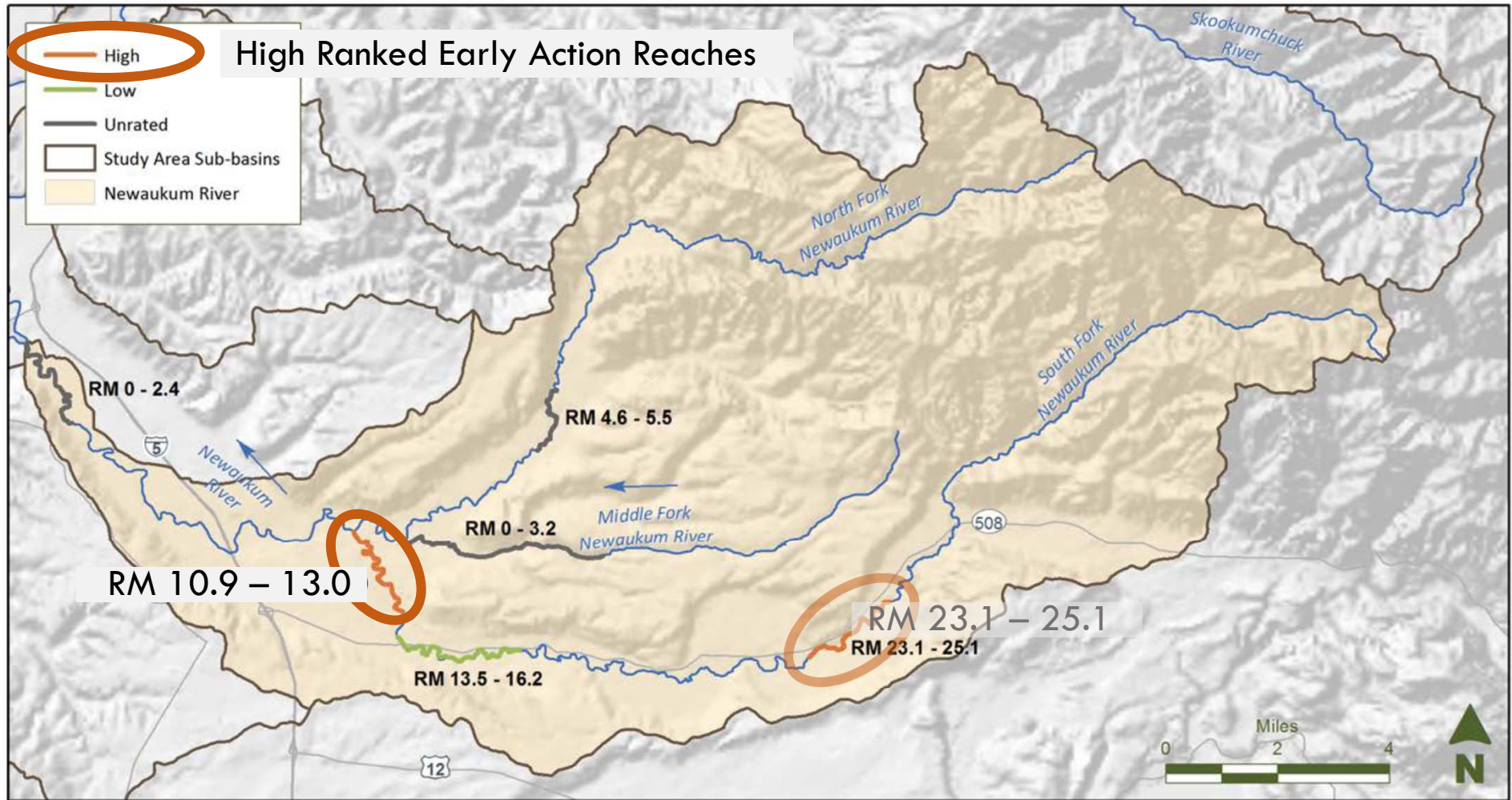
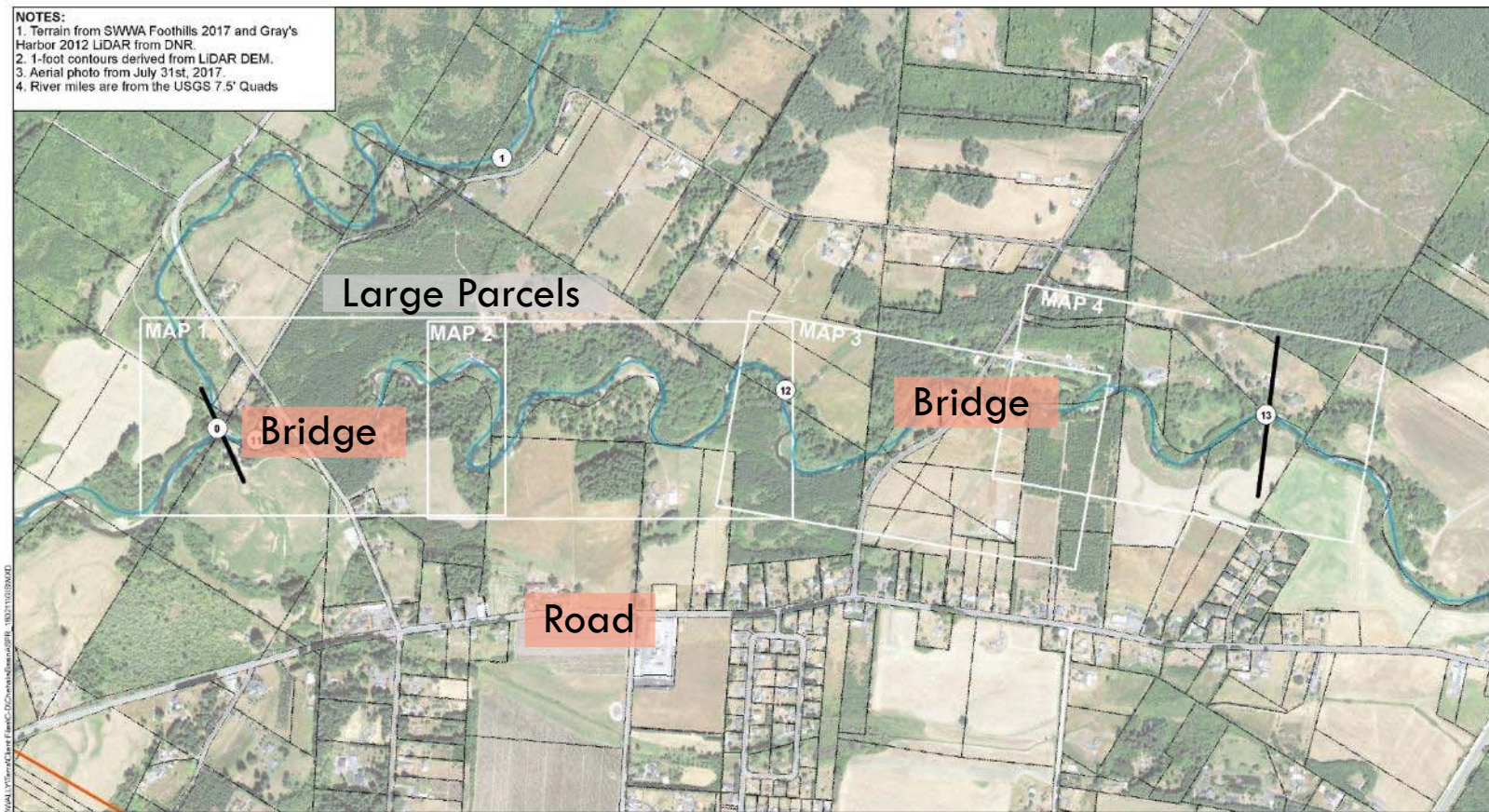


Newaukum Sub-Basin



South Fork Newaukum RM 10.9 – 13.0



DRAFT



Projection: NAD 1983
State Plane Washington South FIPS 4602



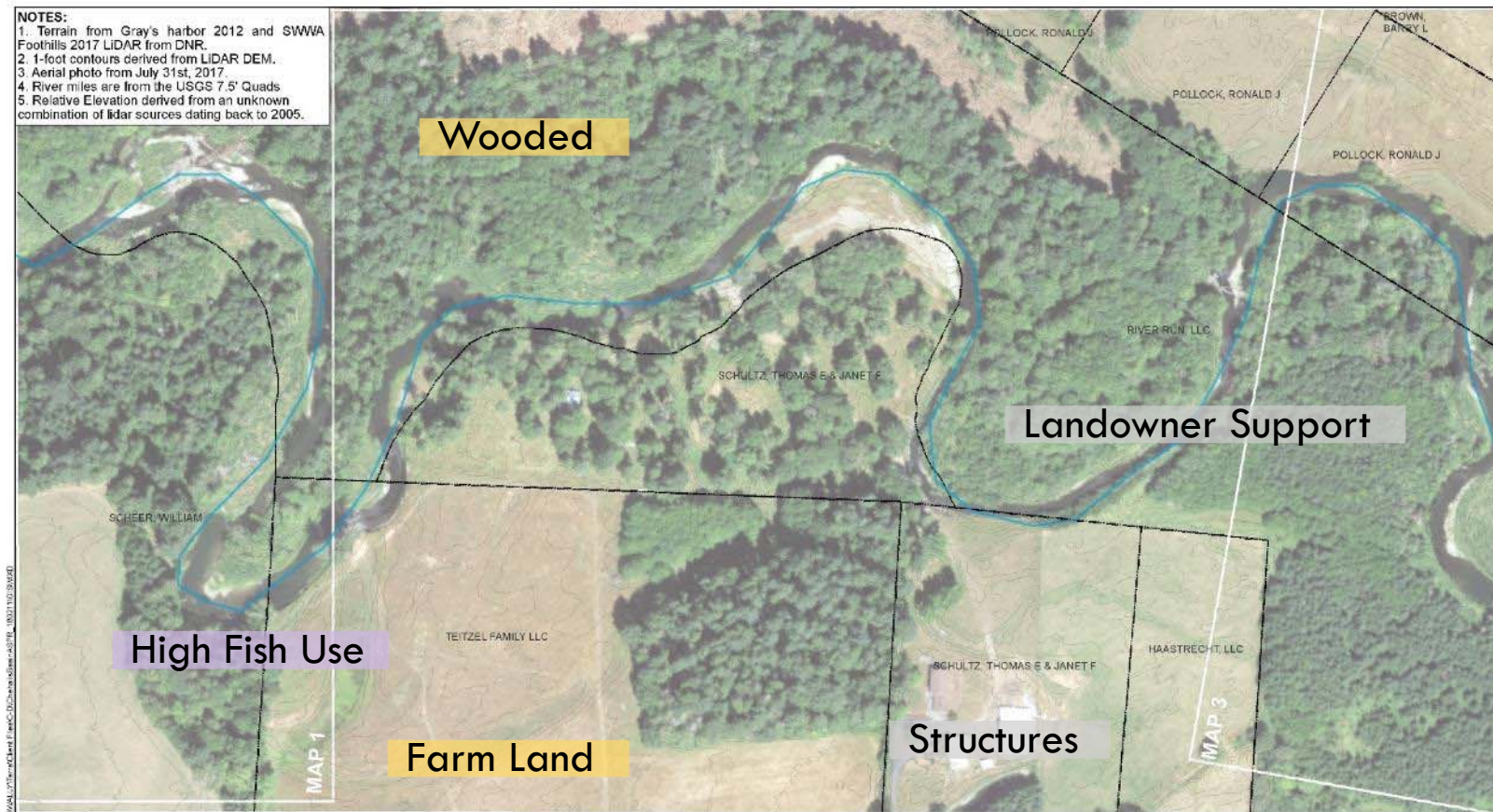
- Map Matchlines
- Parcels
- River Miles

