Hydro-Geologic Natural System Functions and Resiliency: Anderson Valley, California

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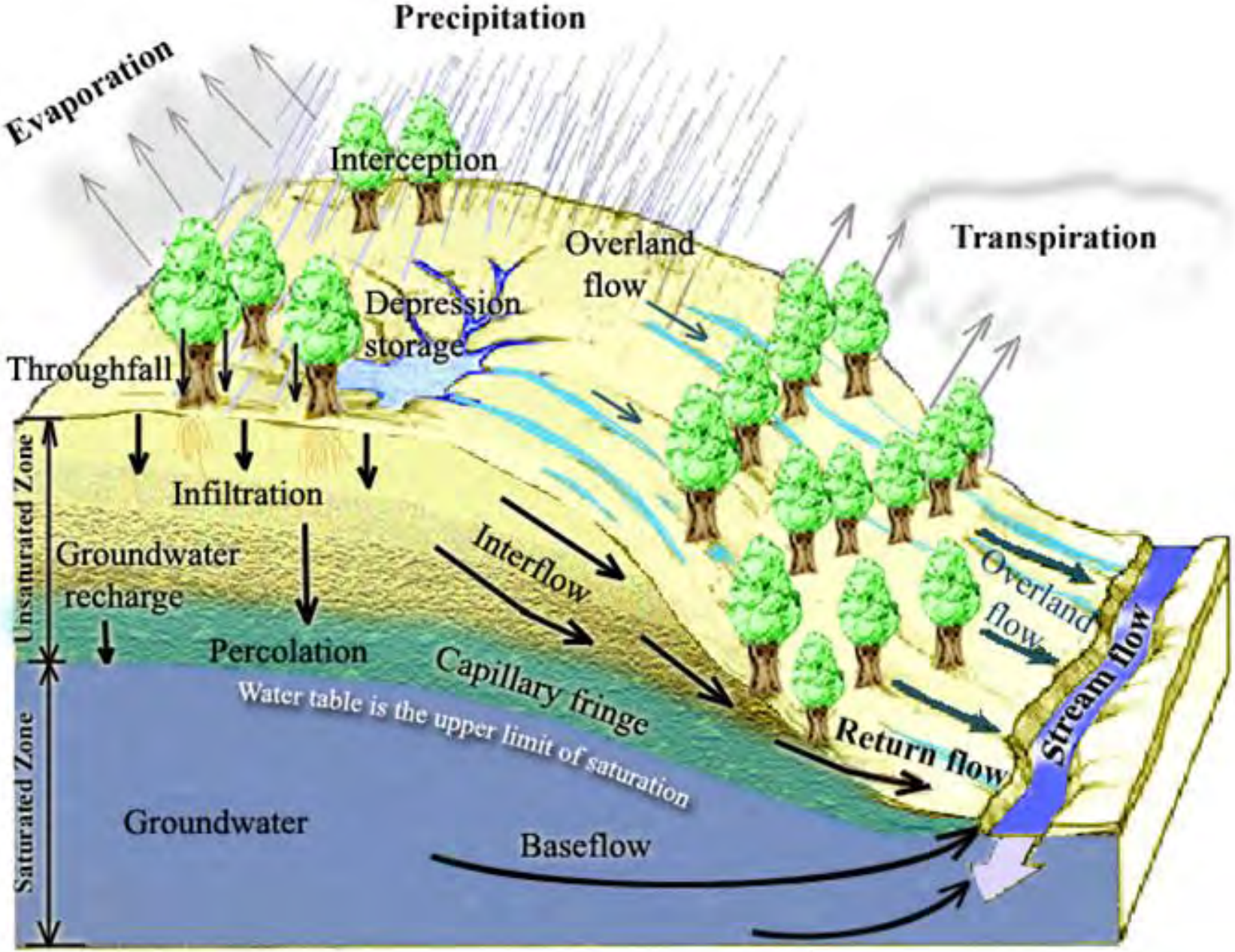
Presentation:

- Key watershed functions: geology, soils, landscape
- Human impacts on healthy hydrogeologic functions
- Anderson Valley: Current status
- Natural resilience: How do we define and measure?
- What can we do?

