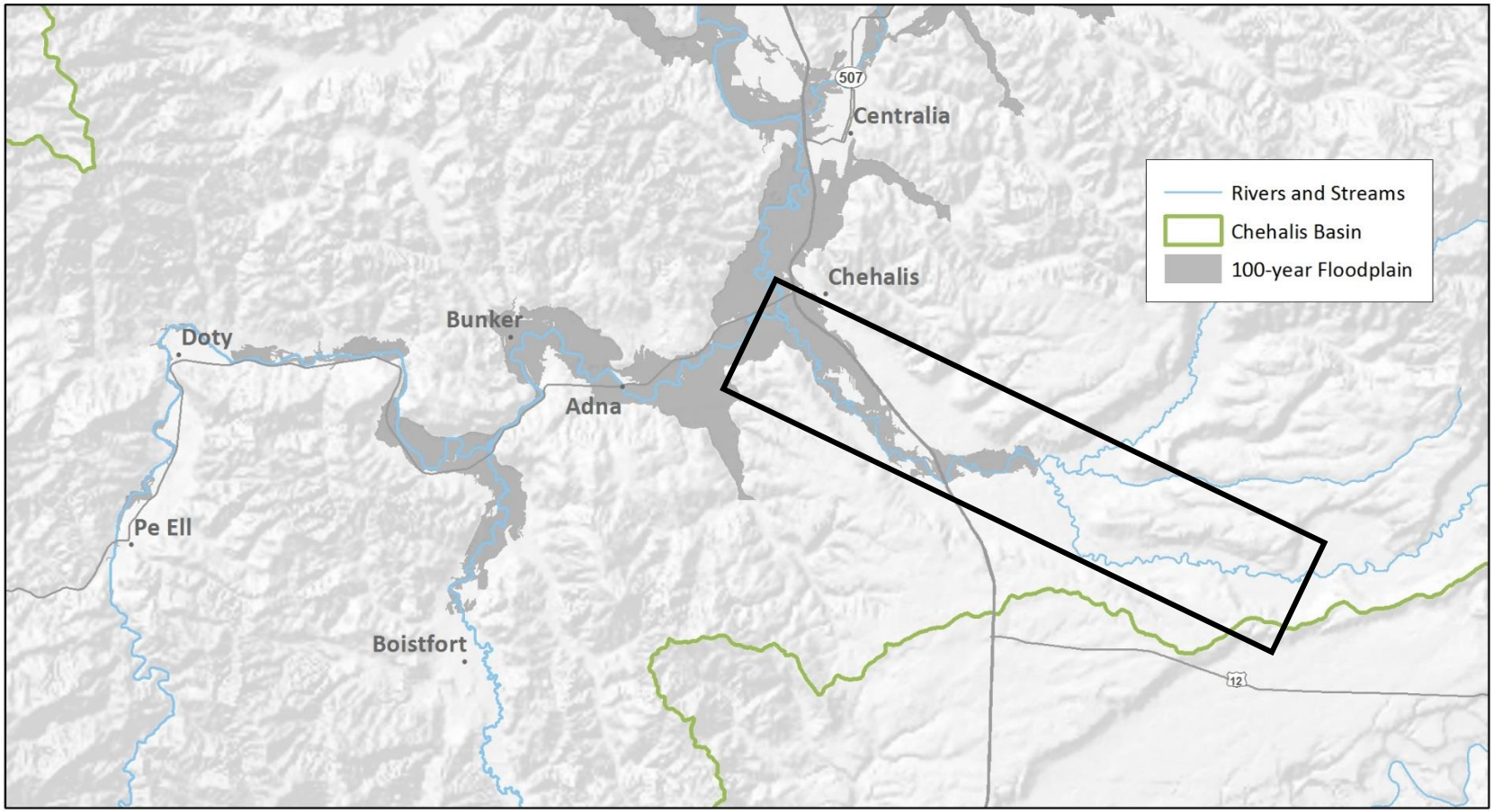
South Fork Chehalis

South Fork Chehalis to Newaukum



South Fork Chehalis to Newaukum

South Fork and Lower Newaukum



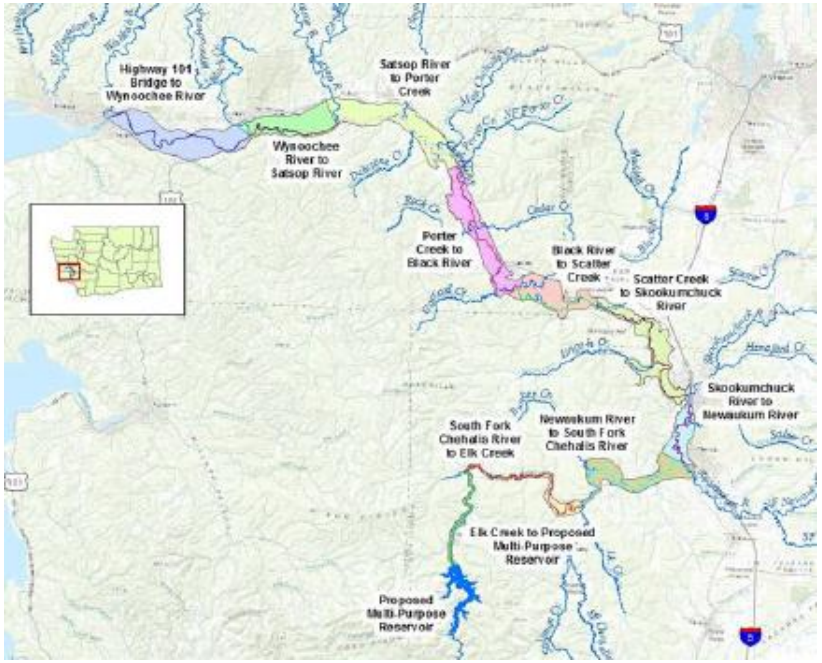
South Fork and Lower Newaukum

Newaukum to Centralia

Newaukum to Centralia

Changes in the Chehalis Floodplain – 1938-2013

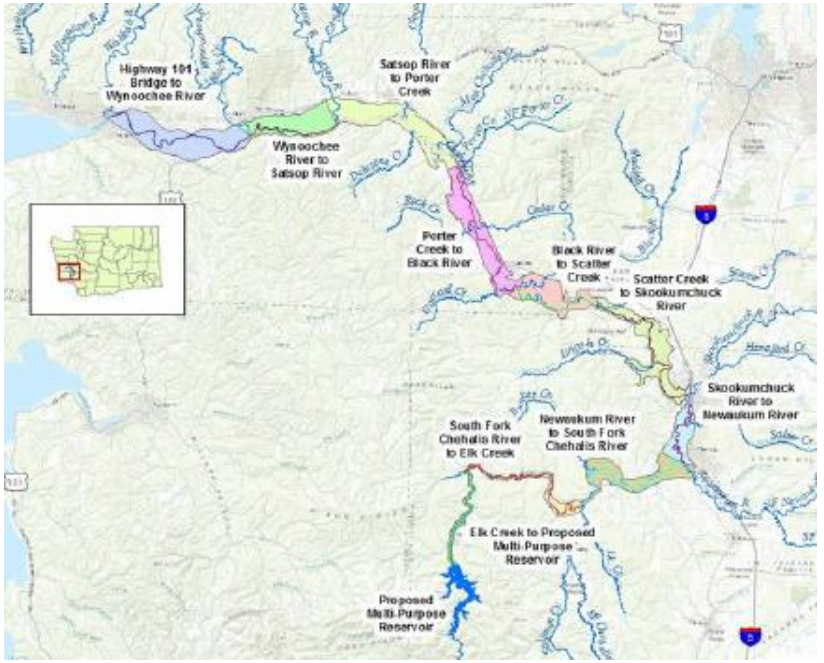
- Pierce et al. used aerial image analyses to determine changes in land cover in portions of the Chehalis River floodplain between 1938 and 2013
- Study area = Mainstem Chehalis River floodplain (57,325 acres)



Floodplain segments from Pierce et al. 2017

Changes in the Chehalis Floodplain – 1938-2013

- Pierce et al. used three land cover categories
  - Agriculture: land used in some kind of agriculture
  - Canopy: land with tree cover
  - Development: buildings and impervious surfaces



Floodplain segments from Pierce et al. 2017

Approximated 2013 Floodplain Land Cover[1]

- Agriculture
  - 26,815 acres[2]
  - 47% of floodplain area
- Canopy
  - 18,791 acres[3]
  - 33% of floodplain area
- Development
  - 2,077 acres[4]
  - 4% of floodplain area

Notes (2013 Cover Classes included in each category):

1. Assumes that all vegetation in the floodplain is either agriculture or canopy
2. Herbaceous and half of shrub/small tree
3. Forested and half of shrub/small tree
4. Built

Changes in the Chehalis River Floodplain

1938 to 2013

- Per year changes in land cover:
  - A net increase in agriculture (13 acres per year)
  - A net decrease in canopy (-18 acres per year)
  - A net increase in development (9 acres per year)
- Total net change in land cover:
  - 1,010 acre net increase in agriculture (1.8% of floodplain)
  - 1,356 acre net decrease in canopy (-2.4% of floodplain)
  - 686 acre net increase in development (1.2% of floodplain)

Changes in the Chehalis River Floodplain

1938 to 1970s

- Increase in agriculture (49 acres per year)
- Decrease in canopy (-59 acres per year)
- Increase in development (7 acres per year)
  - I-5 opened in Centralia and Chehalis, 1954-1960
  - Chehalis/Centralia Airport expanded in the 1940s