River Survey - Full Reach

Early Action Reach RM: 10.9 to 13.0
South Fork Newaukum River, WA
Chehalis Basin ASRP Design

South Fork Newaukum | RM 10.9 – 13.0

Aerial Photo and Parcels



DRAFT



Projection: NAD 1983
State Plane Washington South FIPS 4602

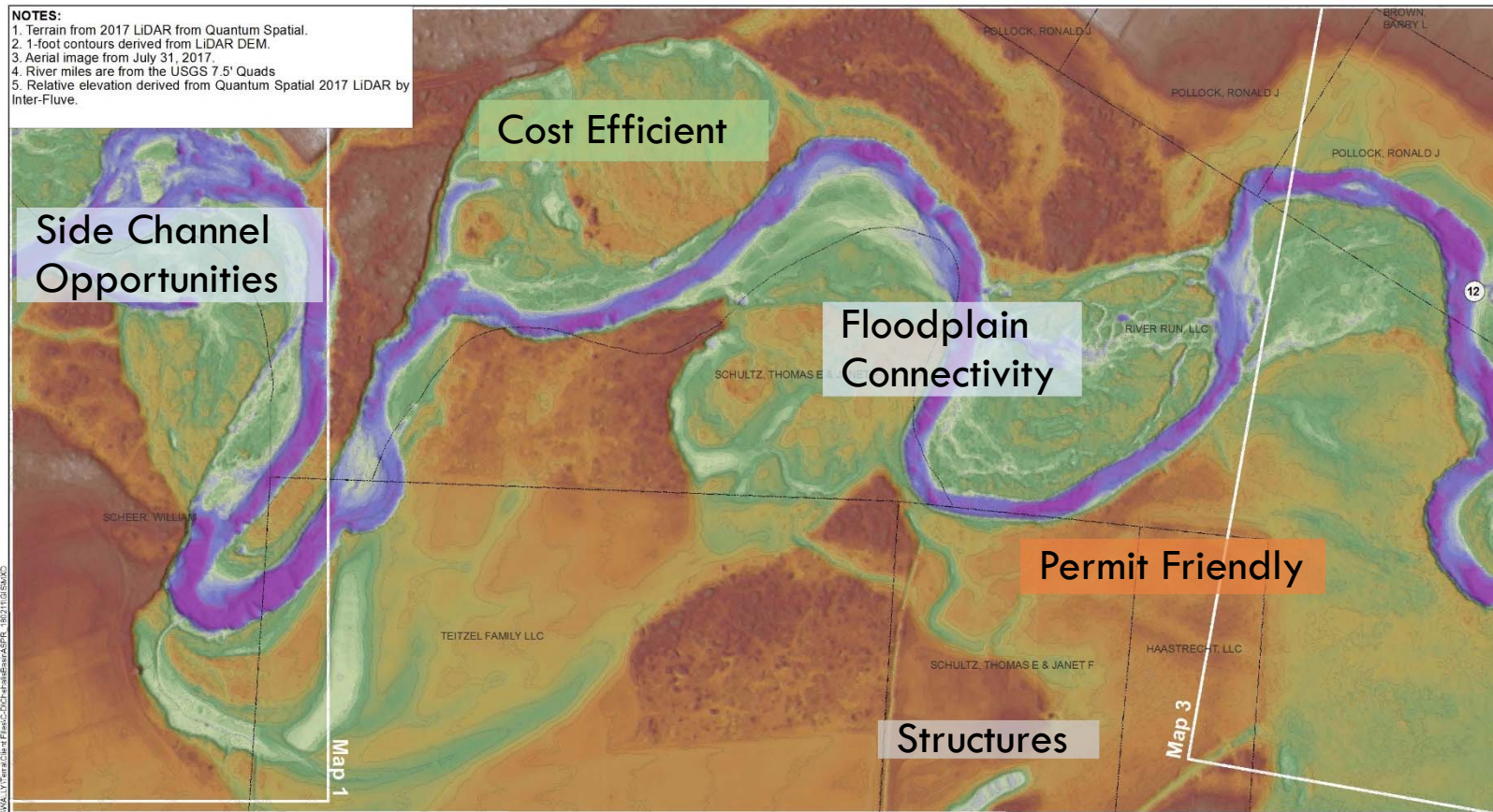


River Survey - Map 2 of 4

Early Action Reach RM: 10.9 to 13.0
South Fork Newaukum River, WA
Chehalis Basin ASRP Design

South Fork Newaukum | RM 10.9 – 13.0

Relative Elevation Map

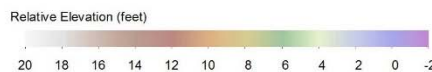


DRAFT



Projection: NAD 1983
State Plane Washington South FIPS 4602

0 200 400
Feet



- Map Matchlines
- Parcels
- 4 River Miles

River Survey - Map 2 of 4

Early Action Reach RM: 10.9 to 13.0
South Fork Newaukum River, WA
Chehalis Basin ASRP Design