Key watershed functions: geology, soils, landscape


Precipitation
Evaporation
Interception
Overland flow
Transpiration
Depression storage
Throughfall
Infiltration
Unsaturated Zone
Groundwater recharge
Interflow
Percolation
Capillary fringe
Water table is the upper limit of saturation
Overland flow
Stream flow
Return flow
Saturated Zone
Groundwater
Baseflow

Sediment production (infiltration/runoff → soil erosion)

Human impacts on healthy hydrogeologic functions

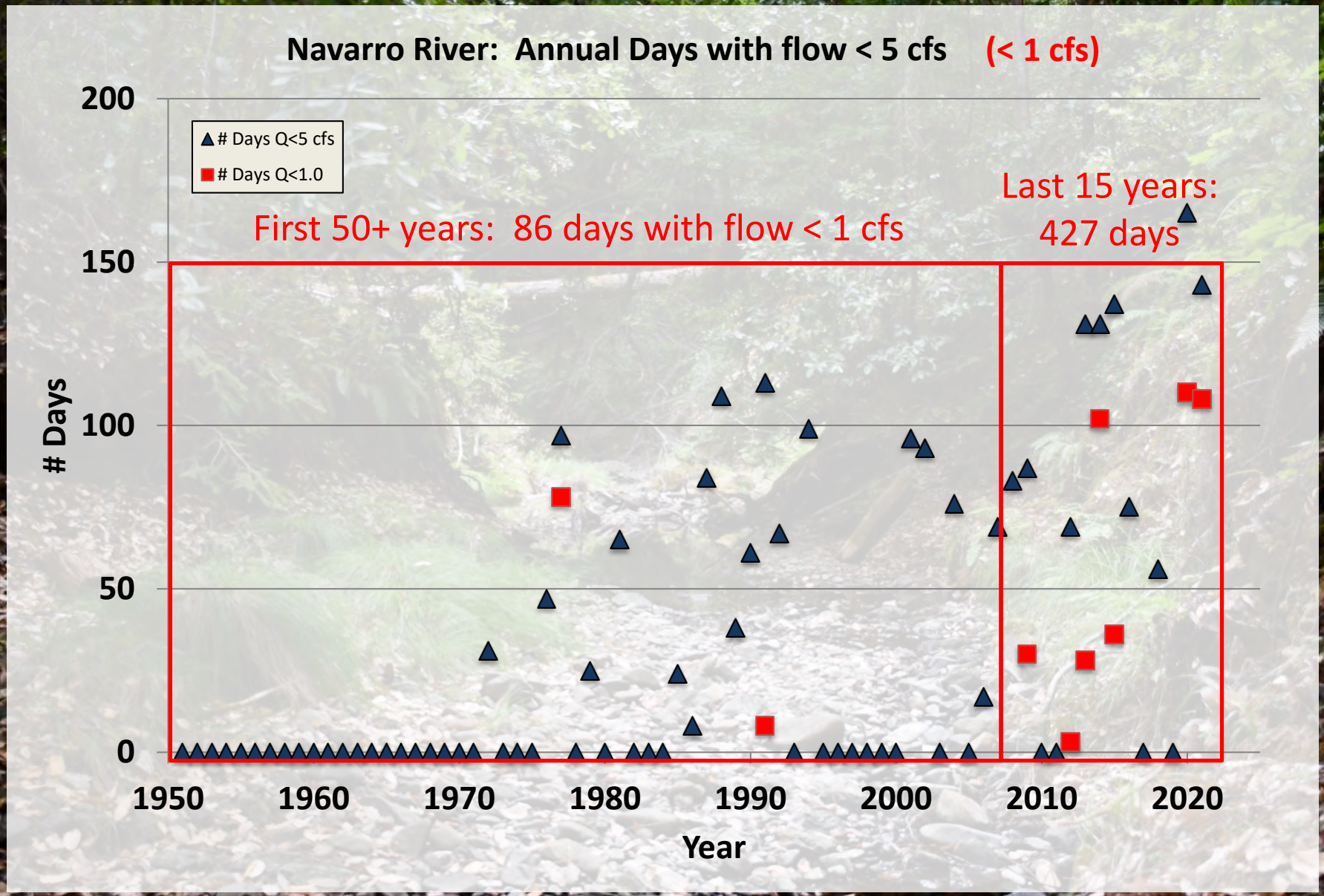
Soil health:
Organic matter, root penetration, infiltration, erosion control

