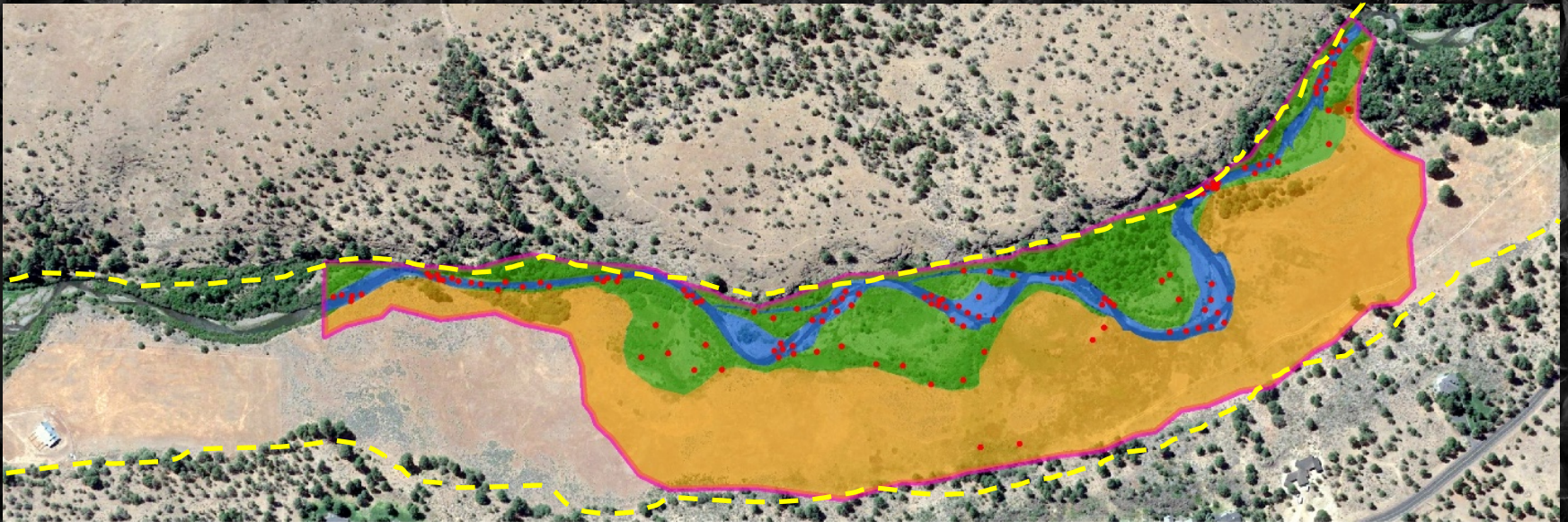


LTPBR WORKSHOP



Design Leading Design with Recovery Potential



RESTORATION PROCESS



Planning

Module 3

Design

Module 4

Implementation

Module 5

Never start a design without that **critical context** from planning

Addressed during Phase 1

Q: What are current riverscape **conditions**?

Geomorphically?
Riparian?

- to sustain wood accumulation and/or beaver dam activity

Q: What is **recovery potential**?

Design Opportunity is defined by gap between **Condition** & **Recovery Potential**

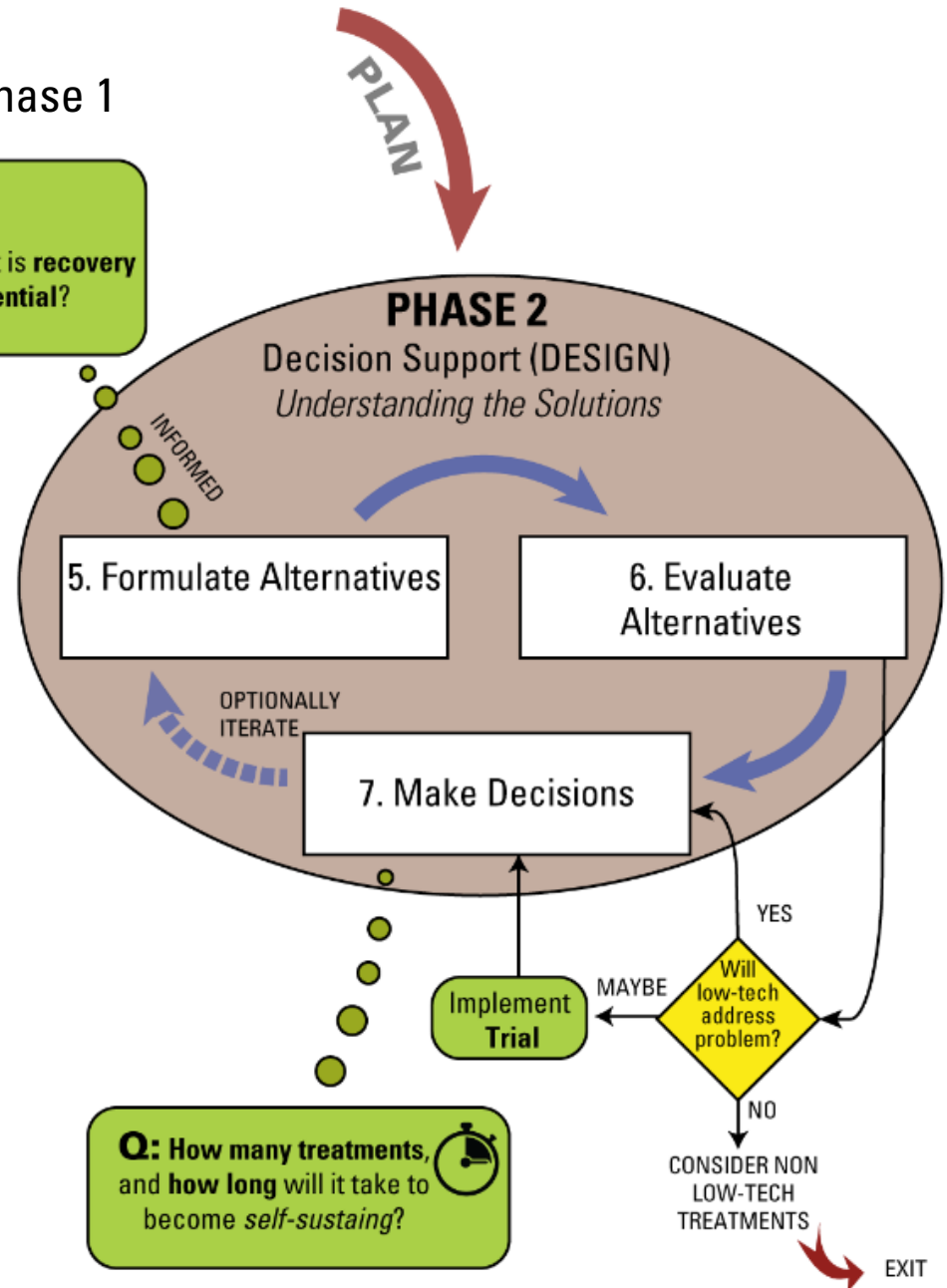


Figure 5.1 from Chap 5: Shahverdian et al. (2019)

DOI: [10.13140/RG.2.2.11621.45286](https://doi.org/10.13140/RG.2.2.11621.45286)

What constitutes a healthy riverscape?



From pages 3-4 of Pocket Guide; Wheaton et al. (2019)

DOI: [10.13140/RG.2.2.28222.13123/1](https://doi.org/10.13140/RG.2.2.28222.13123/1)

See Wheaton et al. (2019, p 60): Chapter 2 LTPBR Manual for Principles

DOI: [10.13140/RG.2.2.34270.69447](https://doi.org/10.13140/RG.2.2.34270.69447)

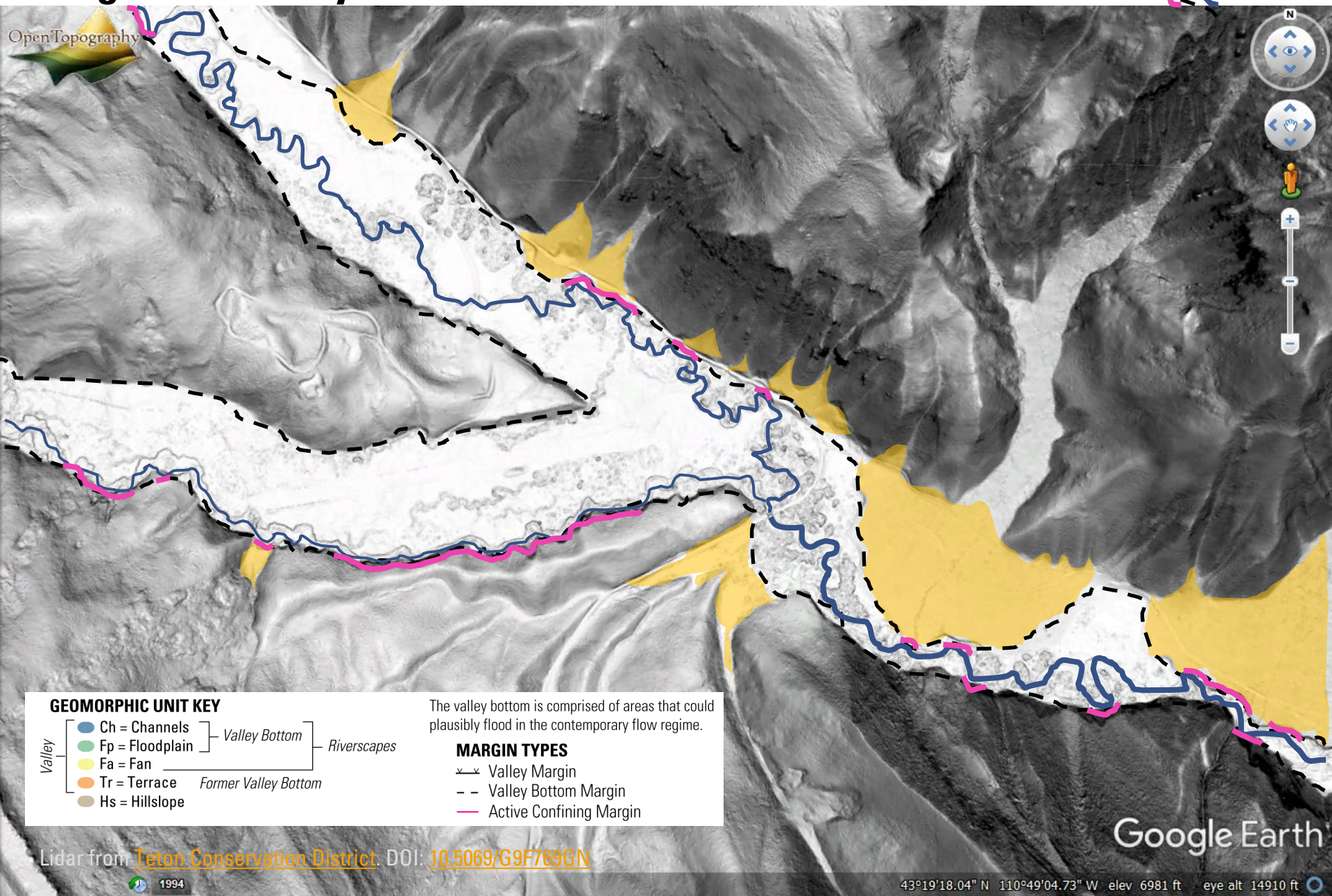
Riverscapes Principles

A topographic map of a mountainous watershed. The terrain is shown in shades of gray, with blue lines representing the river network. Several areas, primarily along the river channels and in the valleys, are highlighted in green, indicating floodplains or areas that could be inundated by the rivers and streams. The text is overlaid on the map.