I-5 from 13th Street Overpass in 1958

Changes in the Chehalis River Floodplain

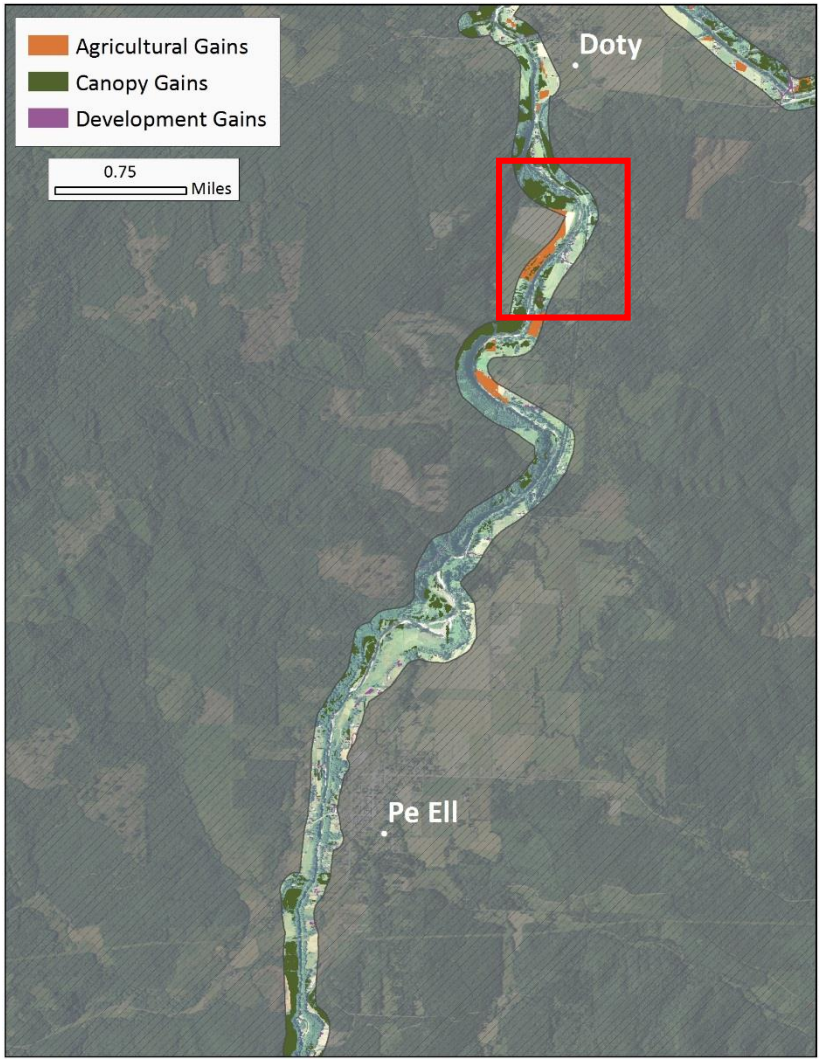
1970s to 2013

- Decrease in agriculture (-21 acres per year)
- Increase in canopy (21 acres per year)
- Increase in development (10 acres per year)
  - Growth Management Act adopted in 1990
  - Most development in city centers of Centralia, Chehalis, Grand Mound, Aberdeen (6 acres per year)

Floodplain Land Cover Change

(Segment 10 – Elk Creek to Proposed Reservoir)

- Very little land cover change
  - Less than 0.5 acre per year change for each land cover type



Gains 1938 to 2013

Floodplain Land Cover Change
(Segment 10)