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



Large Wood

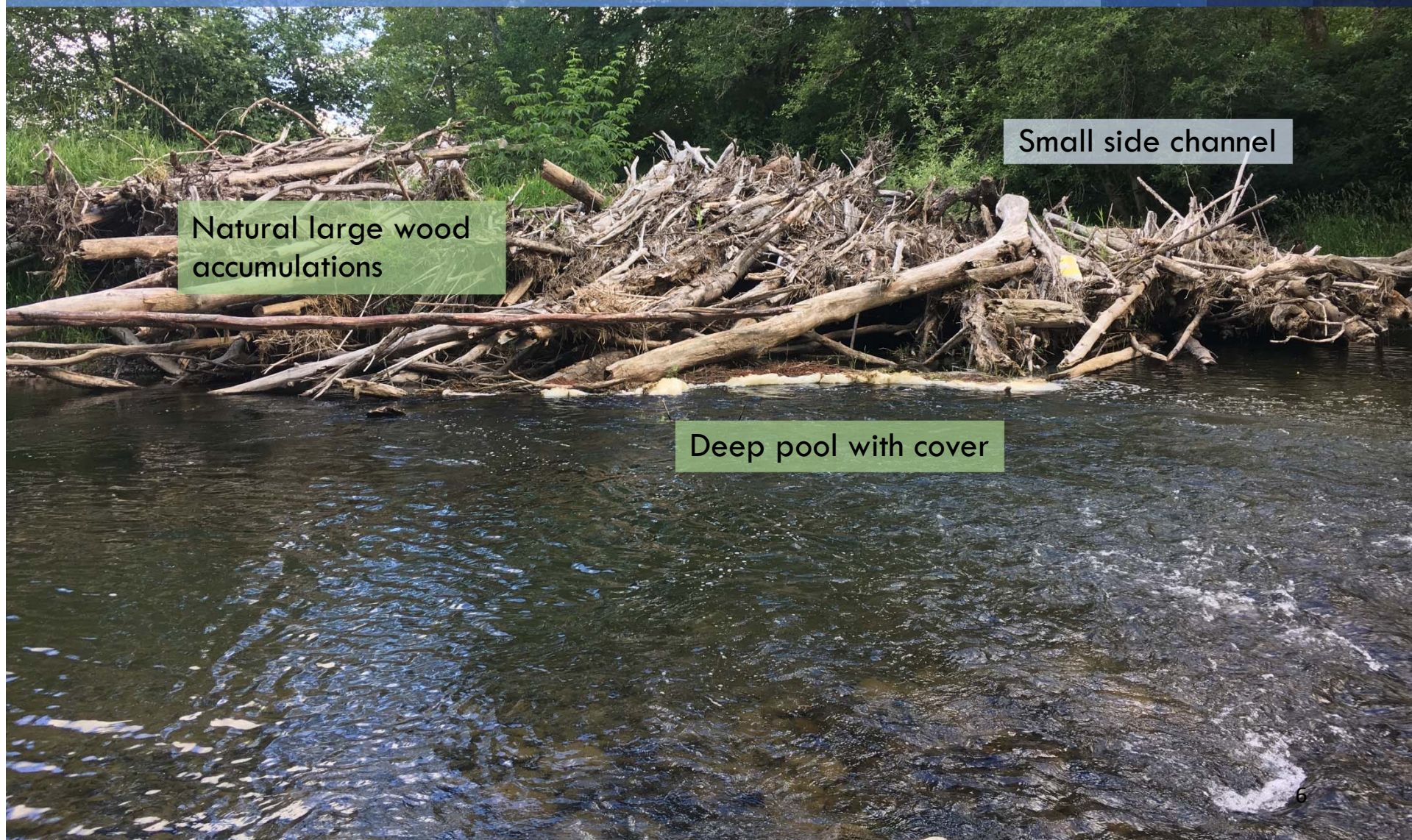
Deep Pools

Limited Shading

Clean Gravels

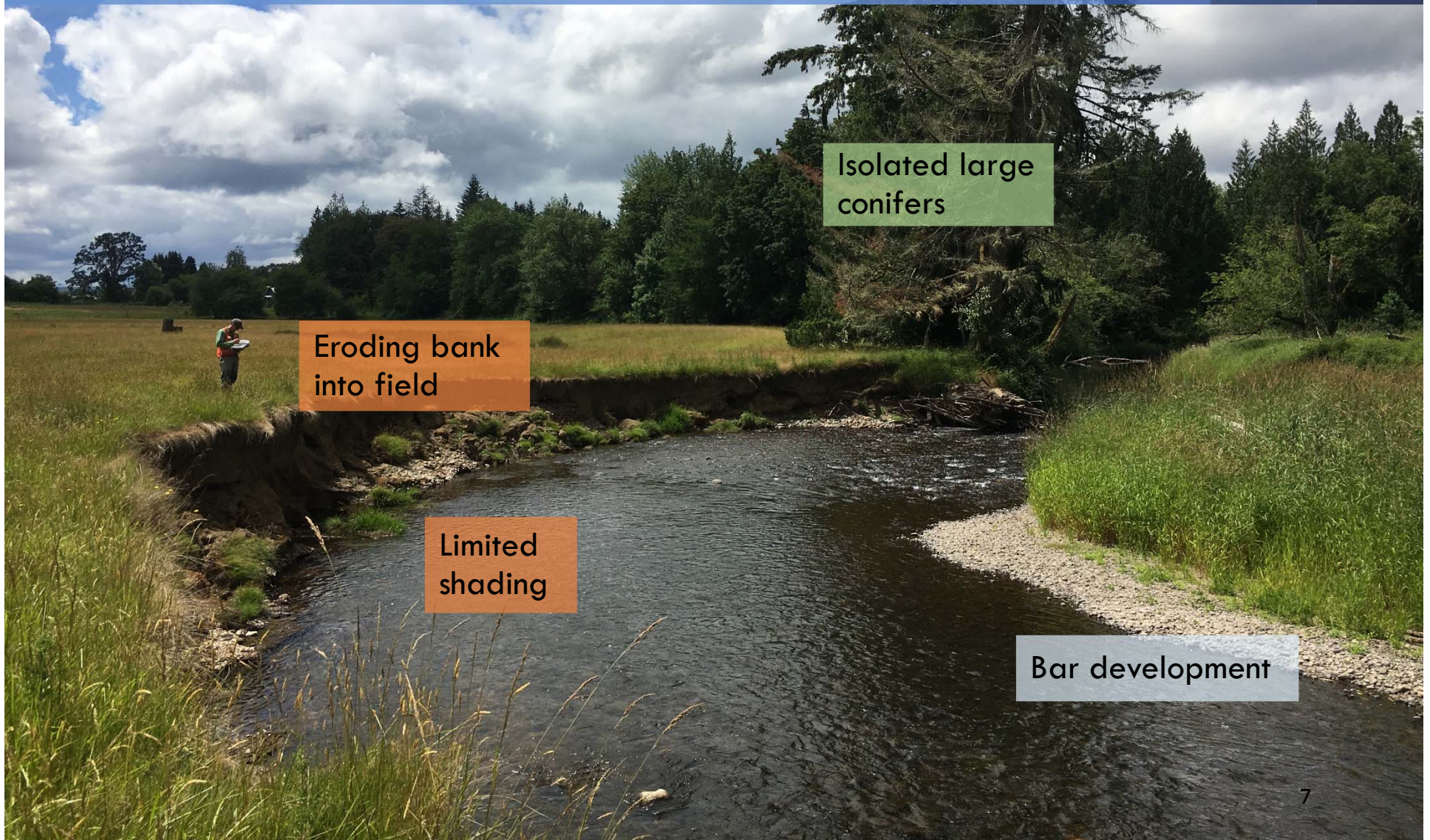
South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



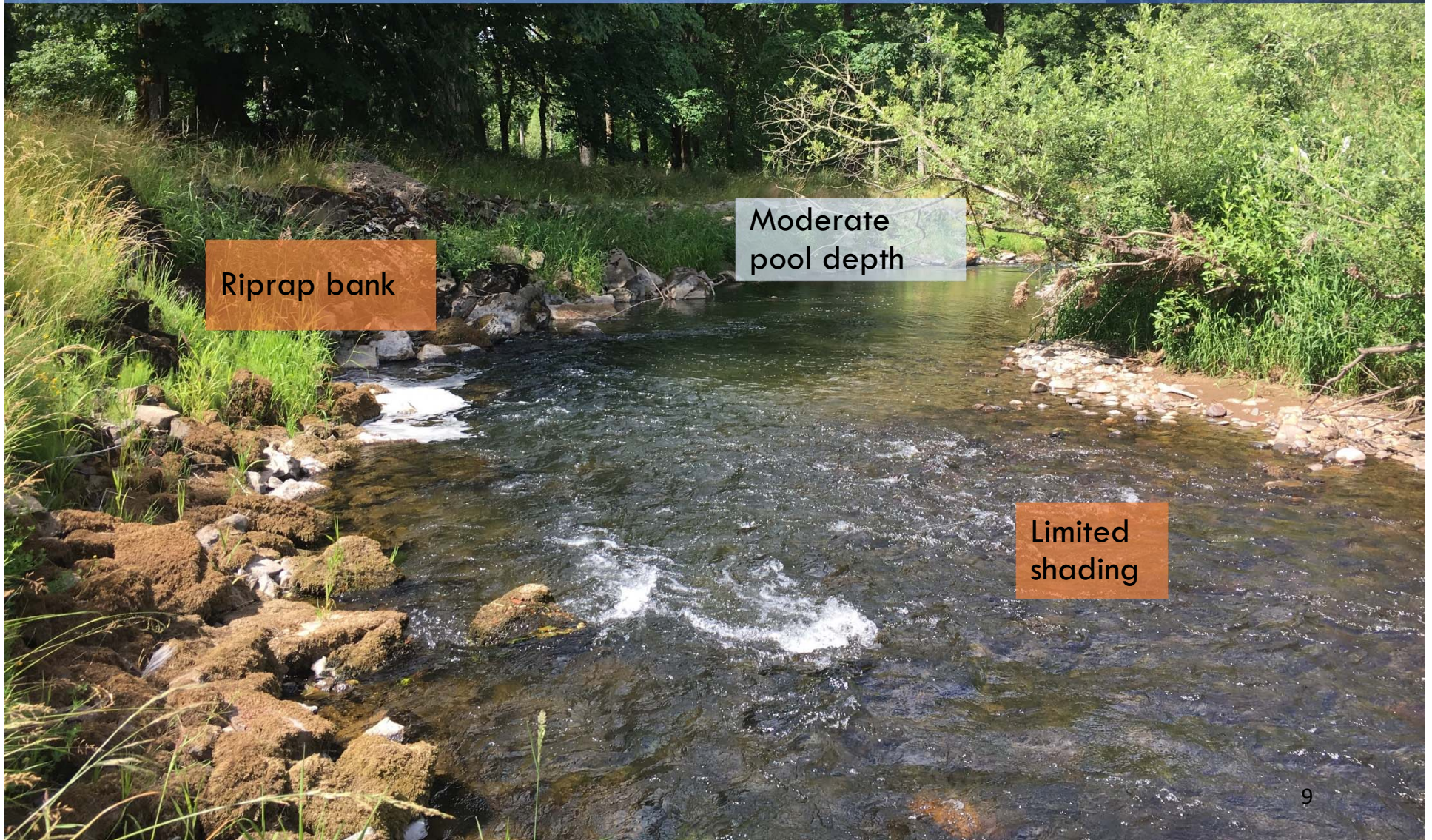
Deep pool
with no
structure

Limited
shading

Fencing to
the edge

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



Riprap bank

Moderate
pool depth

Limited
shading

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos

Young forest

Limited bar
development

High
banks

Plane bed
channel

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



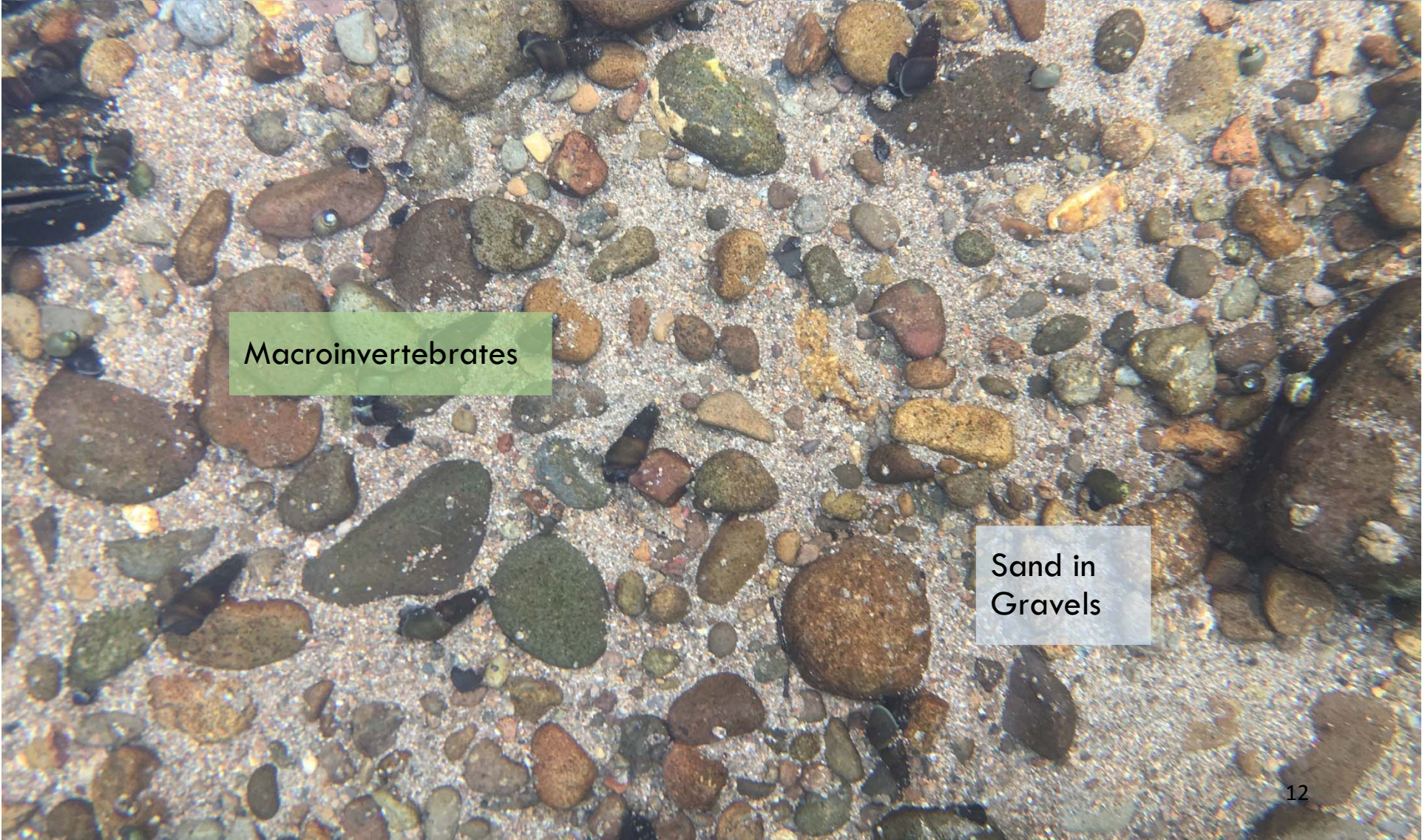
Macroinvertebrates

Clay and
Silts in
Gravels

Freshwater
mussels

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos




Macroinvertebrates

Sand in
Gravels

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos

A photograph of a forest landscape. In the foreground, there is a dense carpet of green ferns. Several tall, straight tree trunks rise from the forest floor. The background shows more trees and a glimpse of a blue sky. Three text labels are overlaid on the image: 'High terrace' in a grey box, 'Second growth forest' in a green box, and 'Native Plants' in a green box.