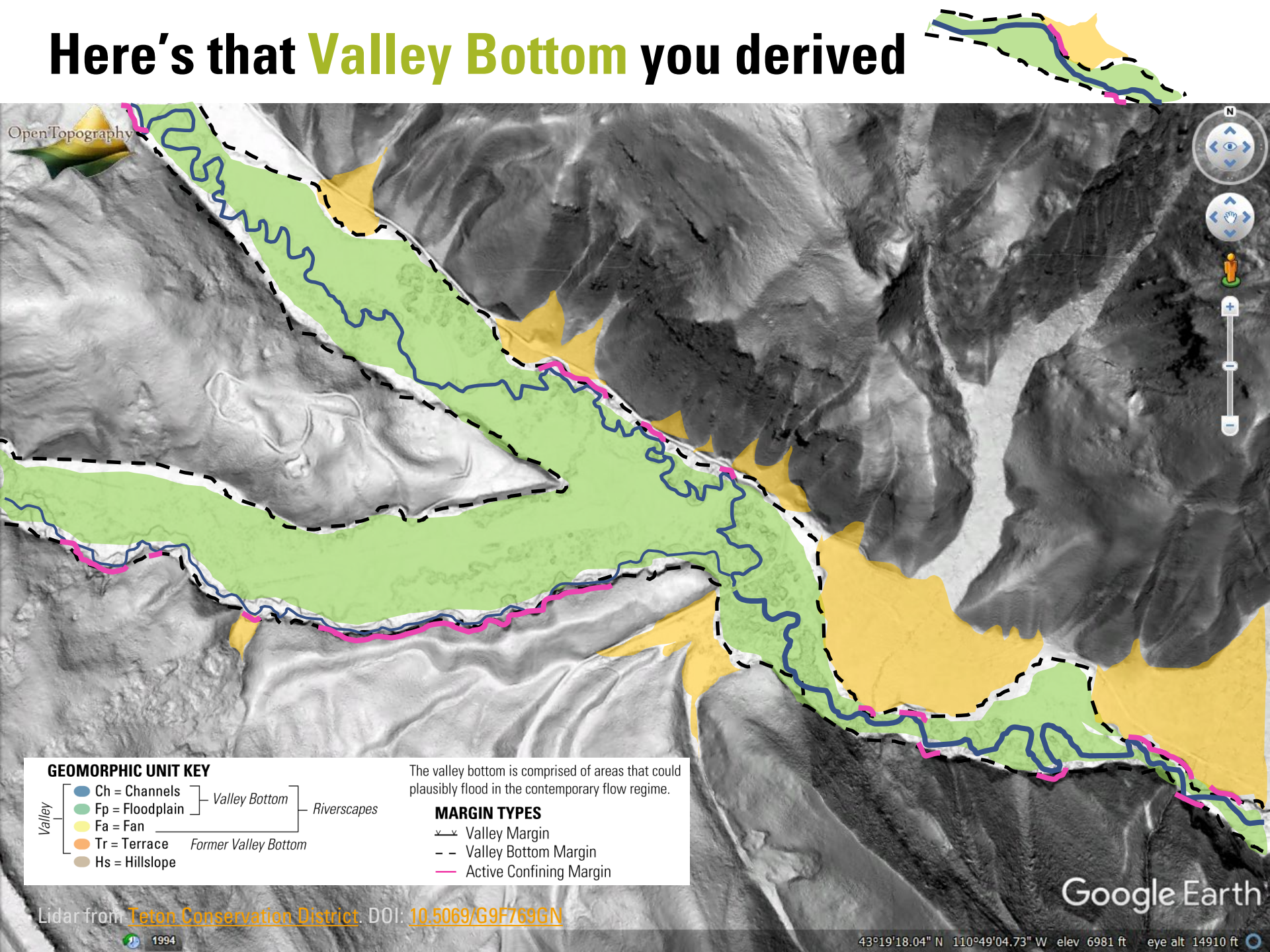
Reminder: Riverscapes span the network across a watershed

Riverscapes are the part of the landscape that could plausibly flood by their rivers & streams in the natural flow regime.

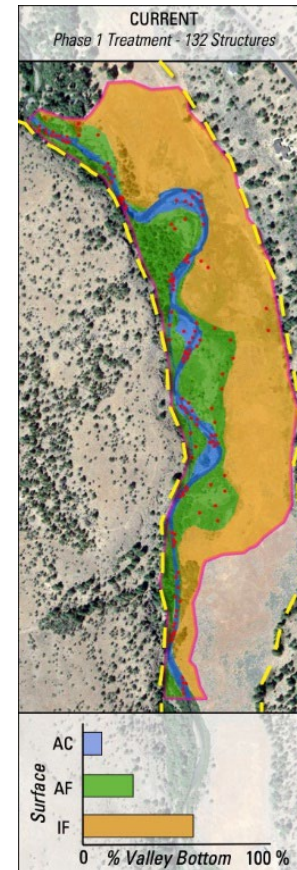
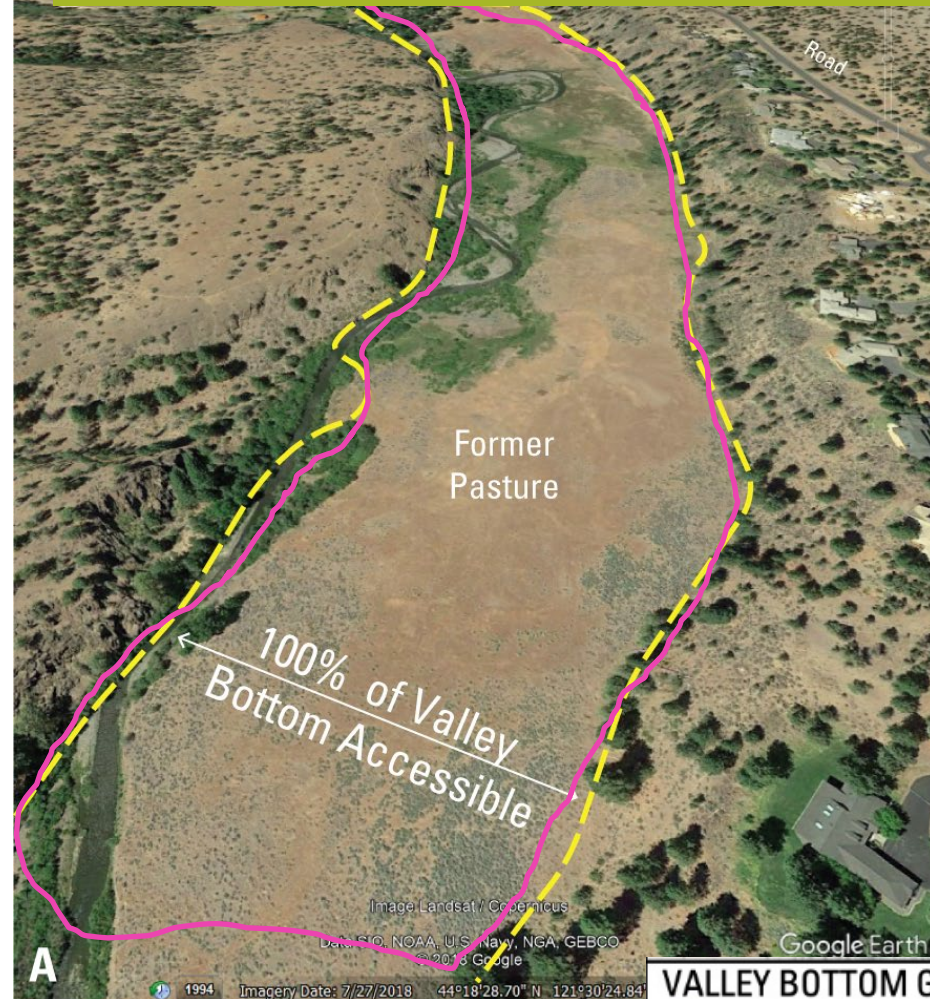
Recall, you mapped active channels & fans... to get the Valley Bottom



Here's that **Valley Bottom** you derived



Design Opportunity is defined by gap between **Condition** & **Recovery Potential**



Q: What are current riverscape **conditions**?

Geomorphically?
Riparian?

Q: What is **recovery potential**?