Land cover gains by time period upstream of Doty

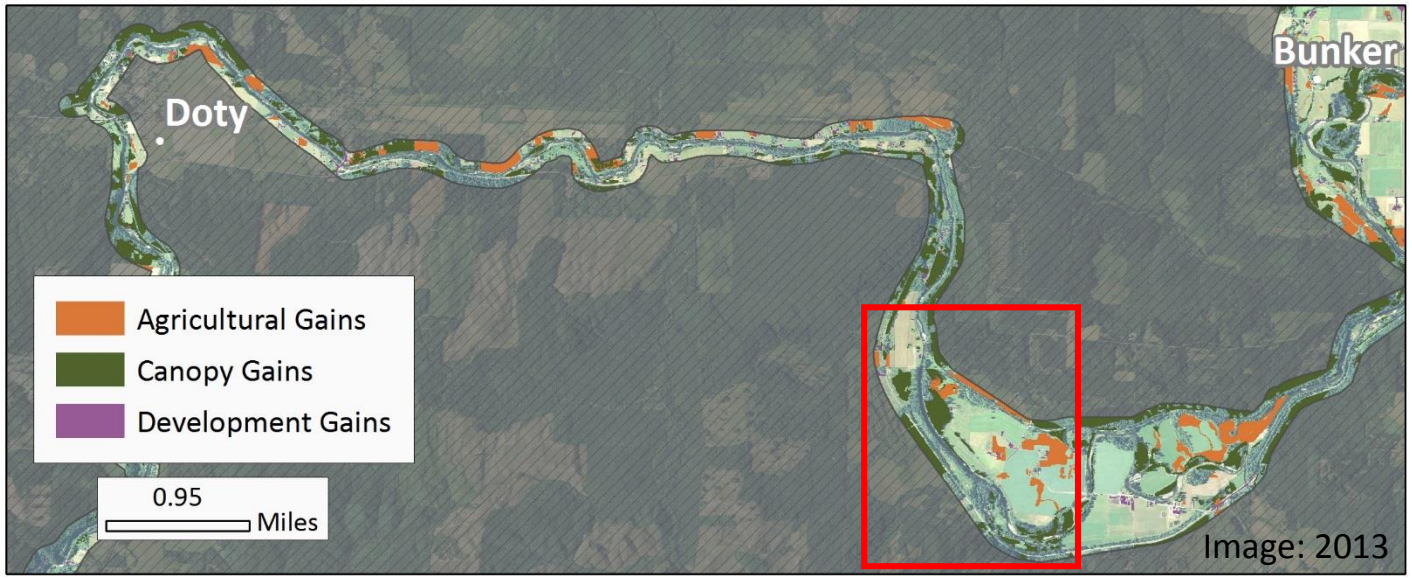
1938 to 1970

1970 to 2013

Floodplain Land Cover Change

(Segment 9 – South Fork Chehalis to Elk Creek)

Gains 1938 to 2013



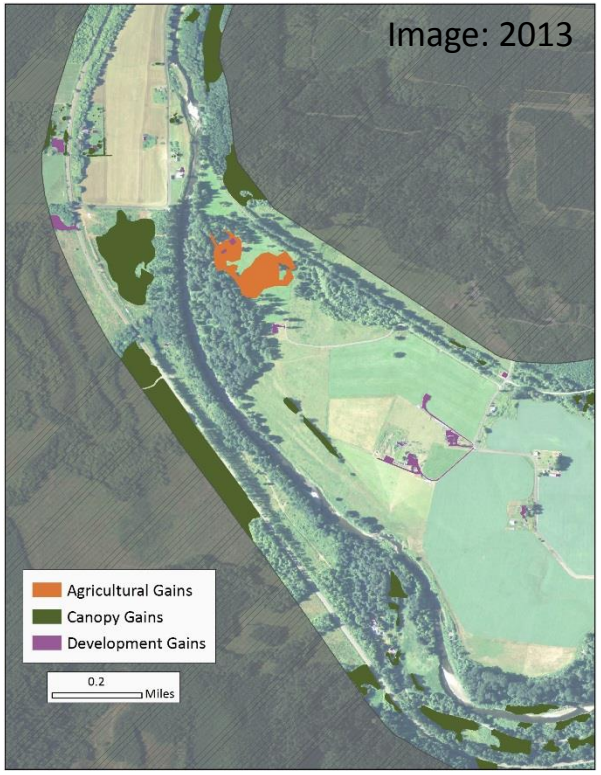
- Little development increase (0.2 acre per year)
- Increase in both agriculture and canopy 1938-1970
- Almost no change in land cover between 1970-2013

Floodplain Land Cover Change
(Segment 9)

Land cover gains by time period upstream of confluence with the South Fork Chehalis