Streams incision – lowers the water table

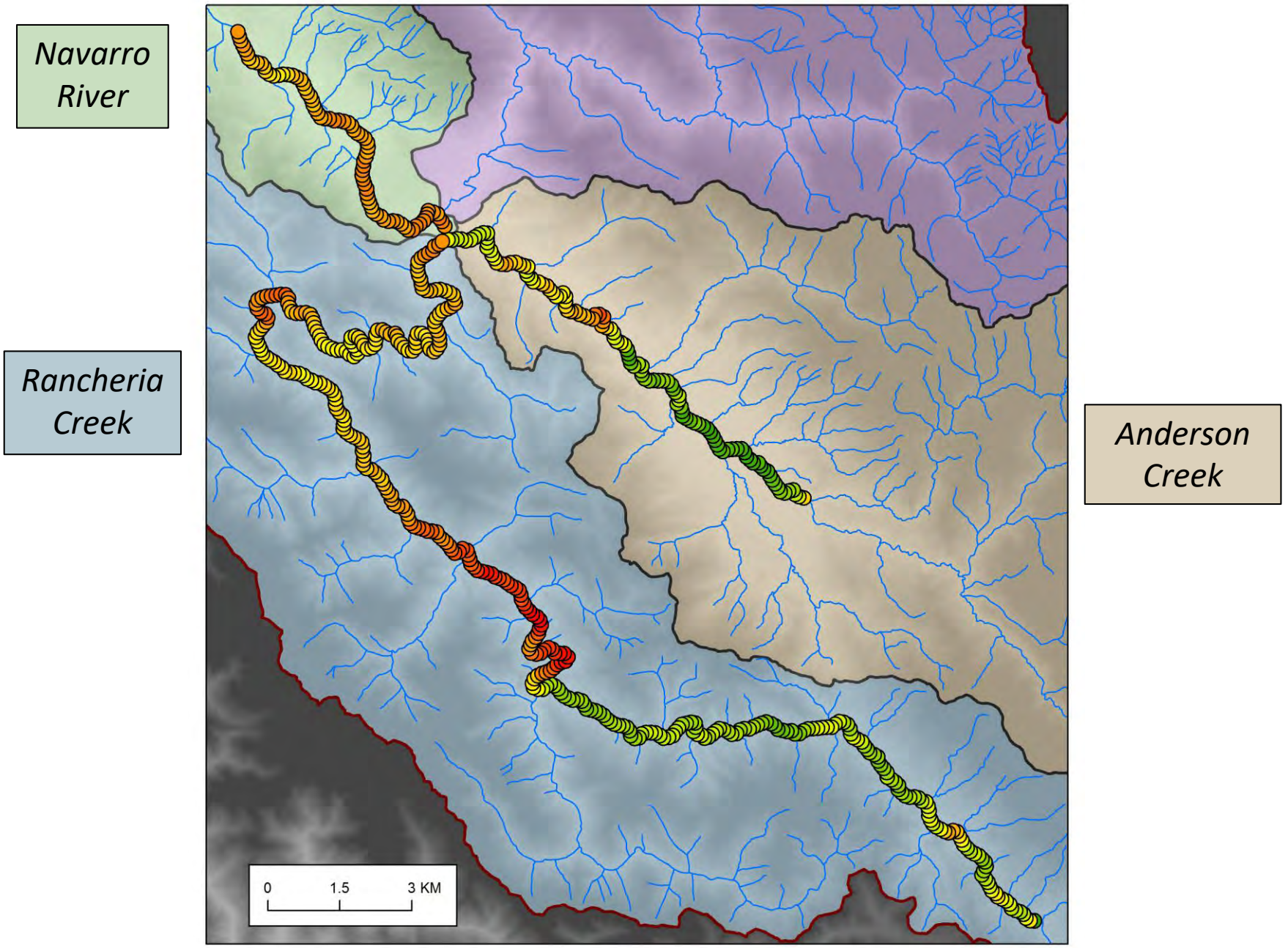
Gully repair – groundwater recharge

Gully repair – groundwater recharge

Anderson Valley: current status



Stream temperatures (too warm)