- to sustain wood accumulation and/or beaver dam activity

So lets get **condition** by splitting valley bottom into:

- AC - Active channel
- AF - Active floodplain
- IF - Inactive

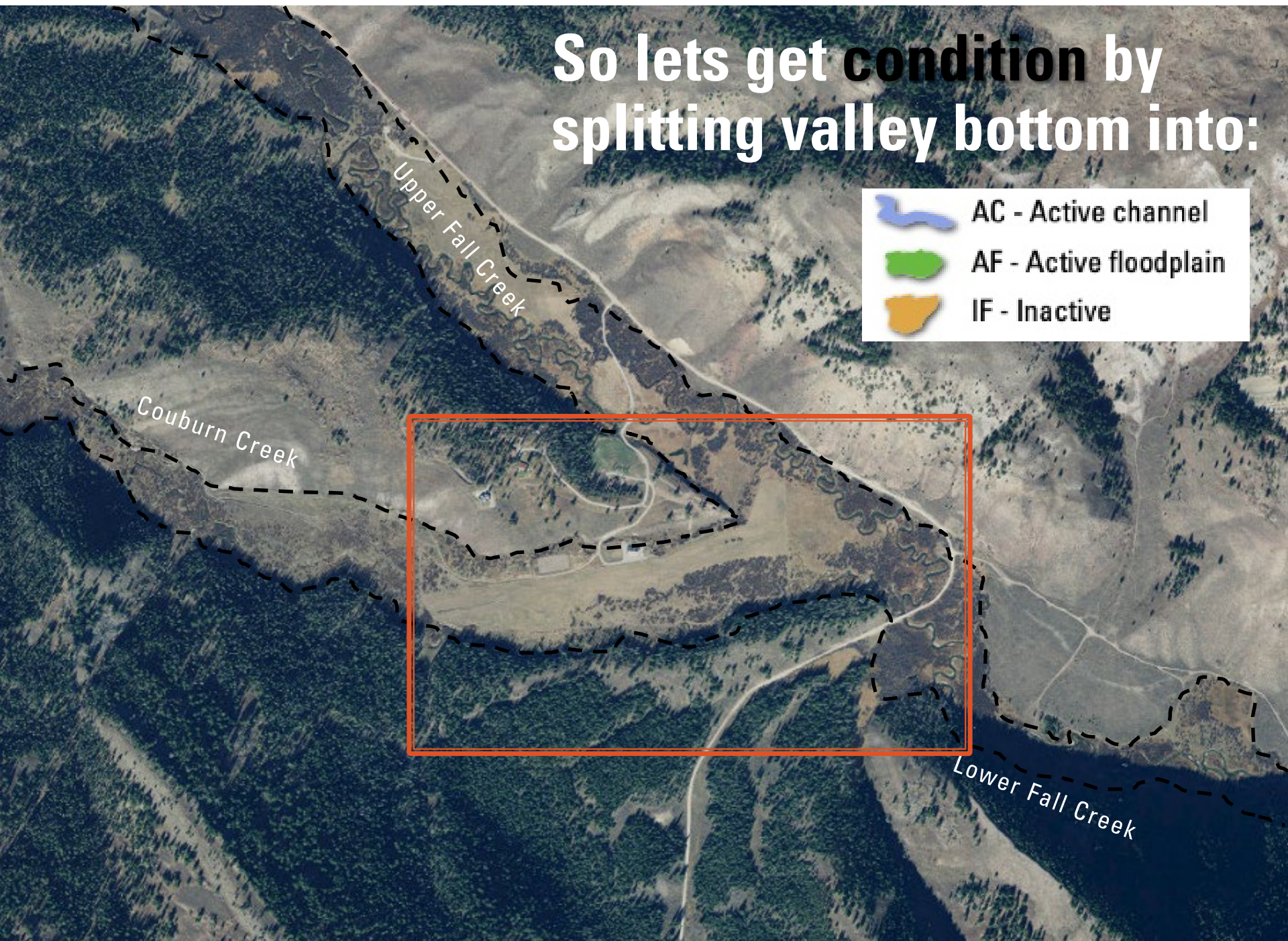
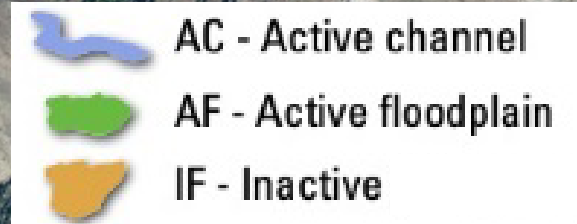
VALLEY BOTTOM GEOMORPHIC COMPOSITION

- AC - Active channel
- AF - Active floodplain
- IF - Inactive / Disconnected floodplain
- Current treatment structures
- Preceding phase structures
- Recovery Potential
- Valley Bottom

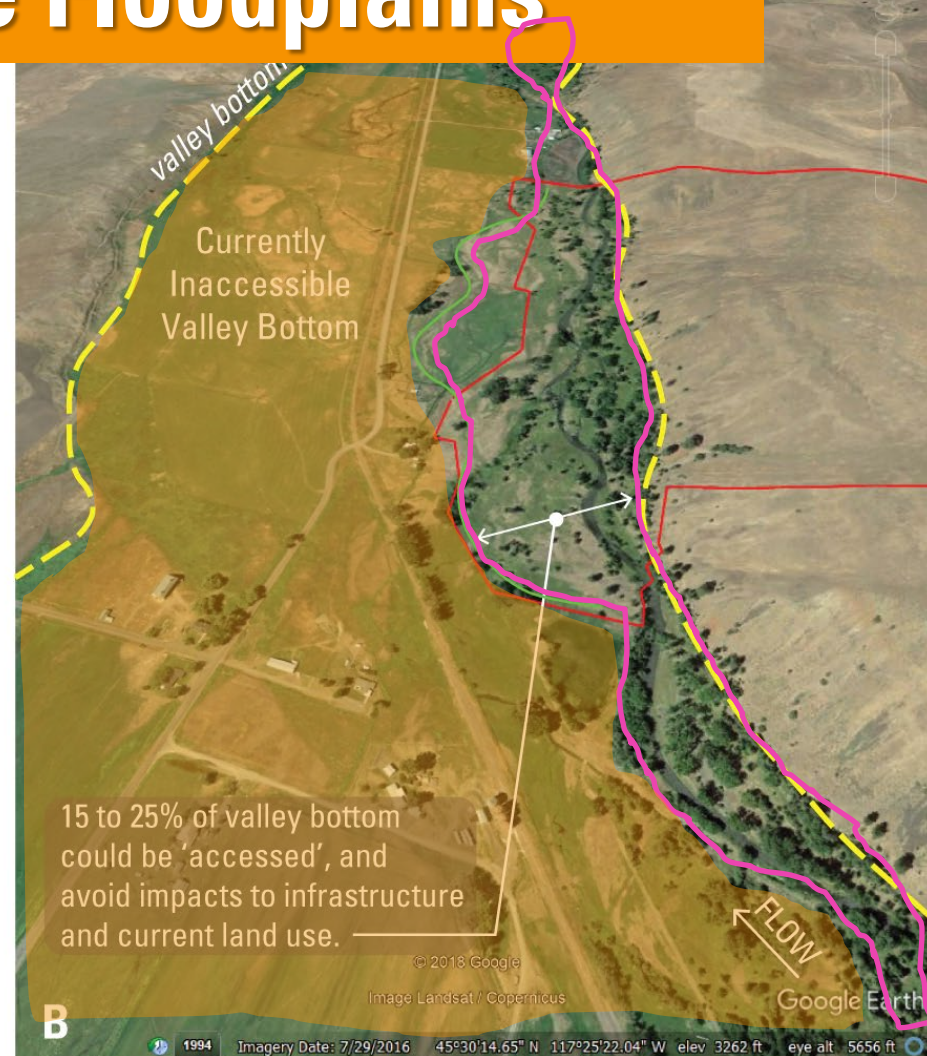
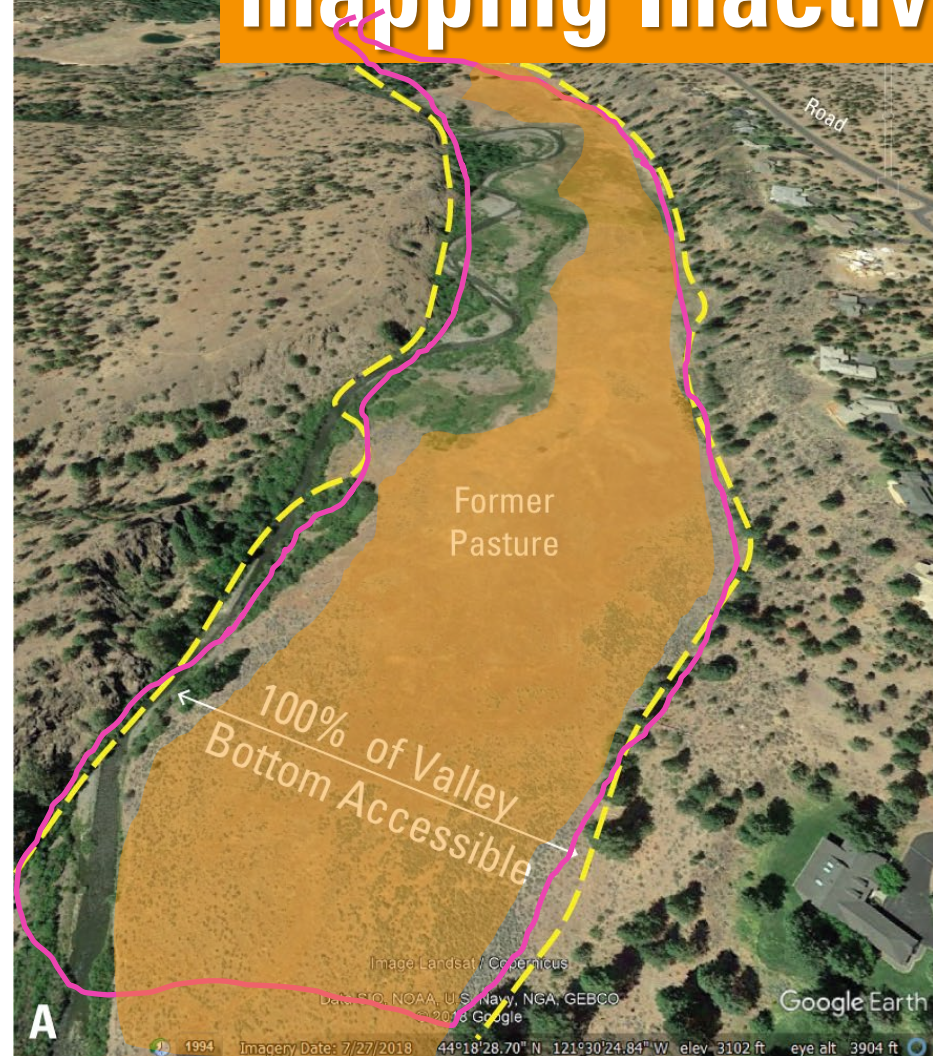
0 500 1000 ft.