1938 to 1970

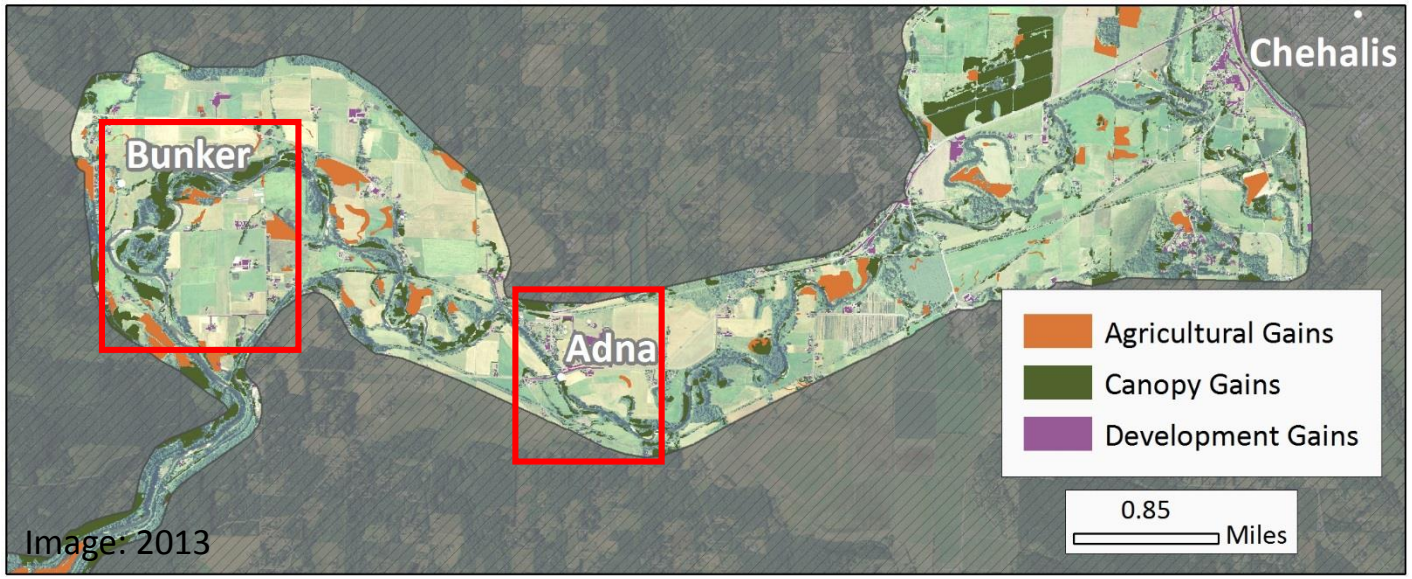
1970 to 2013



Floodplain Land Cover Change

(Segment 8 – Newaukum to South Fork Chehalis)

Gains 1938 to 2013

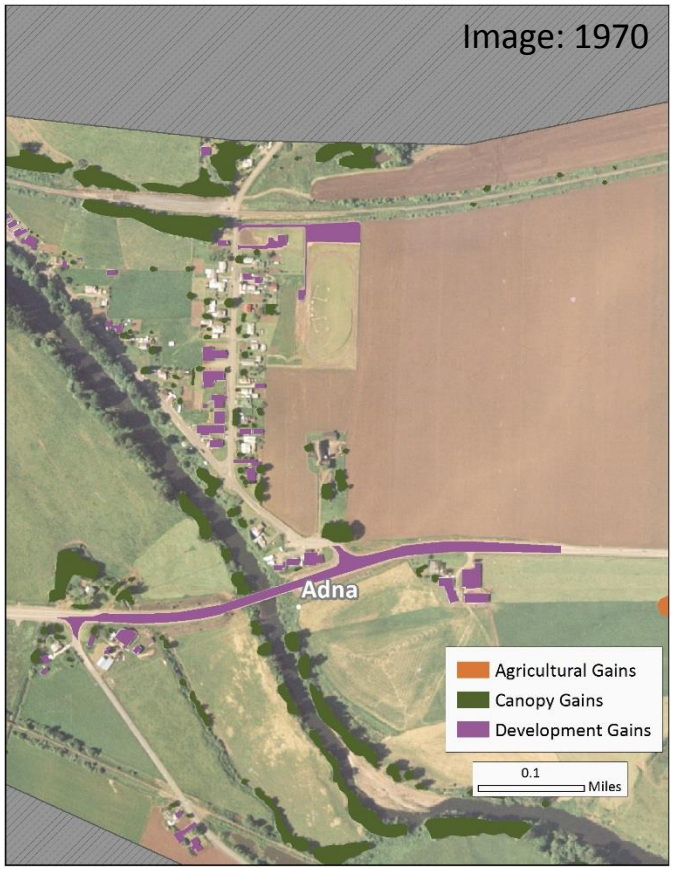


- Little development increase (1 acre per year)
- Agriculture and canopy both increased between 1938-1970 then decreased between 1970-2013

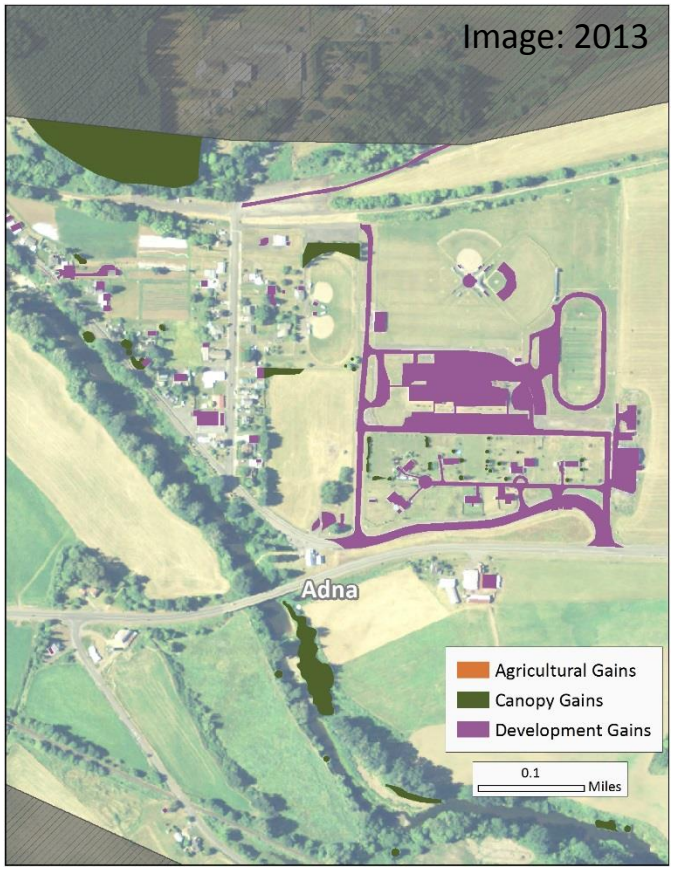
Floodplain Land Cover Change
(Segment 8)