High terrace

Second
growth forest

Native Plants

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



Younger trees

Mowed access routes

Grassy
floodplain

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos

Levees and
riparian buffer
isolates the area

Invasive
vegetation

Old rearing
ponds

Limited
shading

South Fork Newaukum | RM 10.9 – 13.0

Representative Photos



Isolated
alcove

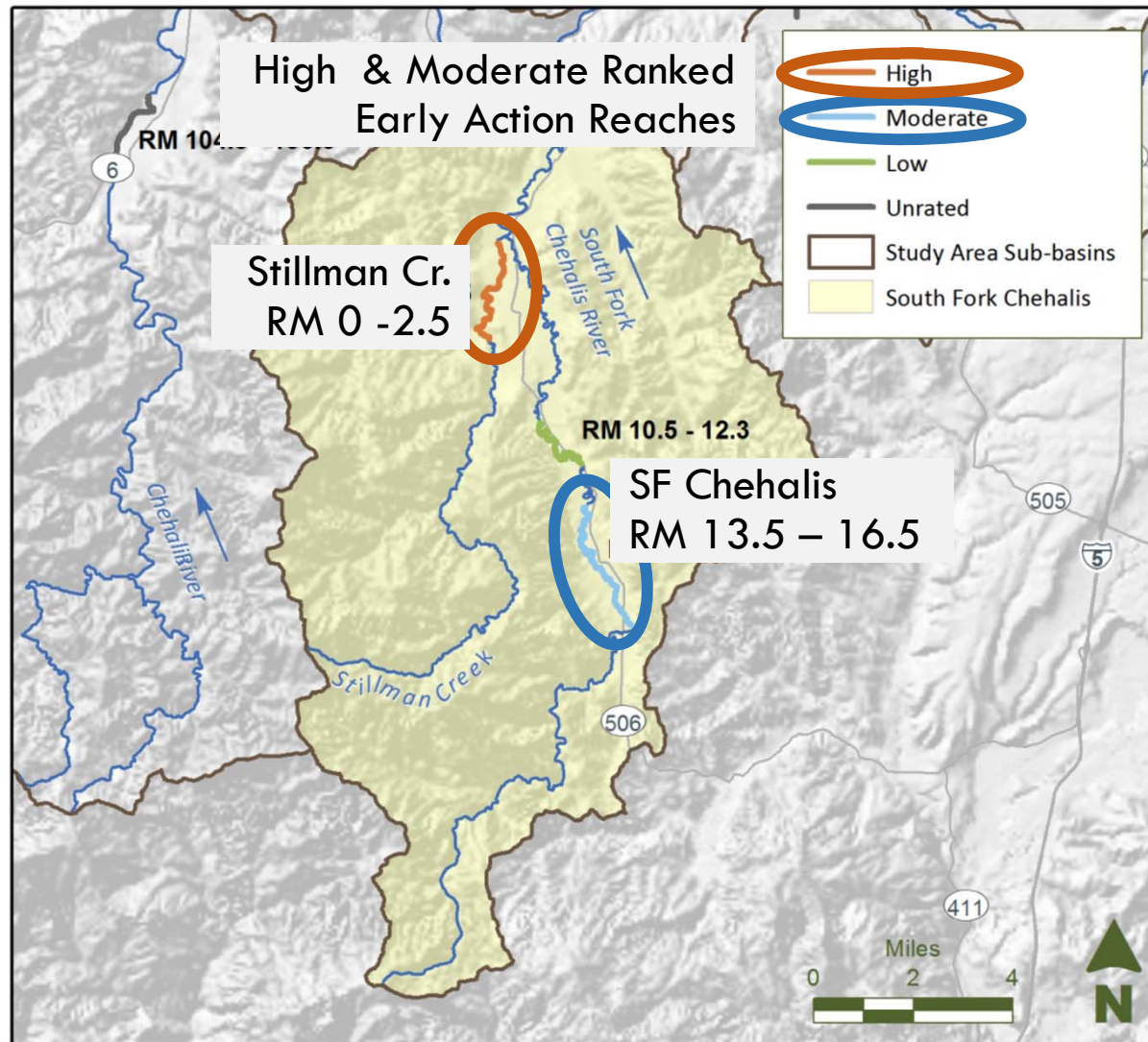
Grassy
floodplain

South Fork Newaukum | RM 10.9 – 13.0

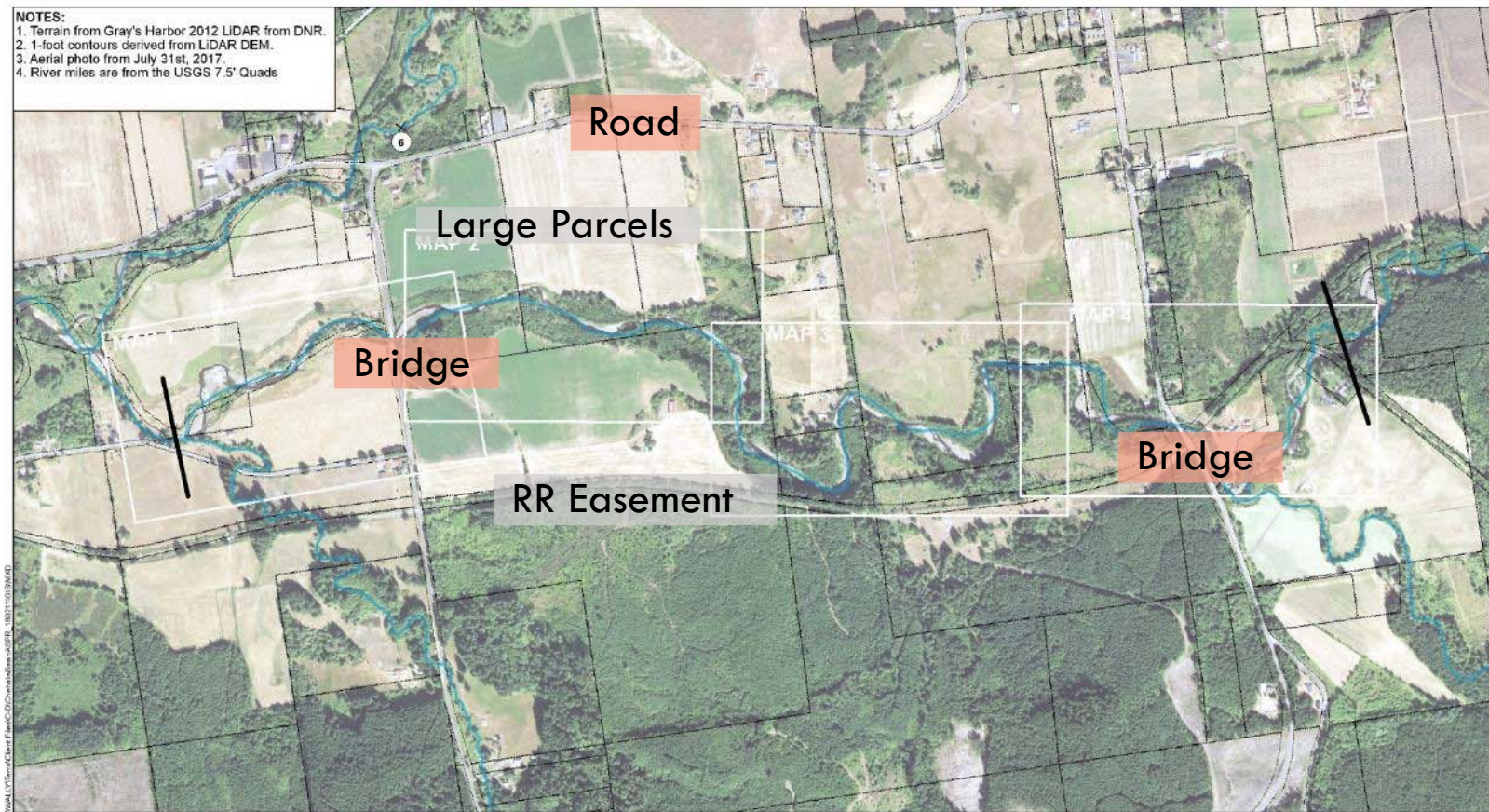
Reach Summary

Criteria	RM 10.9 – 13.0
Ecological Metrics	Connected floodplain, side chls.
Fish & Other Species Use	Salmon use, freshwater mussels
Natural Process	Wooded, planform freedom
Landowner Support	Large parcels, willing
Risk & Public Safety	Bridges
Permitting	No issues identified
Project Unit Cost	Cost effective
Summary	Cool projects, willing owners