So lets get **condition** by
splitting valley bottom into:



Condition can be expressed by mapping Inactive Floodplains

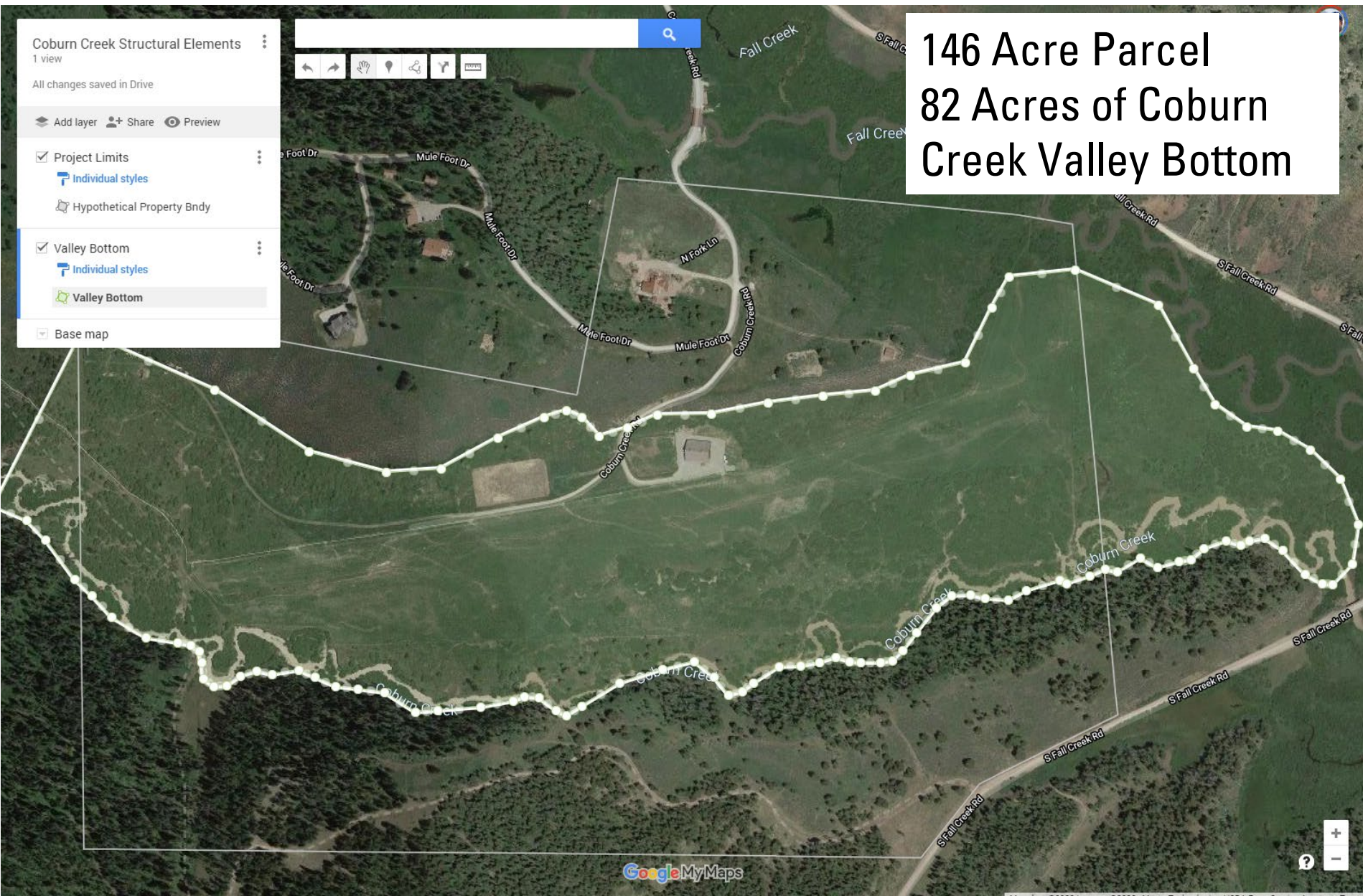


From page 14 of Pocket Guide; Wheaton et al. (2019)

DOI: [10.13140/RG.2.2.28222.13123/1](https://doi.org/10.13140/RG.2.2.28222.13123/1)

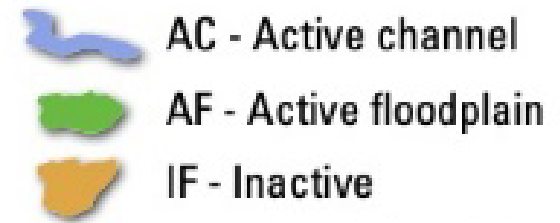
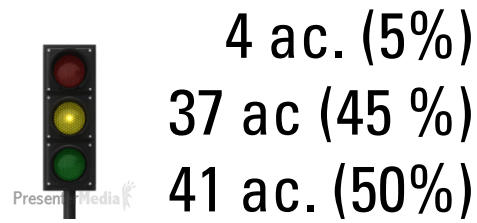
How much is in play for restoration?

But lets do that for a smaller project area:



Conditions:

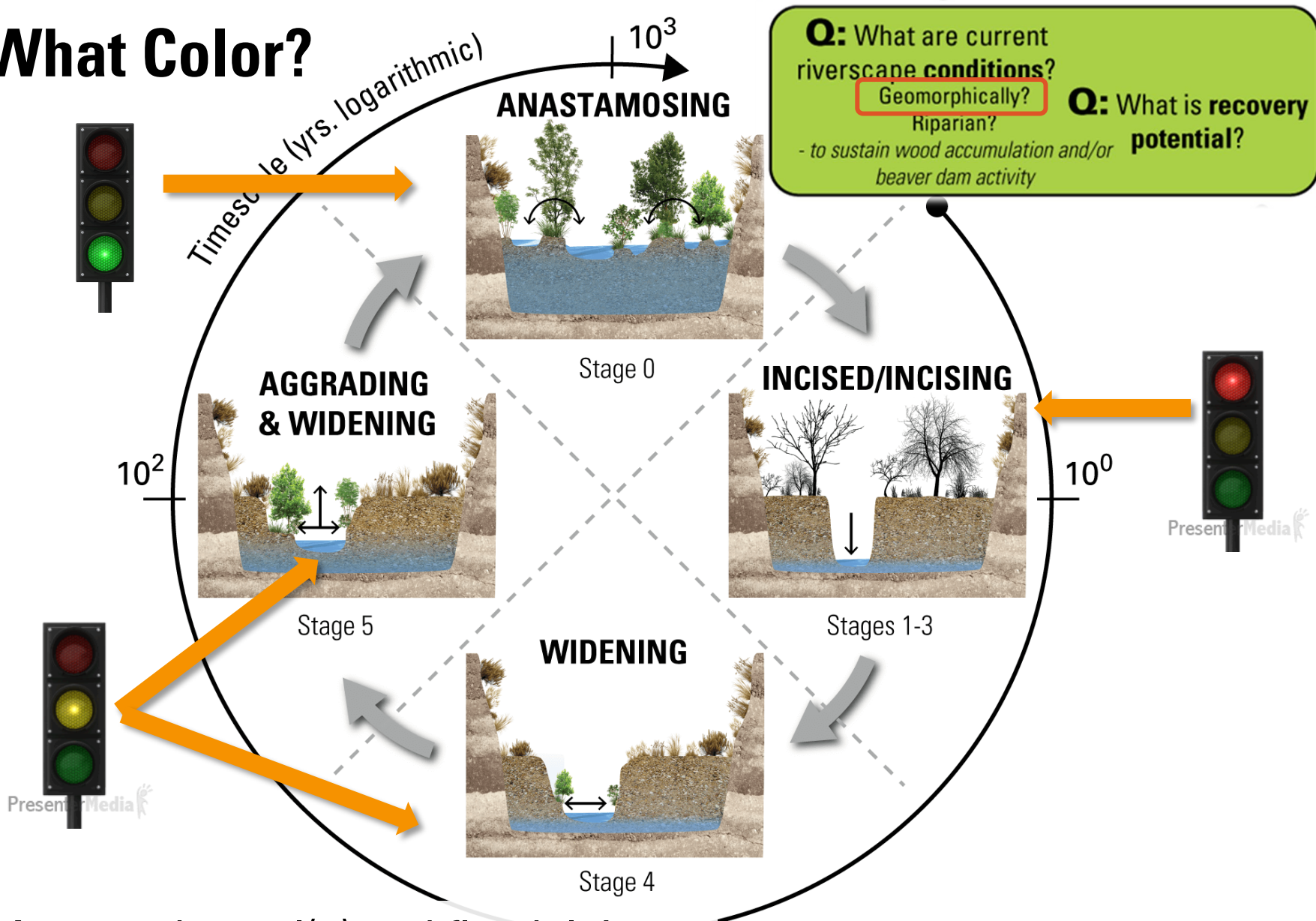
Proportion Active 50%



82 Acres of Coburn Creek Valley Bottom



What Color?



1. Are my channel(s) and floodplain **well-connected**?

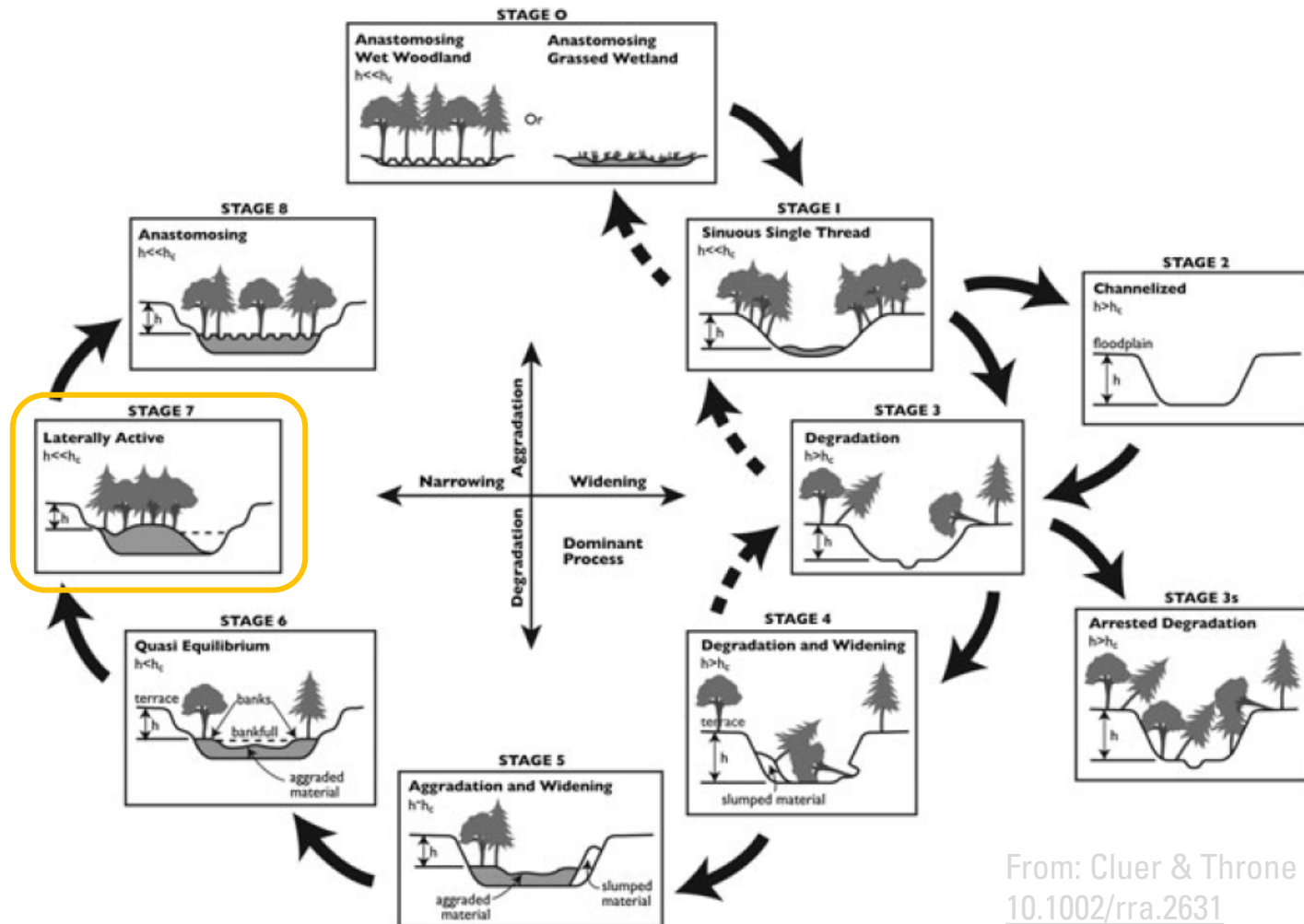
What might we call this reach of Coburn?