Engaged community…

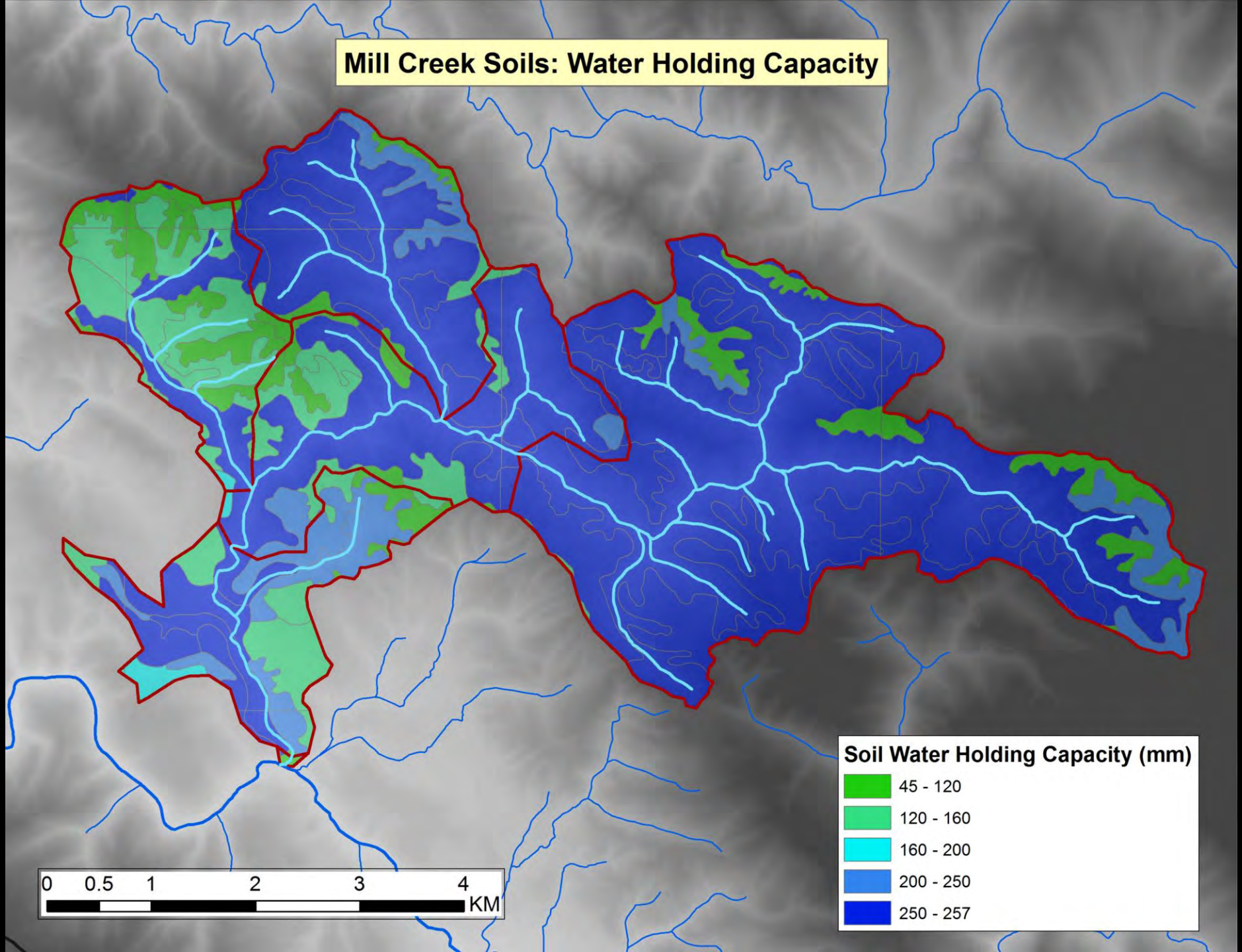
landowner relationships…

organizational partnerships…

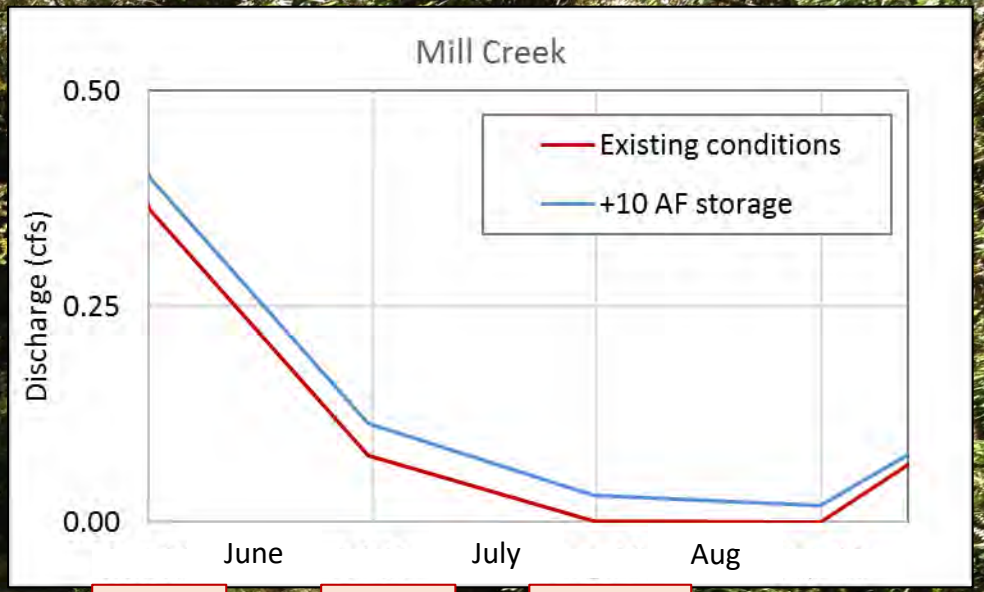
Natural resilience: How do we define and measure?

the capacity to recover quickly from difficulties

What can we do?


Mill Creek Soils: Water Holding Capacity
Soil Water Holding Capacity (mm)
45 - 120
120 - 160
160 - 200
200 - 250
250 - 257
0 0.5 1 2 3 4
KM

Mill Creek: Benefits of managing timing of withdrawals



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Conclusions

- ❖ Hydro-geologic functions are critical
- ❖ We have the potential to restore healthy functions

→ *resiliency*

→ greater soil moisture and groundwater

→ summer/fall stream flow increases

→ cooler water

→ improved water security and habitat

Thank you!

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