South Fork Chehalis Sub-Basin



Stillman Creek RM 0 – 2.5



DRAFT



Projection: NAD 1983
 State Plane Washington South FIPS 4602



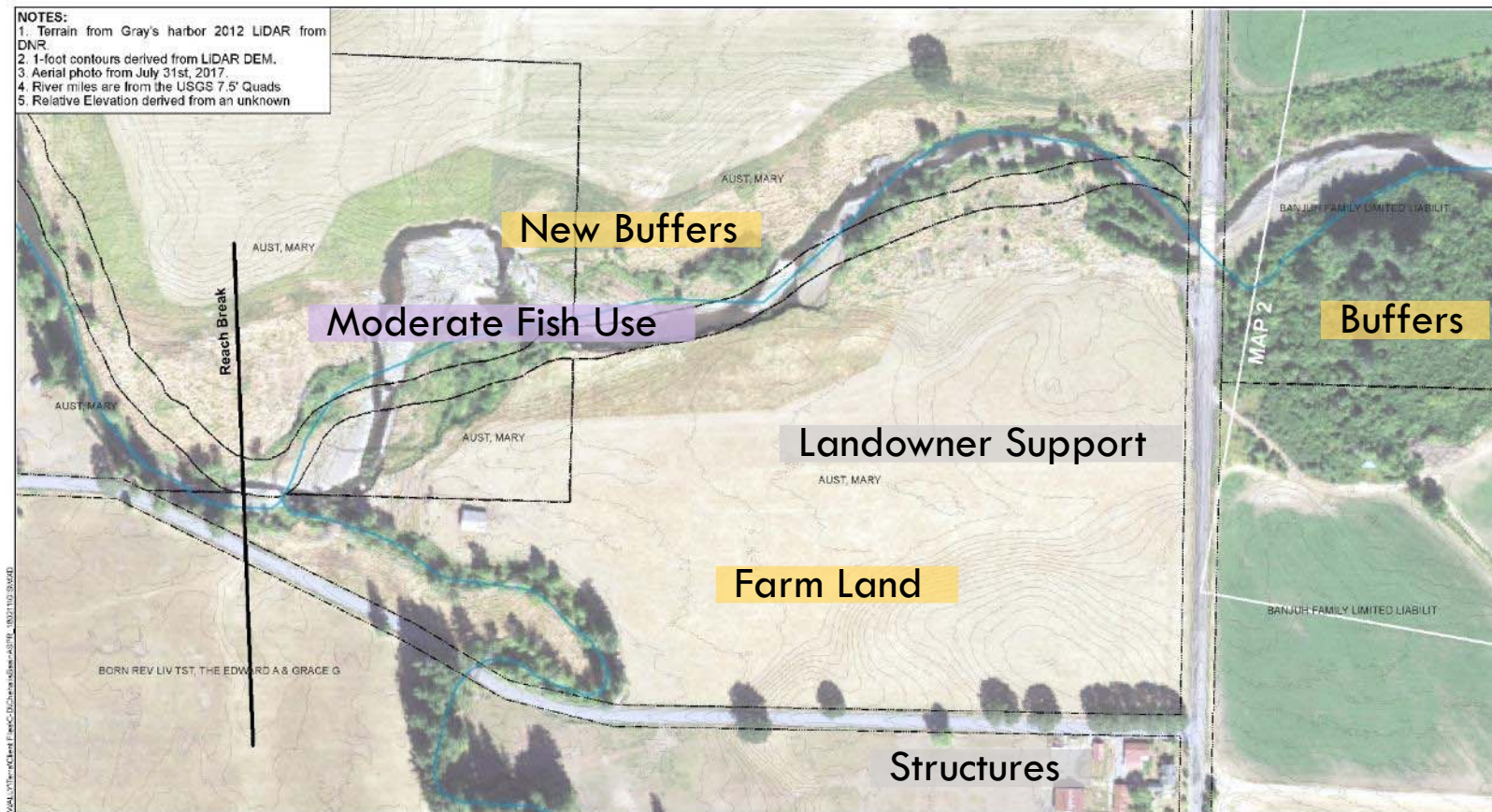
- Map Matchlines
- Parcels
- River Miles

River Survey - Full Reach

Early Action Reach RM: 0 to 2.5
 Stillman Creek, WA
 Chehalis Basin ASRP Design

Stillman Creek | RM 0 – 2.5

Aerial Photo and Parcels



DRAFT



Projection: NAD 1983
 State Plane Washington South FIPS 4602



Feet
 0 200 400

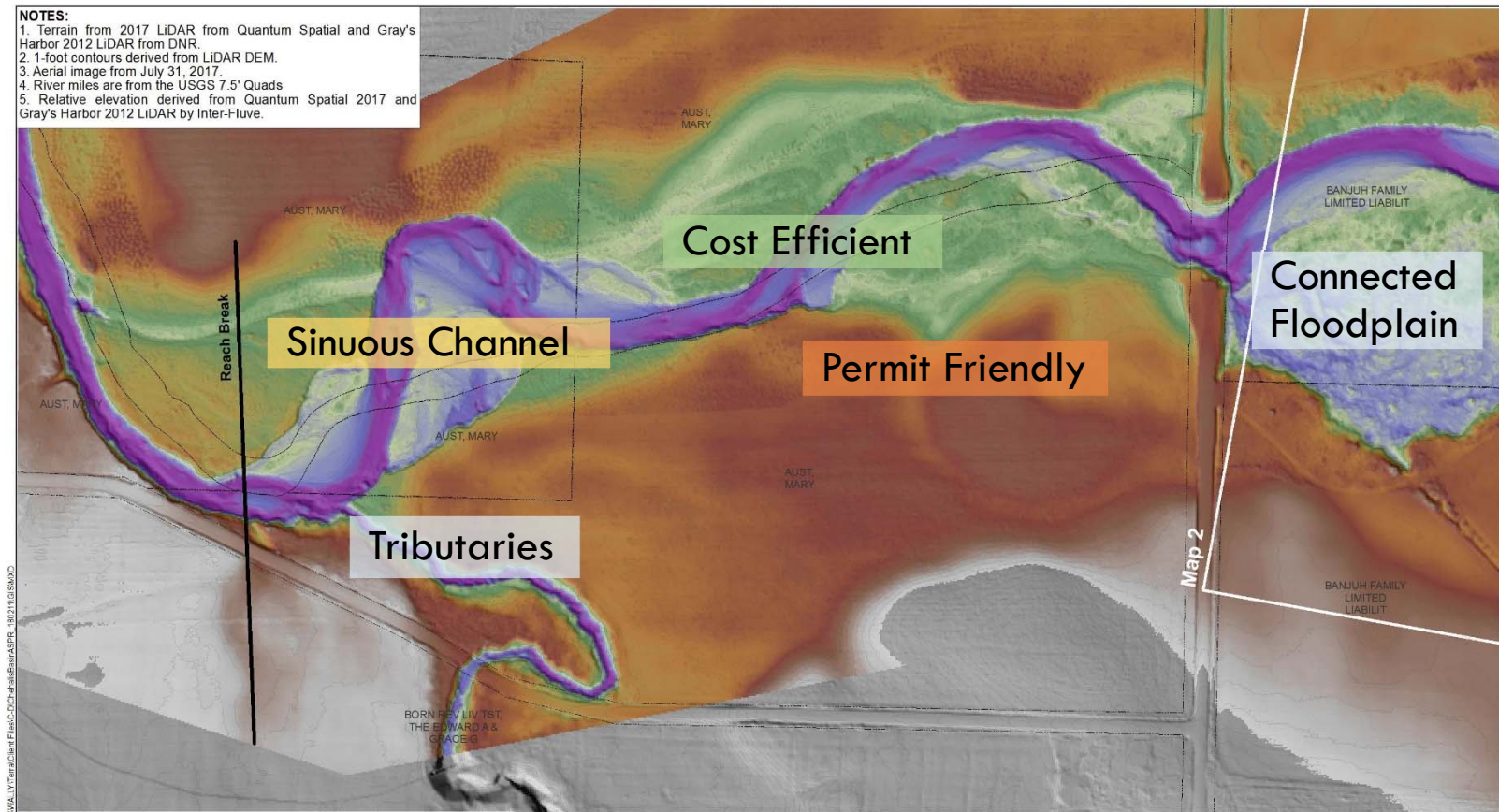
Contours 1ft
 Map Matchlines
 Parcels
 River Miles

River Survey - Map 1 of 4

Early Action Reach RM: 0 to 2.5
 Stillman Creek, WA
 Chehalis Basin ASRP Design

Stillman Creek | RM 0 – 2.5

Relative Elevation Map



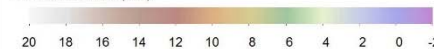
DRAFT



Projection: NAD 1983
State Plane Washington South FIPS 4602



Relative Elevation (feet)