Q: What are current riverscape **conditions**?

Geomorphically?
Riparian?

Q: What is **recovery potential**?

- to sustain wood accumulation and/or beaver dam activity

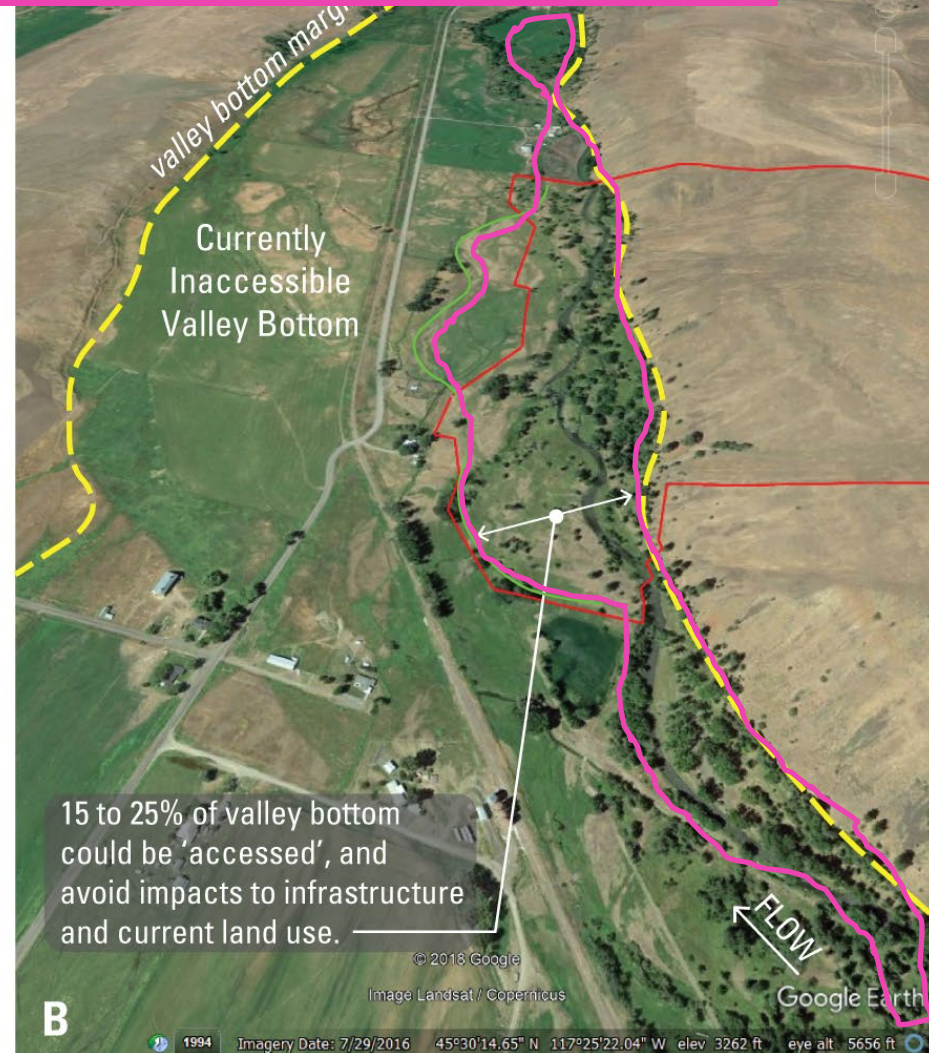
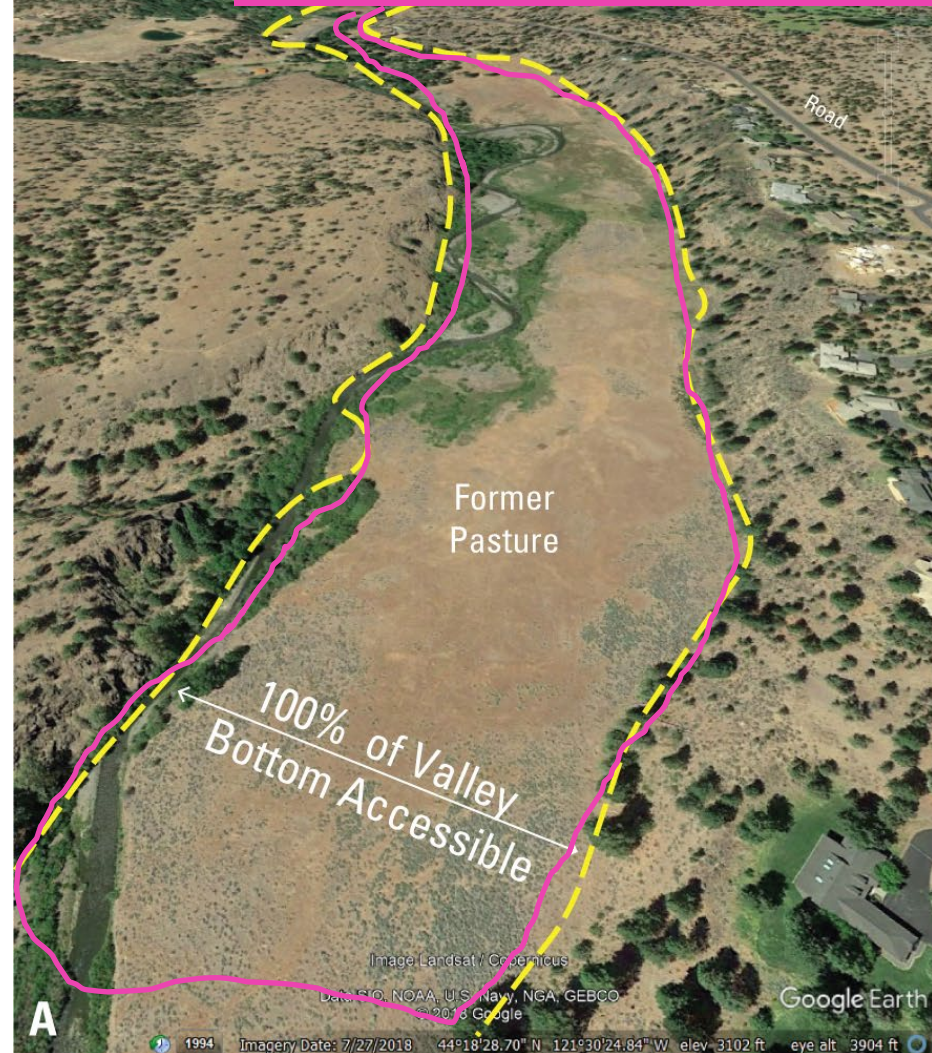


From: Cluer & Throne (2013) DOI:
[10.1002/rra.2631](https://doi.org/10.1002/rra.2631)

ENTIRE VALLEY BOTTOM 'ACCESSIBLE'

PARTIAL VALLEY BOTTOM 'ACCESSIBLE'

Answer is Recovery Potential!



From page 14 of Pocket Guide; Wheaton et al. (2019)

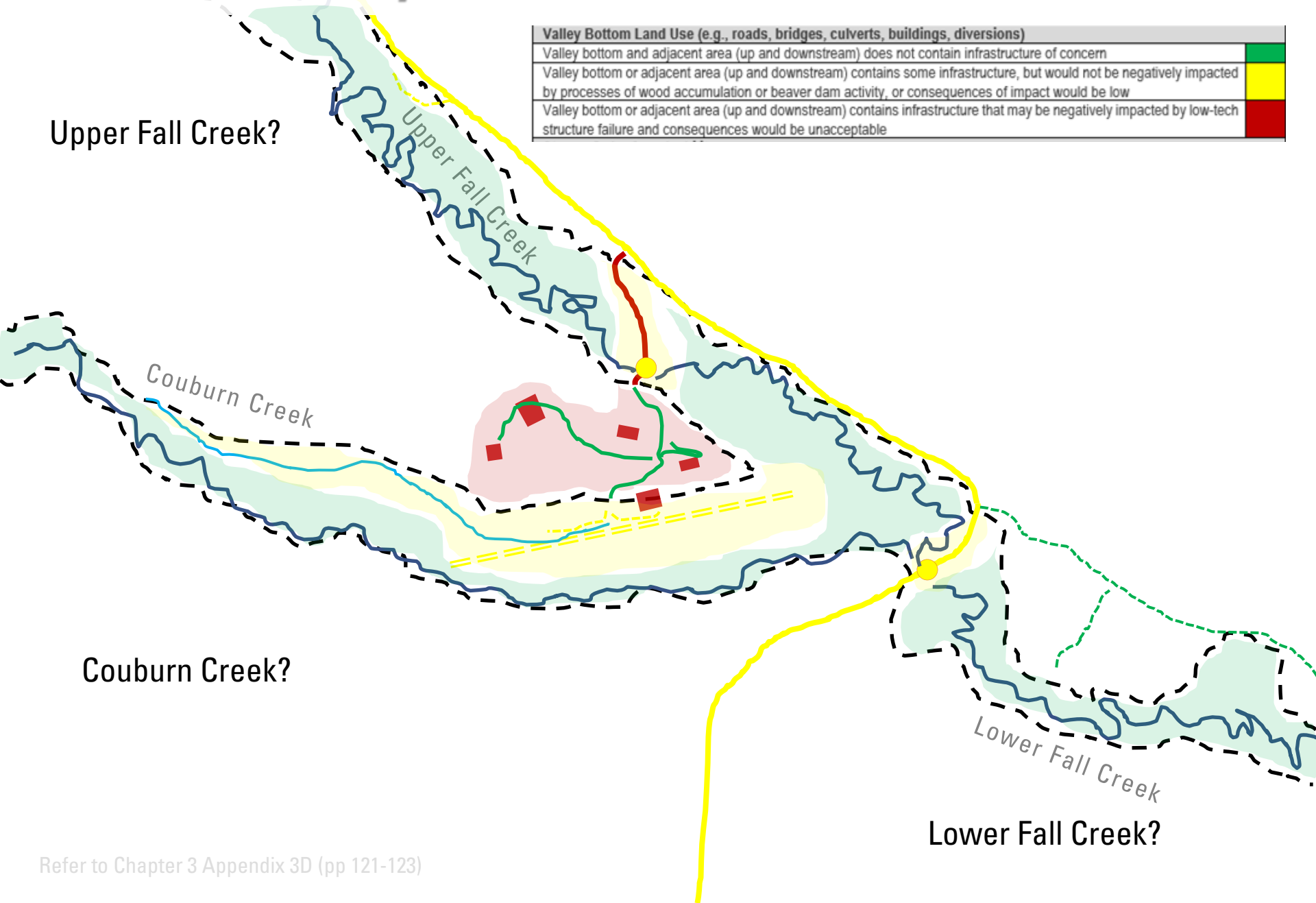
DOI: [10.13140/RG.2.2.28222.13123/1](https://doi.org/10.13140/RG.2.2.28222.13123/1)

How much is in play for restoration?