Land cover gains by time period in Adna

1938 to 1970



1970 to 2013

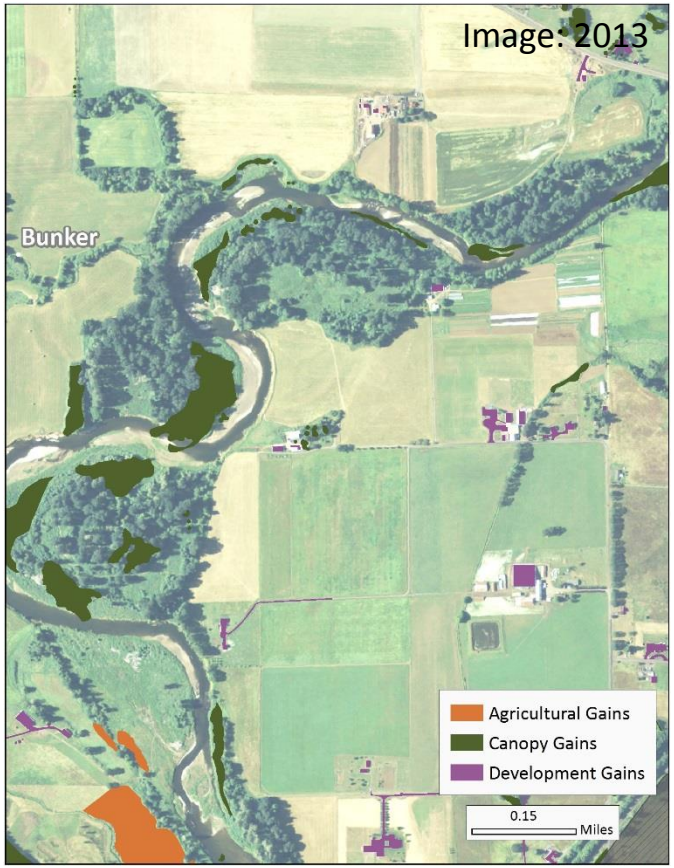


Floodplain Land Cover Change
(Segment 8)