- Map Matchlines
- Parcels
- River Miles

River Survey - Map 1 of 4

Early Action Reach RM: 0 to 2.5
Stillman Creek, WA
Chehalis Basin ASRP Design

Stillman Creek | RM 0 – 2.5

Representative Photos



Fair Riparian

Large wood

Channel
complexity

Stillman Creek | RM 0 – 2.5

Representative Photos



Stillman Creek | RM 0 – 2.5

Representative Photos

Limited riparian

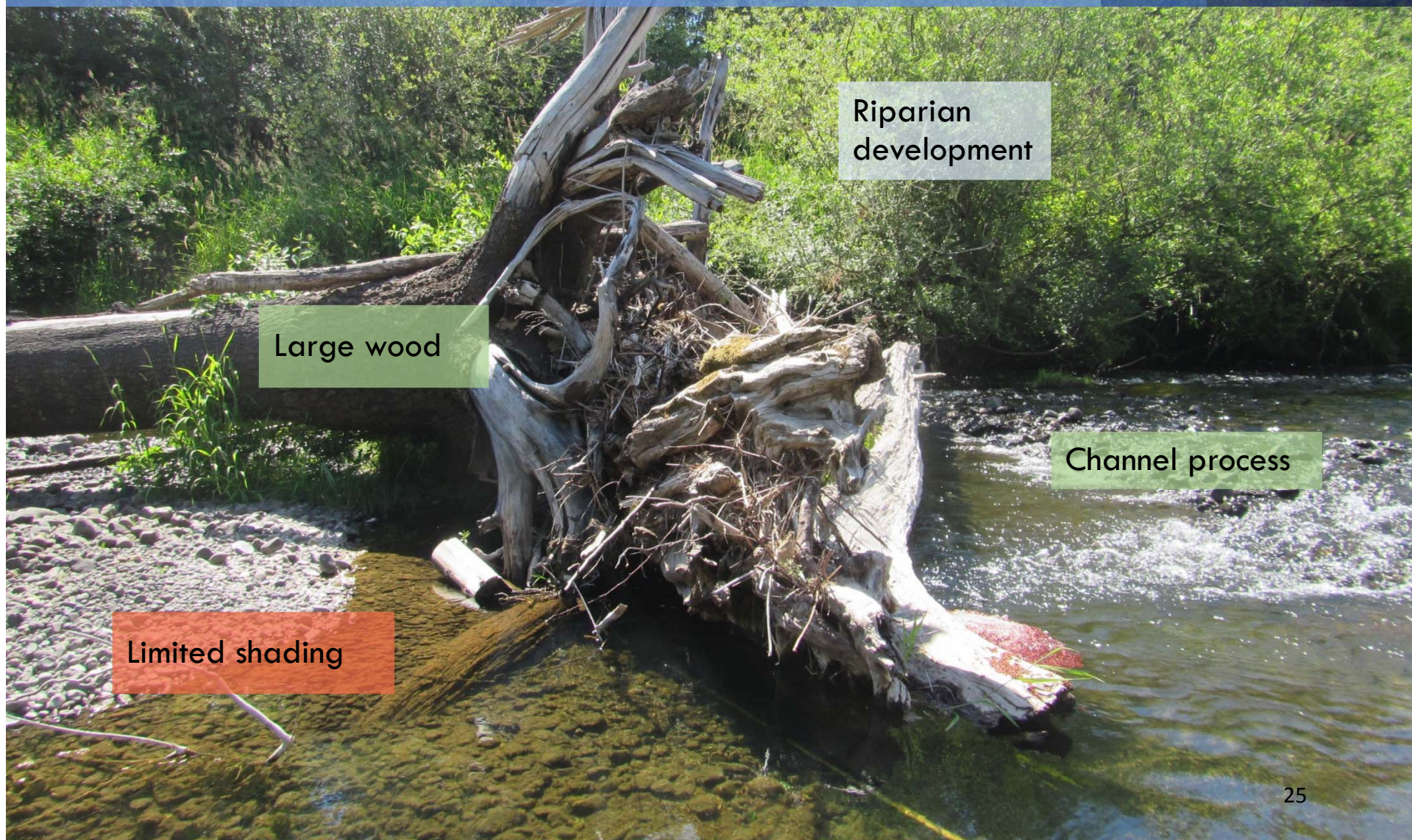
High
banks

Pools with
limited cover

Bar
development

Stillman Creek | RM 0 – 2.5

Representative Photos



Riparian
development

Large wood

Channel process

Limited shading

Stillman Creek | RM 0 – 2.5

Representative Photos



Riparian re-growth

Old large wood

Limited
shading

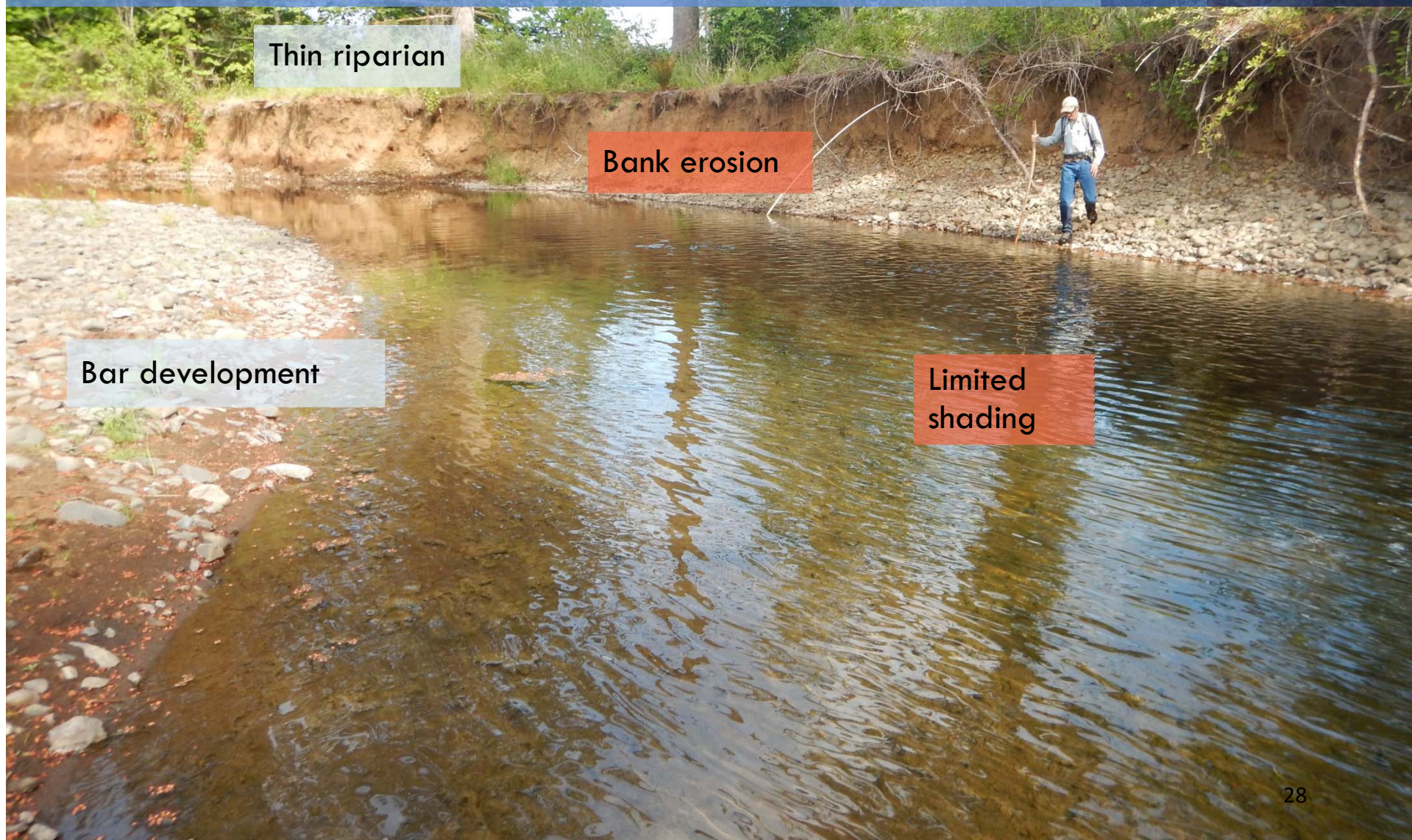
Stillman Creek | RM 0 – 2.5

Representative Photos



Stillman Creek | RM 0 – 2.5

Representative Photos



Thin riparian

Bank erosion