Remember Valley Bottom Land Use

Valley Bottom Land Use (e.g., roads, bridges, culverts, buildings, diversions)	
Valley bottom and adjacent area (up and downstream) does not contain infrastructure of concern	Green
Valley bottom or adjacent area (up and downstream) contains some infrastructure, but would not be negatively impacted by processes of wood accumulation or beaver dam activity, or consequences of impact would be low	Yellow
Valley bottom or adjacent area (up and downstream) contains infrastructure that may be negatively impacted by low-tech structure failure and consequences would be unacceptable	Red

Upper Fall Creek?



Couburn Creek?

Lower Fall Creek?

We asked Pops:

Proportion Active 50%

29 Acres (35%).
Uplift? -?

4 ac. (5%)

37 ac (45 %)

41 ac. (50%)



AC - Active channel

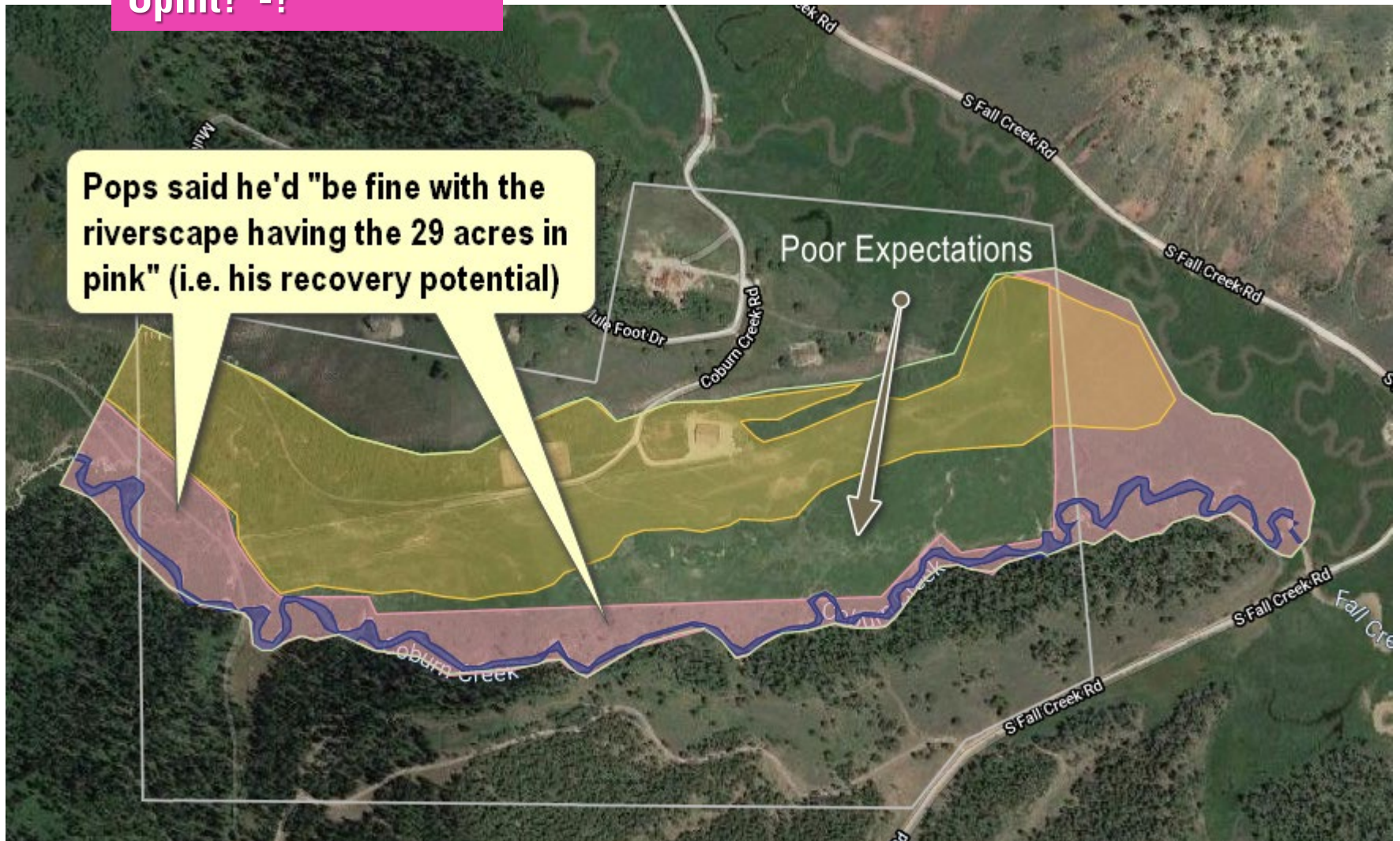


AF - Active floodplain

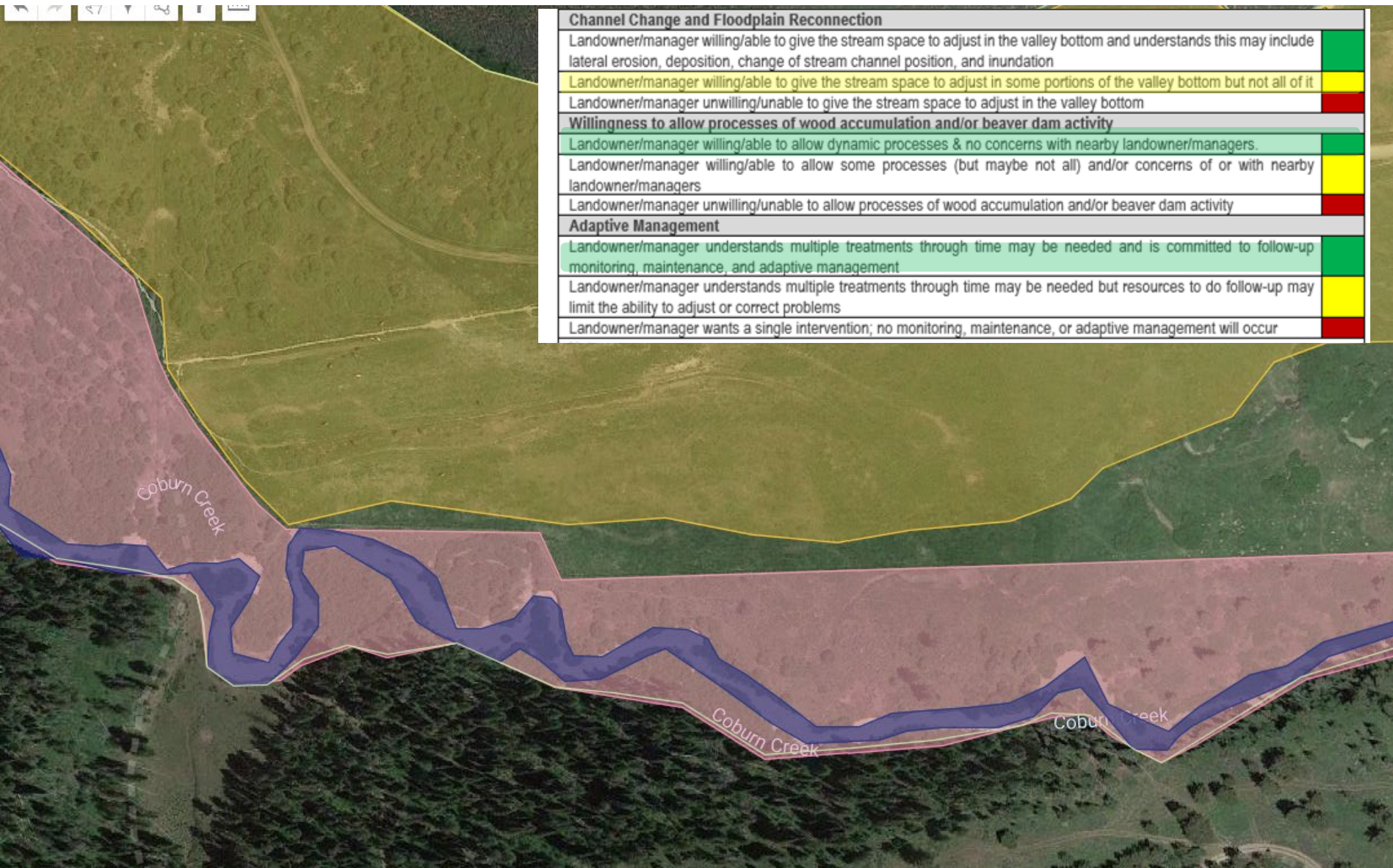


IF - Inactive

82 Acres of Coburn Creek Valley Bottom



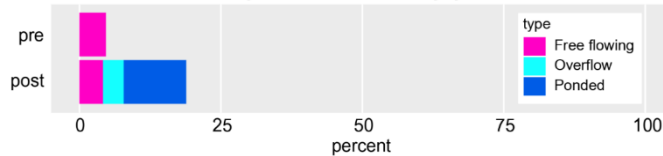
This follows what he's doing now (i.e. fence line)



So maybe Proportion Active not a good indicator here (with Pops), but inundation extent and inundation type might be?



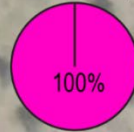
% valley bottom inundation by type



- Inundation types great proxy for residence time...