Land cover gains by time period upstream of Adna

1938 to 1970

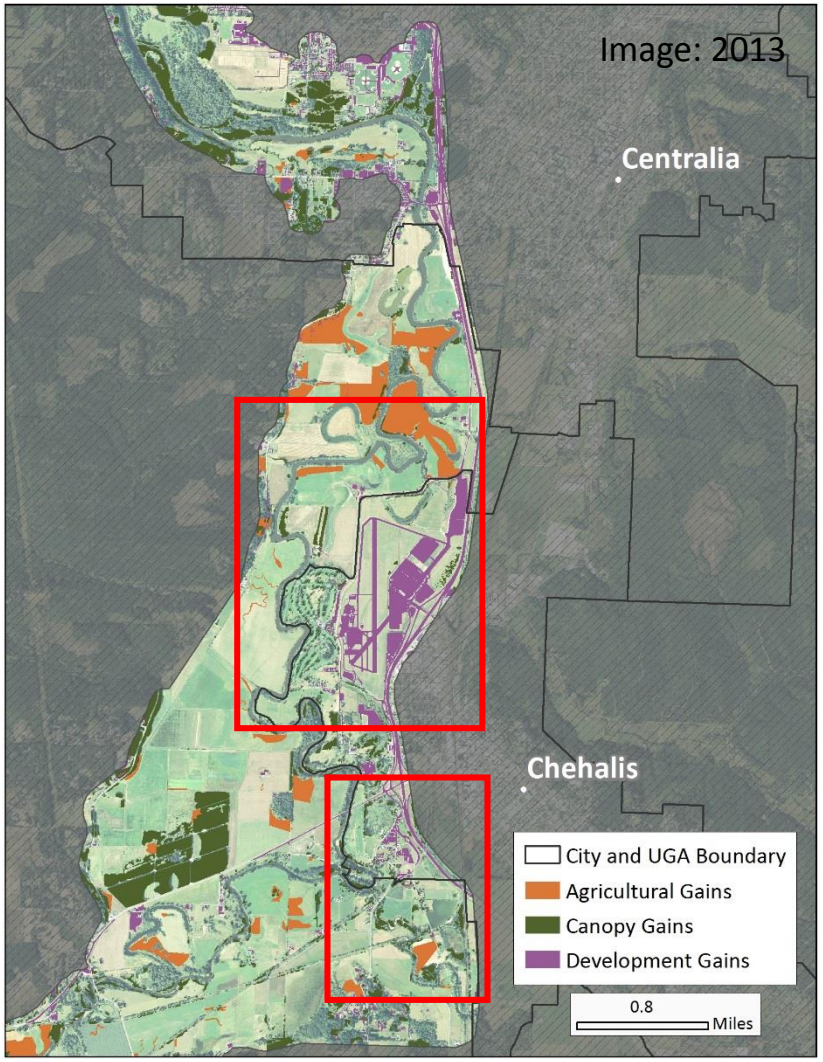
1970 to 2013



Floodplain Land Cover Change

(Segment 7 – Skookumchuck to Newaukum)

- Development increase in the Chehalis/Centralia area
  - 4 acres per year
  - Mostly around the airport and I-5
- Net decrease in agricultural areas
  - Mostly between 1938 and 1970s: -10 acres per year
  - Less decrease between 1970 and 2013: -1 acre per year
  - Some areas isolated of agricultural gains
- Net increase in canopy
  - 2 acres per year



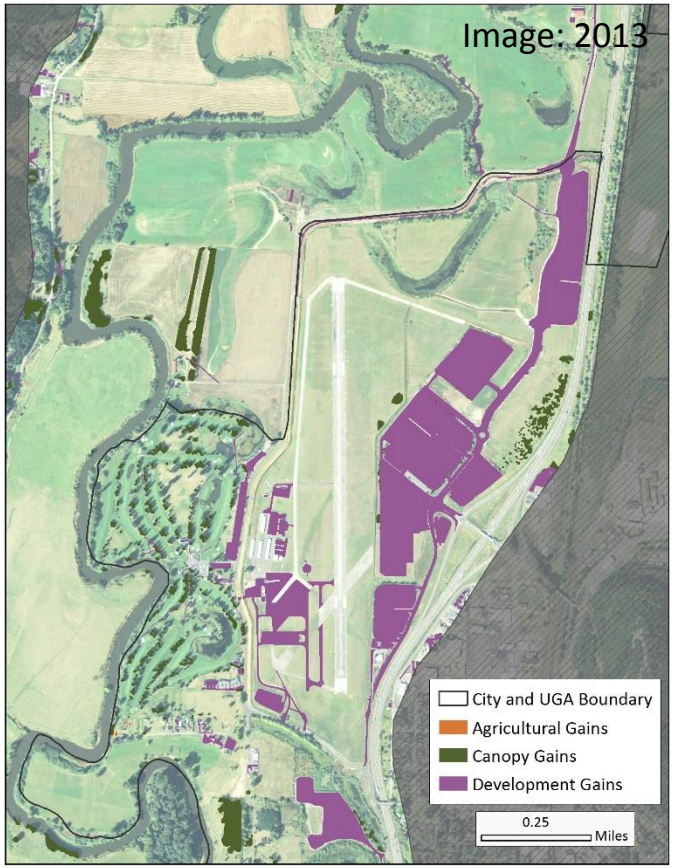
Gains 1938 to 2013

Floodplain Land Cover Change
(Segment 7)