Bar development

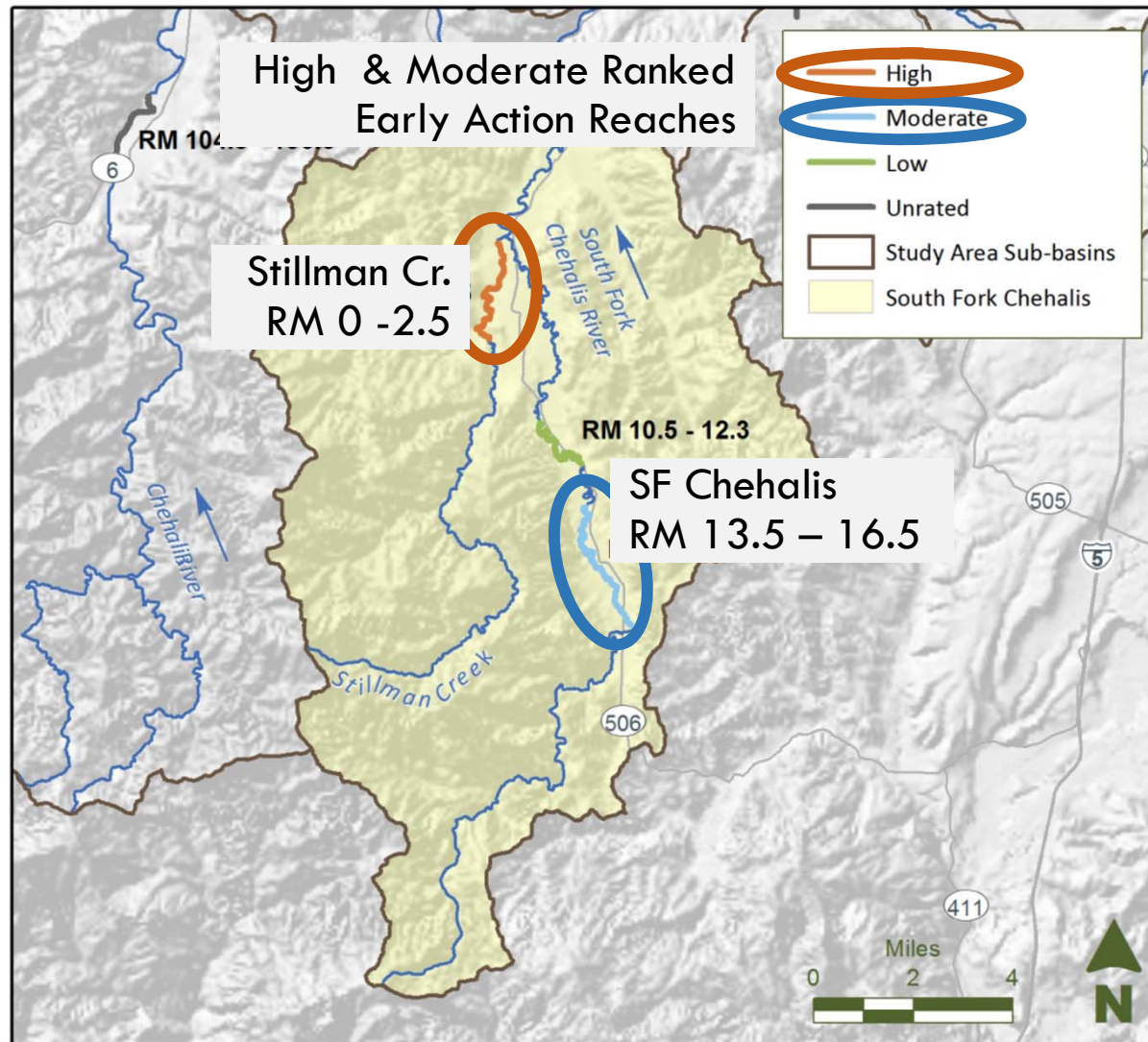
Limited shading

Stillman Creek | RM 0 – 2.5

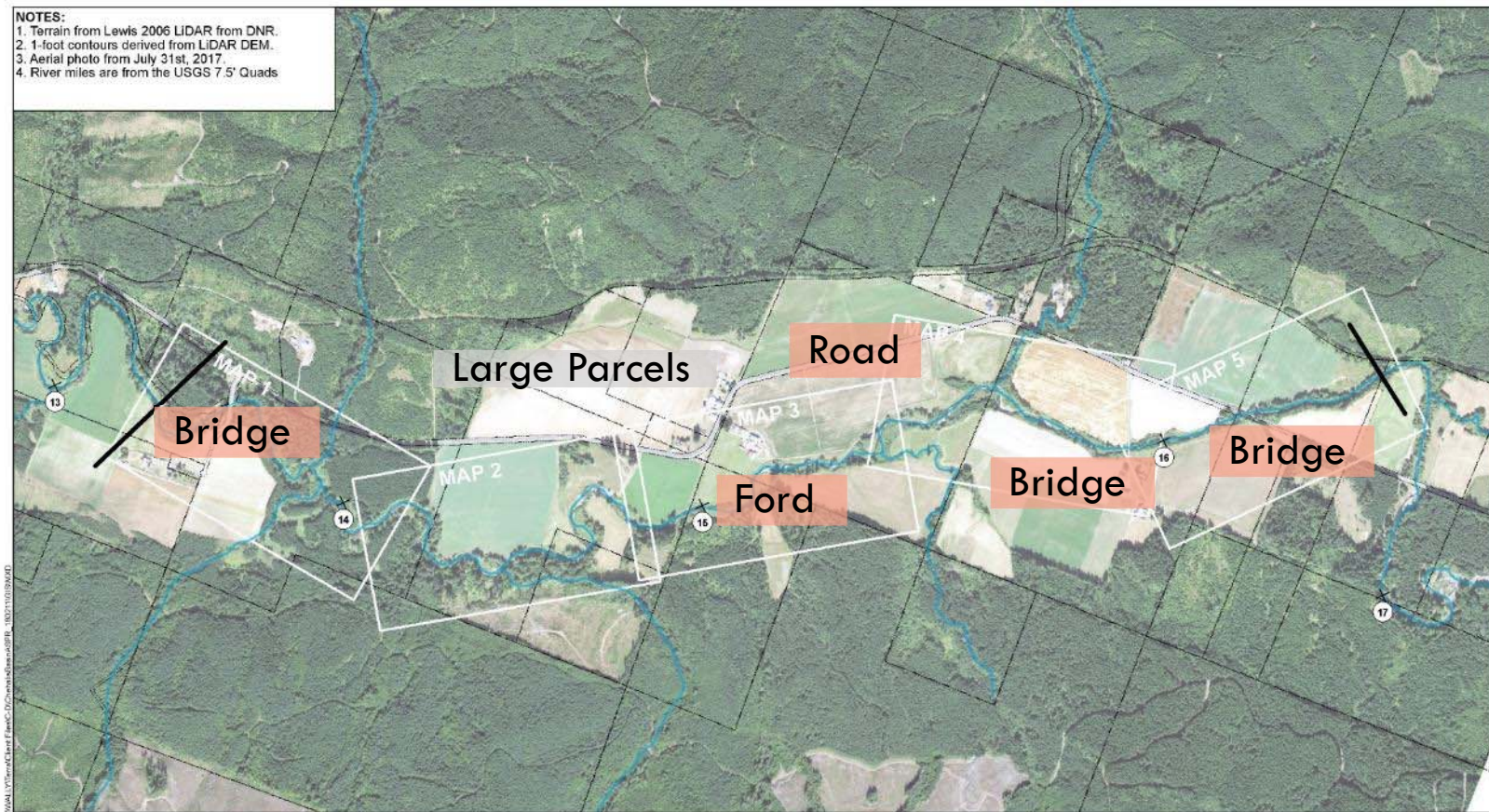
Reach Summary

Criteria	Stillman Cr. RM 0-2.5
Ecological Metrics	Tributaries, connected floodplain
Fish & Other Species Use	Salmon
Natural Process	Farm land, new buffers, sinuosity
Landowner Support	Large parcels
Risk & Public Safety	Bridges
Permitting	Permittable
Project Unit Cost	Cost effective
Summary	Cost effective project opportunities

South Fork Chehalis Sub-Basin



South Fork Chehalis RM 13.5 – 16.5



DRAFT



Projection: NAD 1983
 State Plane Washington South FIPS 4602

Feet
 0 800 1,600

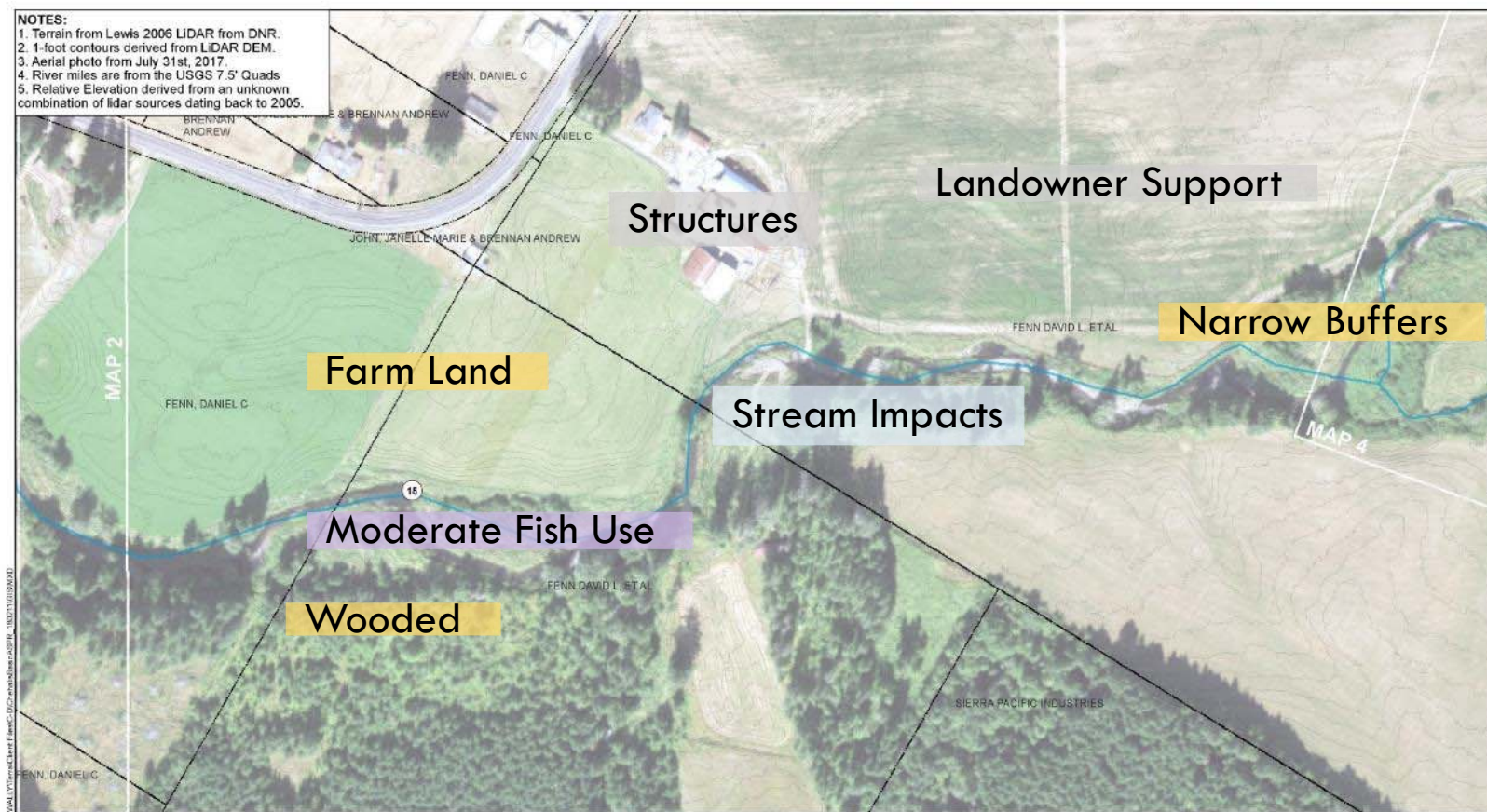
- Map Matchlines
- Parcels
- River Miles

River Survey - Full Reach

Early Action Reach RM: 13.5 to 16.5
 Middle South Fork Chehalis River, WA
 Chehalis Basin ASRP Design