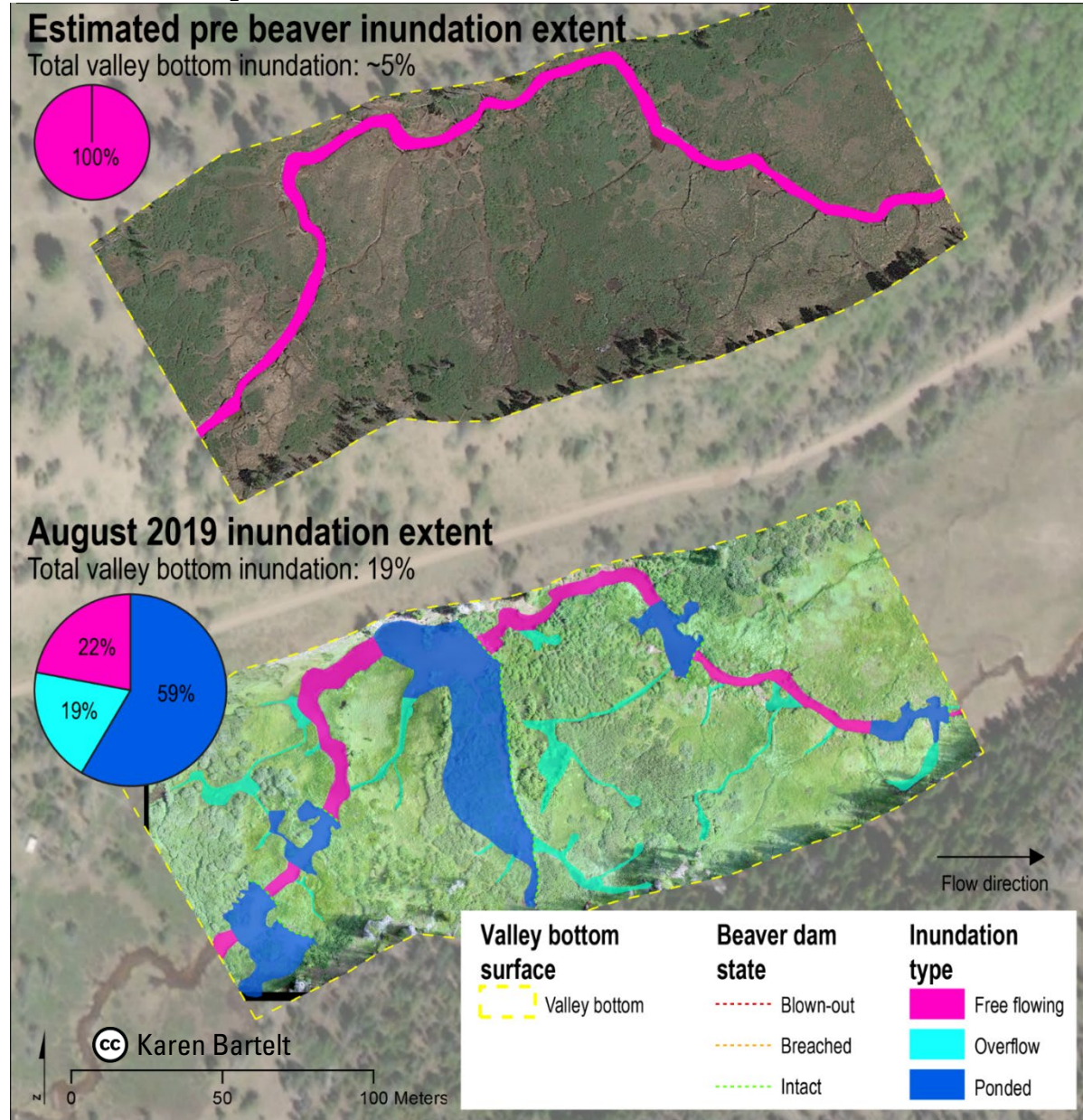
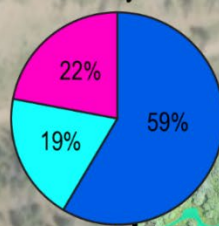
Estimated pre beaver inundation extent

Total valley bottom inundation: ~5%



August 2019 inundation extent

Total valley bottom inundation: 19%



What could Pop's reach of Coburn be?

29 Acres (35%).
Proportion Active Uplift? 0?
But: Stage 7 → Stage 8 😊

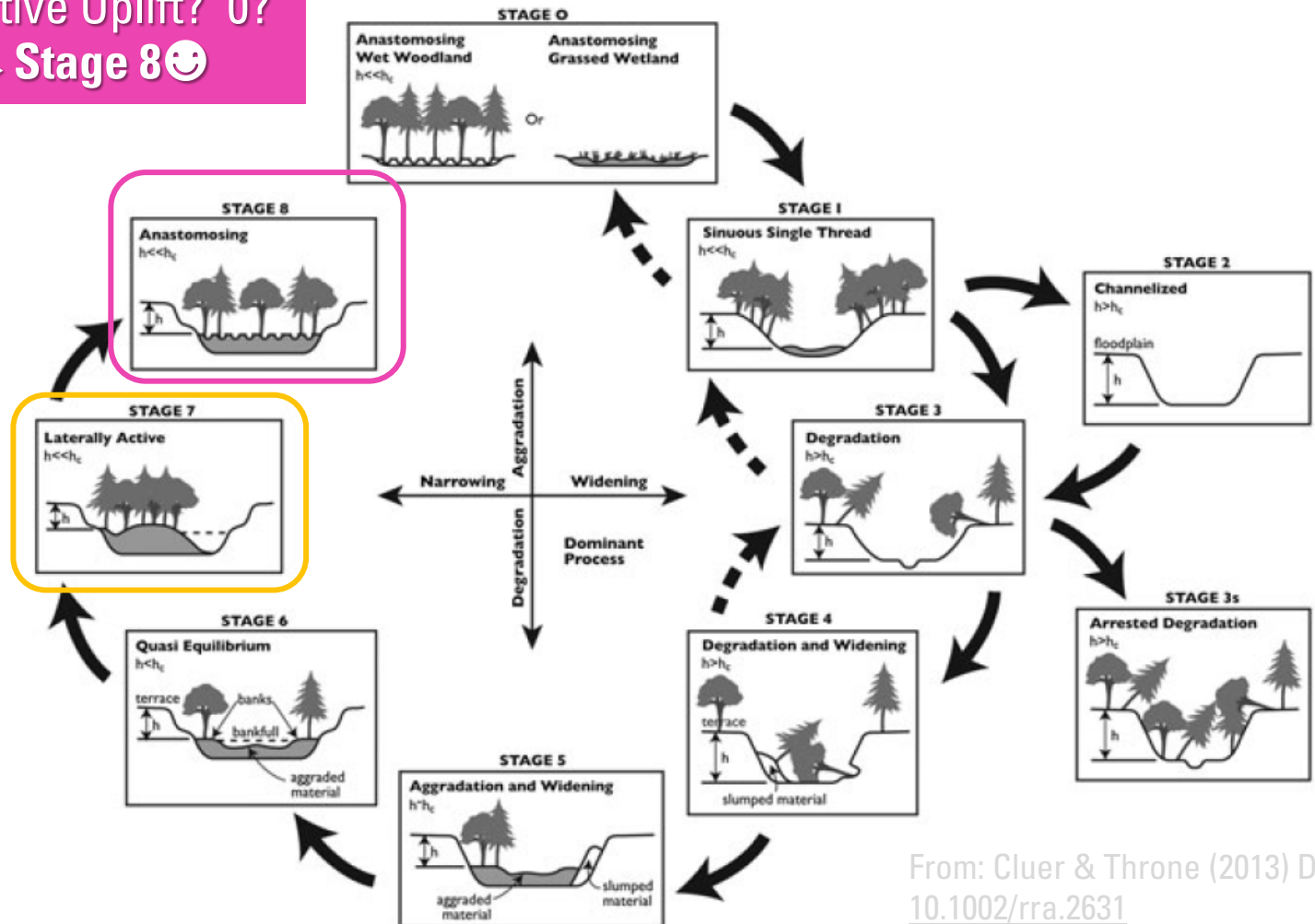
Q: What are current riverscape conditions?

Geomorphically?

Riparian?

- to sustain wood accumulation and/or beaver dam activity

Q: What is recovery potential?



From: Cluer & Throne (2013) DOI:
[10.1002/rra.2631](https://doi.org/10.1002/rra.2631)

Carol (Pops' Daughter):

Proportion Active 50%

Recovery Potential: 63 ac. (76%)

Uplift 22 ac. (53%)

4 ac. (5%)

37 ac (45 %)

41 ac. (50%)