Land cover gains by time period near Chehalis/Centralia

1938 to 1970

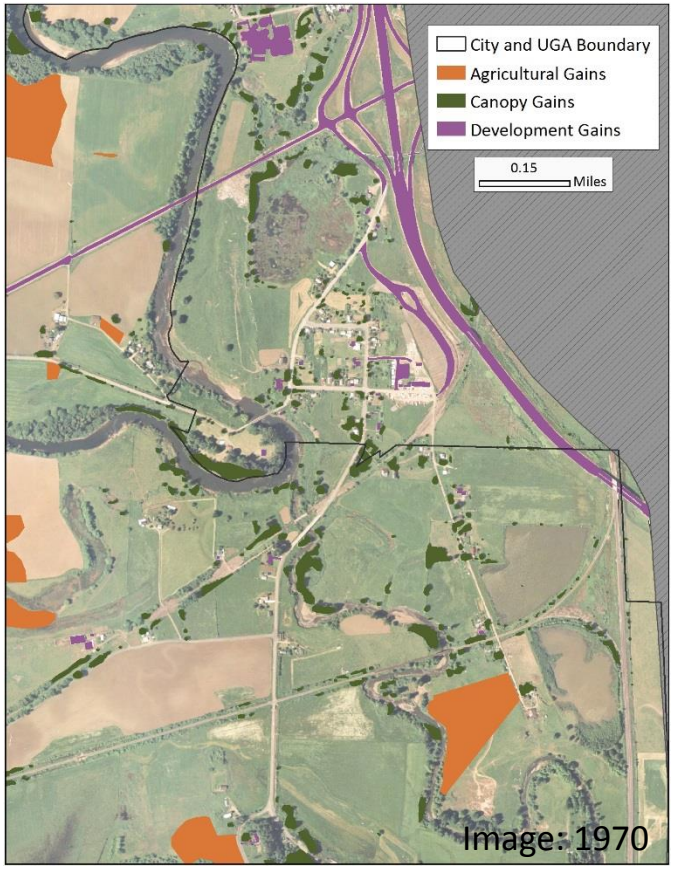
1970 to 2013



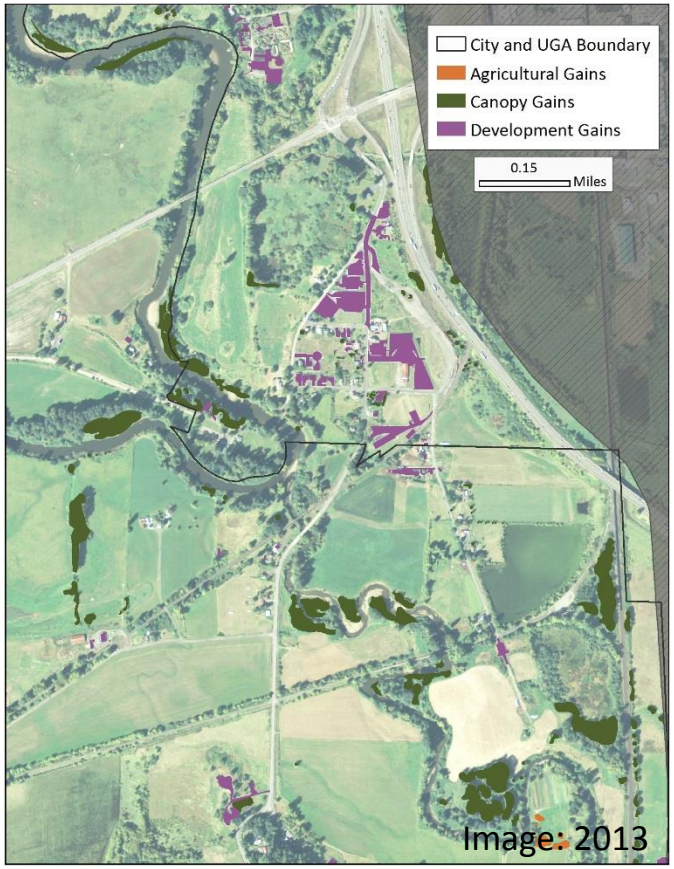
Floodplain Land Cover Change
(Segment 7 and 8)

Land cover gains by time period near Newaukum

1938 to 1970



1970 to 2013



Development Pressure
Chehalis River 100-year Floodplain

Urban Growth Areas (UGA) and Incorporated areas

- 7% of buildable area
- 59% of development potential (under current zoning)

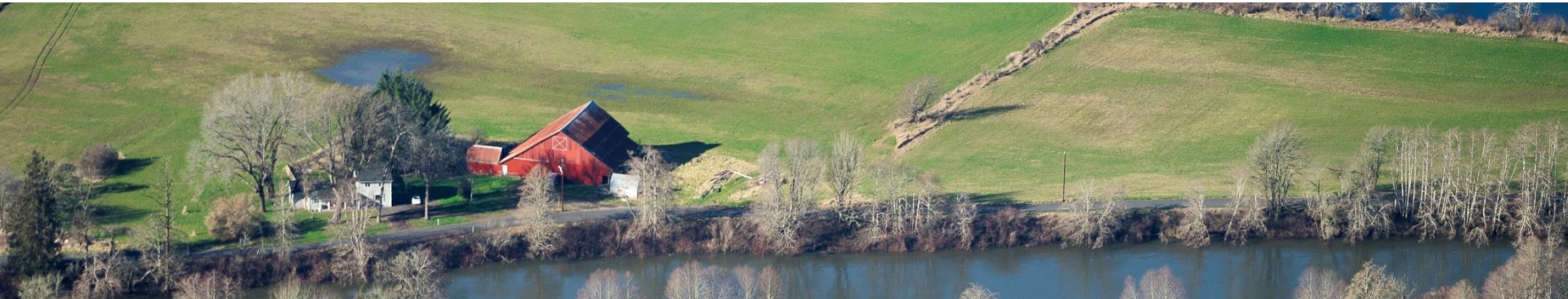
Development Pressure
Chehalis River 100-year Floodplain

Rural (Unincorporated)

- 93% of buildable area
- 41% of development potential (under current zoning)

Development Pressure
Chehalis River 100-year Floodplain

- Development potential is highly concentrated in UGAs and Incorporated areas
- Rural areas cover a majority of the buildable area
- Floodplain development is estimated at between 4 and 9 structures per year
- Very little subdivision is needed to accommodate predicted future development



Questions/Discussion

Counties in the Chehalis Basin