South Fork Chehalis | RM 13.5 – 16.5

Aerial Photo and Parcels



DRAFT



Projection: NAD 1983
 State Plane Washington South FIPS 4602

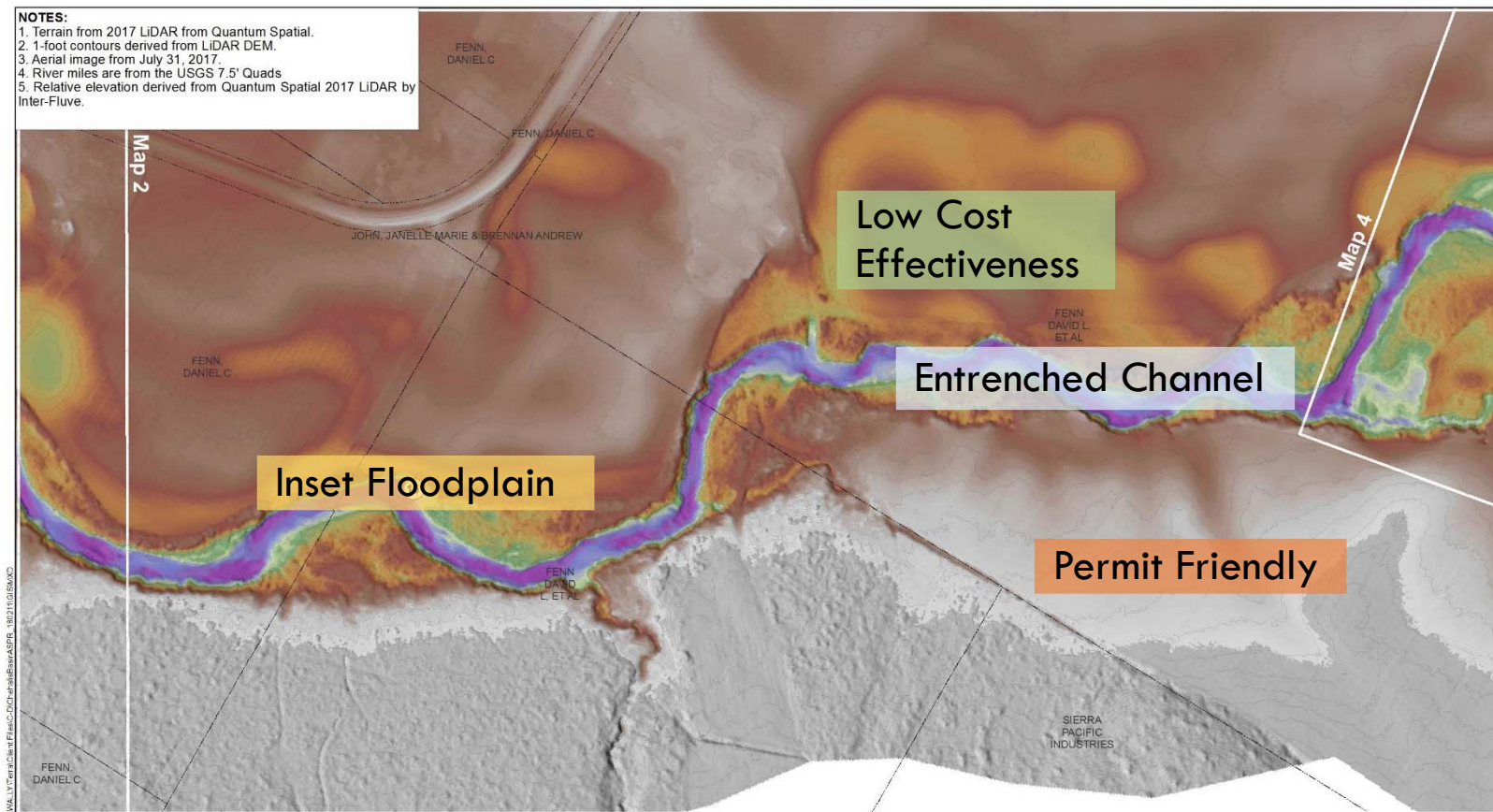


River Survey - Map 3 of 5

Early Action Reach RM: 13.5 to 16.5
 Middle South Fork Chehalis River, WA
 Chehalis Basin ASRP Design

South Fork Chehalis | RM 13.5 – 16.5

Relative Elevation Map



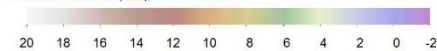
DRAFT



Projection: NAD 1983
State Plane Washington South FIPS 4602



Relative Elevation (feet)




- Map Matchlines
- Parcels
- River Miles

River Survey - Map 3 of 5

Early Action Reach RM: 13.5 to 16.5
Middle South Fork Chehalis River, WA
Chehalis Basin ASRP Design

South Fork Chehalis | RM 13.5 – 16.5

Representative Photos



Sparse
mature trees

Pools without
cover

Channel
entrenchment

South Fork Chehalis | RM 13.5 – 16.5

Representative Photos



High banks

Bar development

Limited shade


South Fork Chehalis | RM 13.5 – 16.5

Representative Photos



South Fork Chehalis | RM 13.5 – 16.5

Representative Photos

A photograph of a large, weathered tree trunk in a grassy field. The tree trunk is heavily textured with vertical grooves and is surrounded by green grass and some dry brush. A yellow tag is attached to the trunk. A thin wire runs across the foreground.

What once was

Pasture corner

South Fork Chehalis | RM 13.5 – 16.5

Representative Photos



High banks

Bar
development

Limited
riparian

South Fork Chehalis | RM 13.5 – 16.5

Reach Summary

Criteria	MSFC RM13.5-16.5
Ecological Metrics	Incised channel & inset floodplain
Fish & Other Species Use	Salmon & Western Toad
Natural Process	Farm land, narrow buffers
Landowner Support	Large parcels
Risk & Public Safety	Bridges & roads
Permitting	Permittable, no wetland mitigation
Project Unit Cost	Low cost effectiveness
Summary	Big projects, high unit cost

Newaukum Sub-Basin Reach Evaluation Summary

Criteria	RM10.9-13.0	RM 23.1-25.1
Ecological Metrics	Best	Good
Fish & Other Species Use	Good	Fair
Natural Process	Best	Fair
Landowner Support	Best	Fair
Risk & Public Safety	Best	Good
Permitting	Best	Fair
Project Unit Cost	Good	Fair
Summary	Best	Fair

South Fork Chehalis Sub-Basin Reach Evaluation Summary

Criteria	MSFC RM13.5-16.5	Stillman RM 0-2.5
Ecological Metrics	Fair	Good
Fish & Other Species Use	Fair	Fair
Natural Process	Fair	Good
Landowner Support	Good	Good
Risk & Public Safety	Fair	Good
Permitting	Good	Good
Project Unit Cost	Fair	Good
Summary	Fair	Good

Ecological Metrics

- Ecological metrics are a combination of a number of factors:
 - Side channels
 - Floodplain
 - Channel length
 - Wetlands
 - Riparian community
 - Wood structures
 - Pools
- A high score shows more ecological benefit than a low score

Fish & Other Species Use

- Fish & other species use is a combination of a number of factors:
 - Steelhead (adult migration, spawning, rearing)
 - Fall Chinook (adult migration, spawning, rearing)
 - Spring Chinook (adult migration, spawning, rearing)
 - Coho (adult migration, spawning, rearing)
 - Chum (adult migration, spawning, rearing)
 - Other species (Western Toad, Coastal Tailed Frog, Oregon Spotted Frog, Van Dyke's Salamander, Northern Red-legged Frog, Western Ridge Mussel, Beaver)
- A high score shows more benefit to more numbers of species than a low score

Natural Process

- Natural process is a representation of the consistency with and sustainability of a approach
 - Does restoration support natural processes?
 - Are there opportunities for the preservation of high quality habitat?
- A high score is better than a low score



Landowner Support

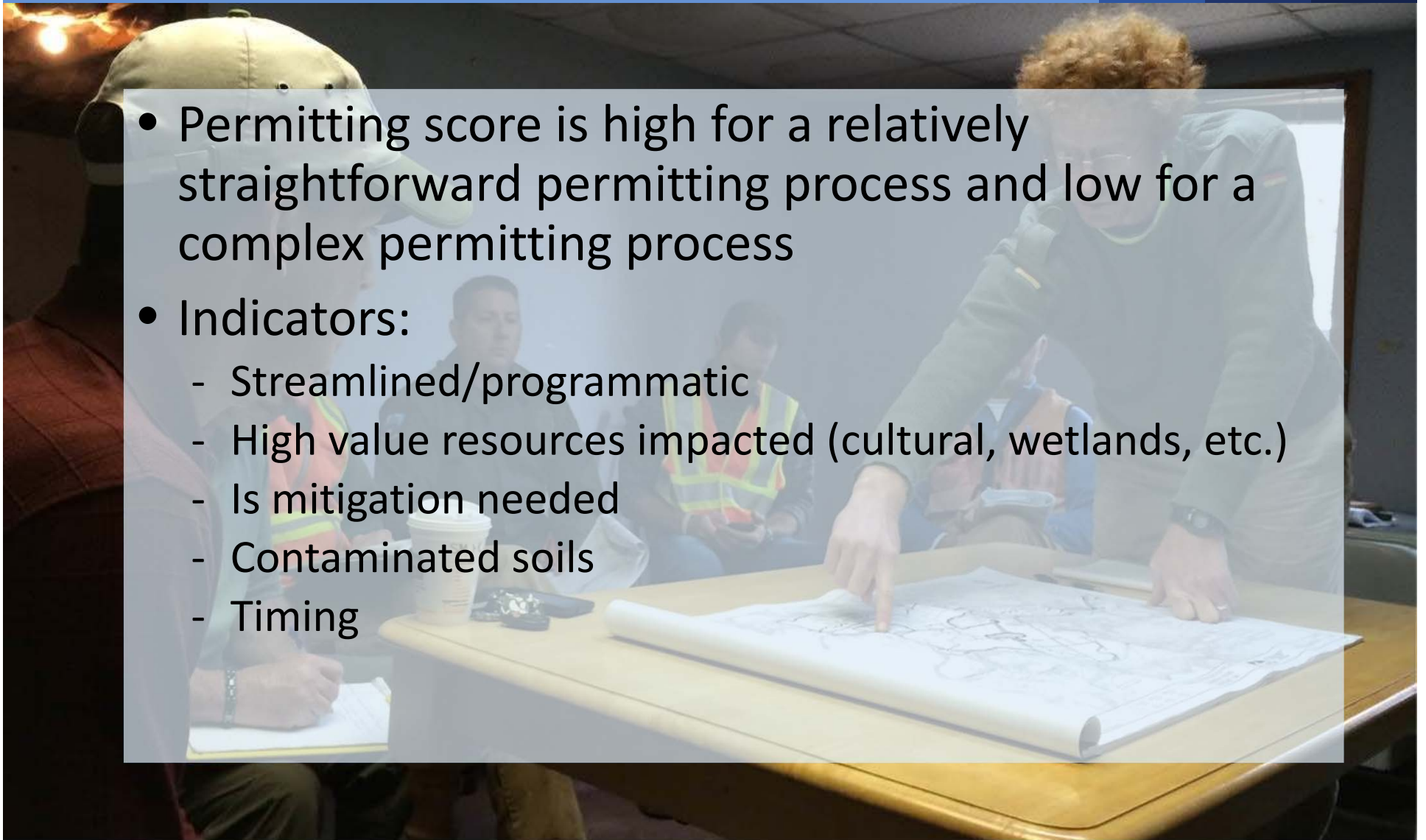
- Landowner support is a combination of a number of factors:
 - Number of landowners per mile
 - Willingness (if known)
 - Public landownership
 - Active use? (e.g. ag, residential, forest)
 - Percent of area within willing landowners
- A high score shows more support by landowners than a low score

Risk & Public Safety

- Risk & Public Safety score is high for low levels of risk and public safety concerns:
 - Arterial roads in floodplain channel migration zone
 - Bridges in or downstream of reach
 - Utilities
 - Houses/structures
 - Levees (flood protection)
 - Recreation (public safety)
- The score is low for high levels of risk and public safety concerns

Permitting

- Permitting score is high for a relatively straightforward permitting process and low for a complex permitting process
- Indicators:
 - Streamlined/programmatic
 - High value resources impacted (cultural, wetlands, etc.)
 - Is mitigation needed
 - Contaminated soils
 - Timing



Project Unit Cost

- Project costs are by unit (area, length, etc.) to normalize for large simple projects compared to small complex projects that may have similar total costs
- A high score is better than a low score