AC - Active channel



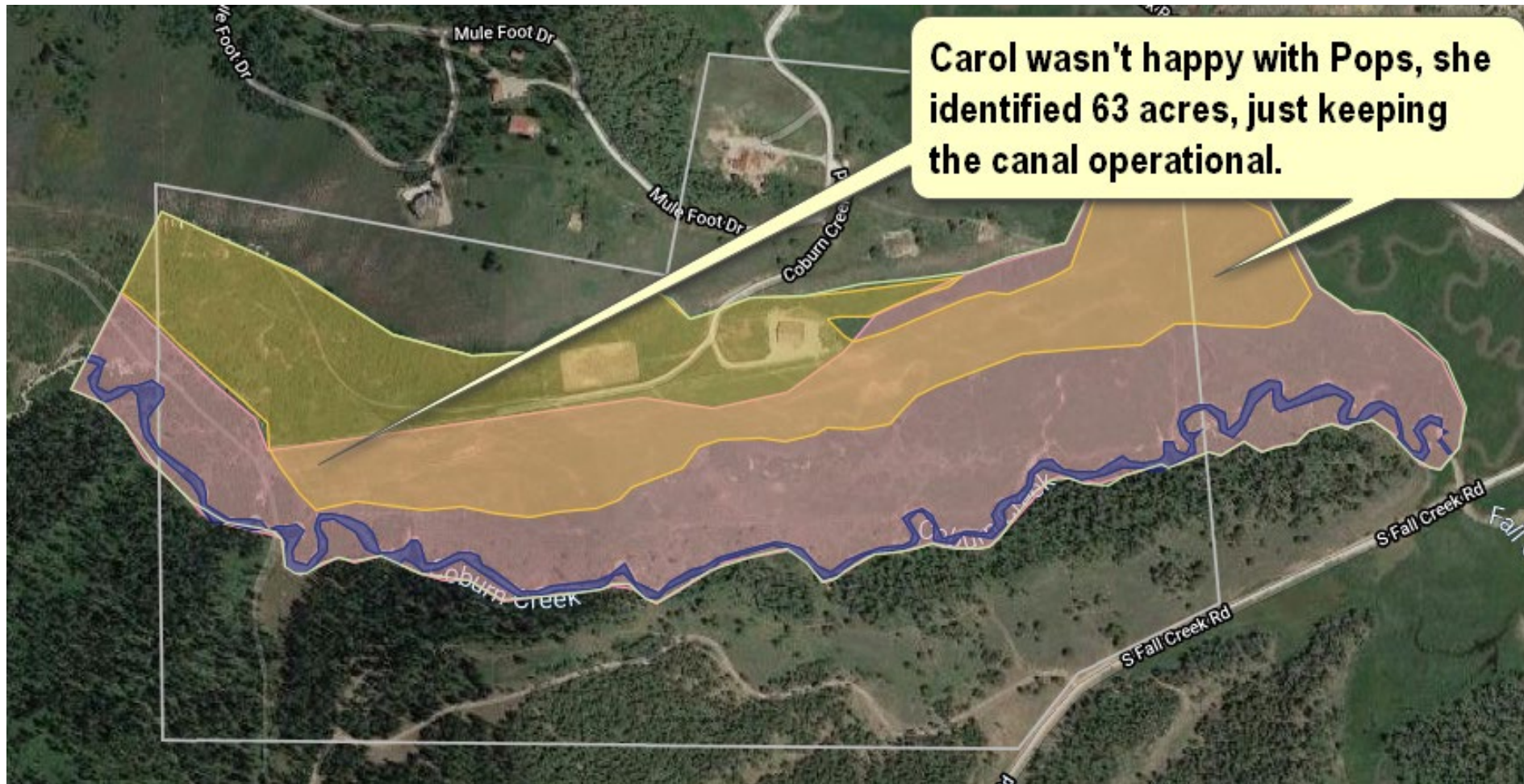
AF - Active floodplain



IF - Inactive

Acres of Coburn Creek Valley Bottom

Carol wasn't happy with Pops, she identified 63 acres, just keeping the canal operational.



What could Carol's reach of Coburn be?

Recovery Potential: 63 ac. (76%)

Uplift 22 ac. (53%)

AND: Stage 7 → Stage 8 / 0 😊

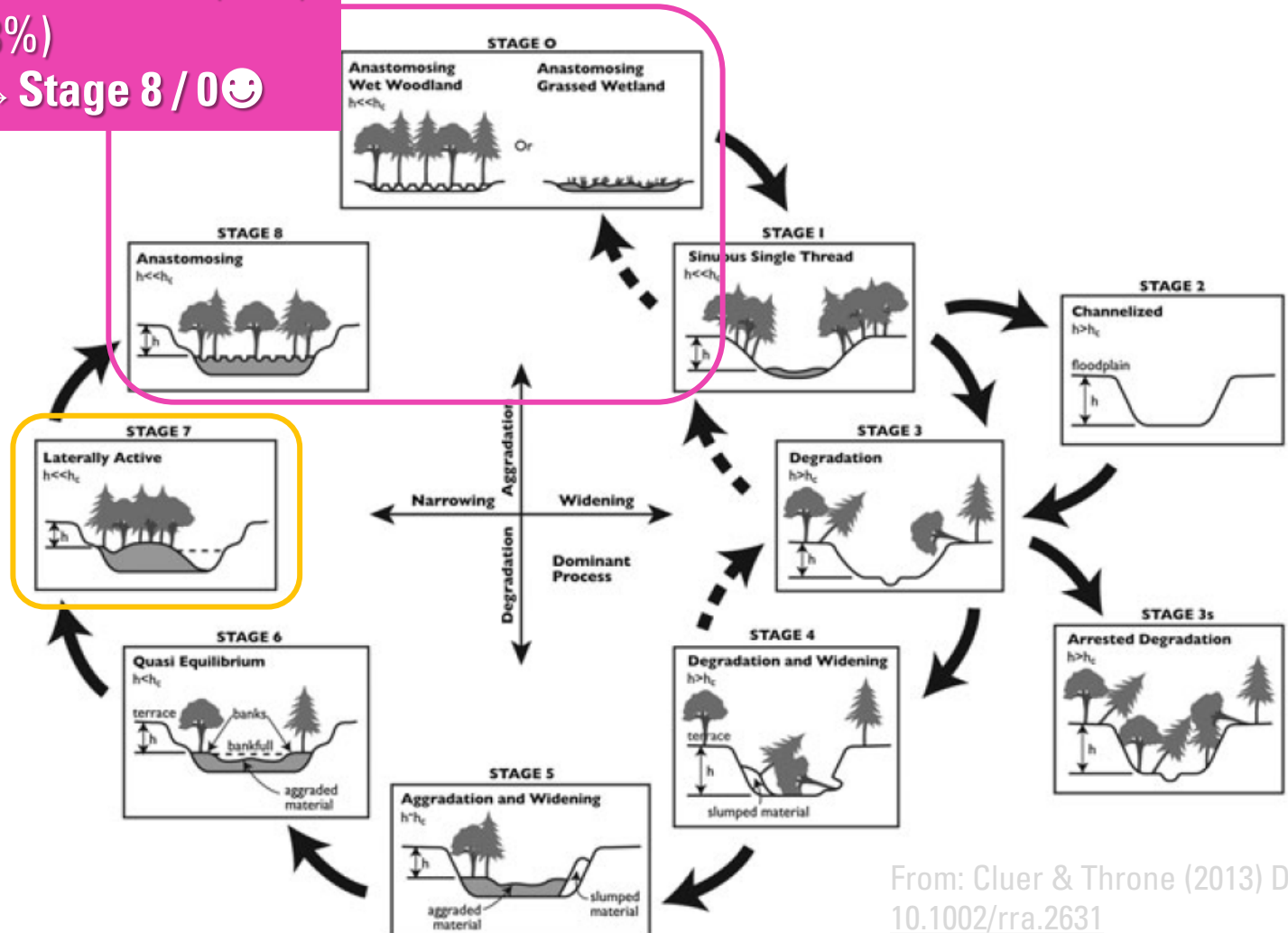
Q: What are current riverscape conditions?

Geomorphically?

Riparian?

- to sustain wood accumulation and/or beaver dam activity

Q: What is recovery potential?



From: Cluer & Throne (2013) DOI: [10.1002/rra.2631](https://doi.org/10.1002/rra.2631)

Never start a design without that **critical context** from planning

Addressed during Phase 1

Q: What are current riverscape **conditions**?

Geomorphically?
Riparian?

- to sustain wood accumulation and/or beaver dam activity

Q: What is **recovery potential**?

Design Opportunity is defined by gap between **Condition** & **Recovery Potential**

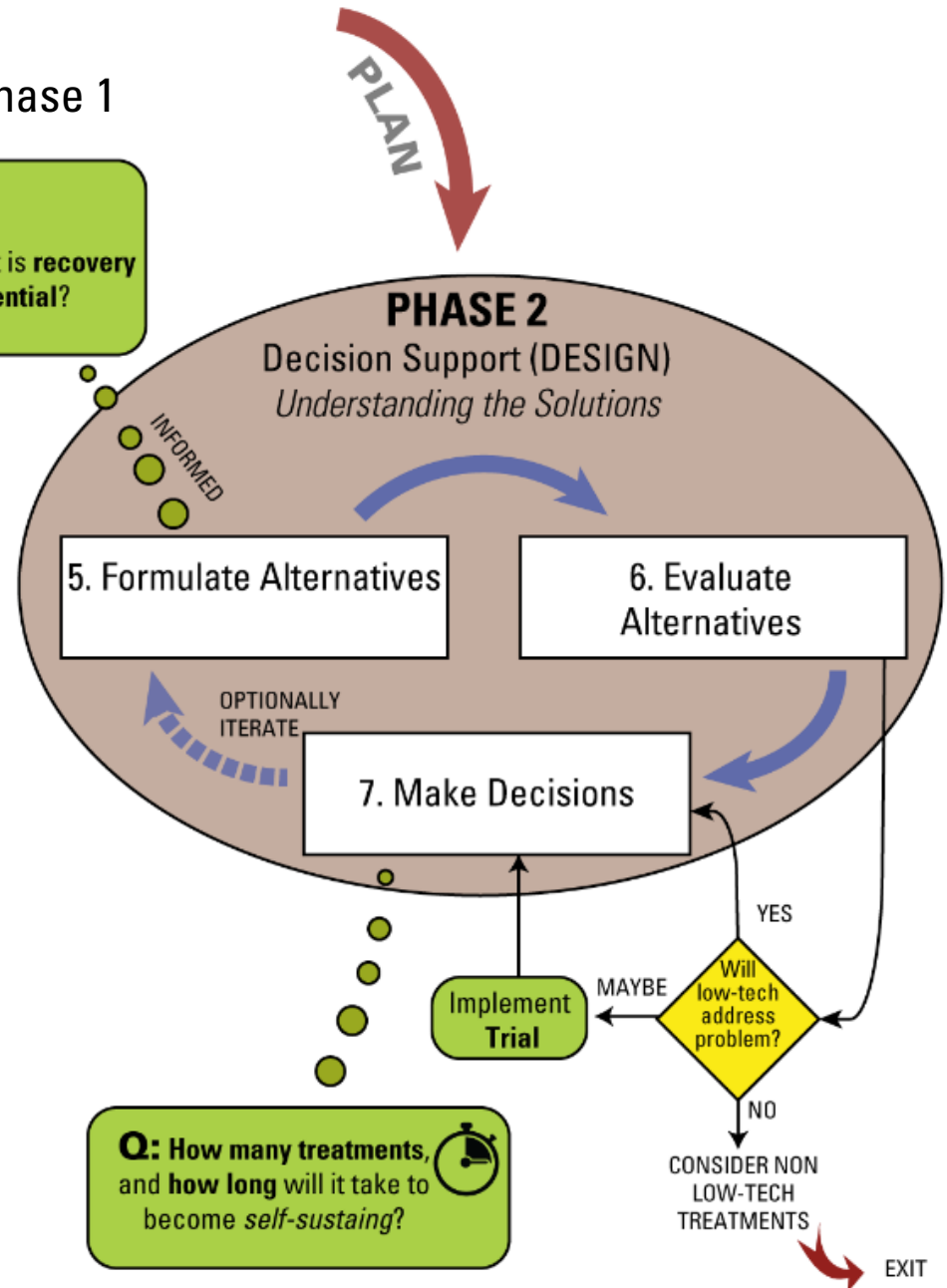


Figure 5.1 from Chap 5: Shahverdian et al. (2019)

DOI: [10.13140/RG.2.2.11621.45286](https://doi.org/10.13140/RG.2.2.11621.45286)