

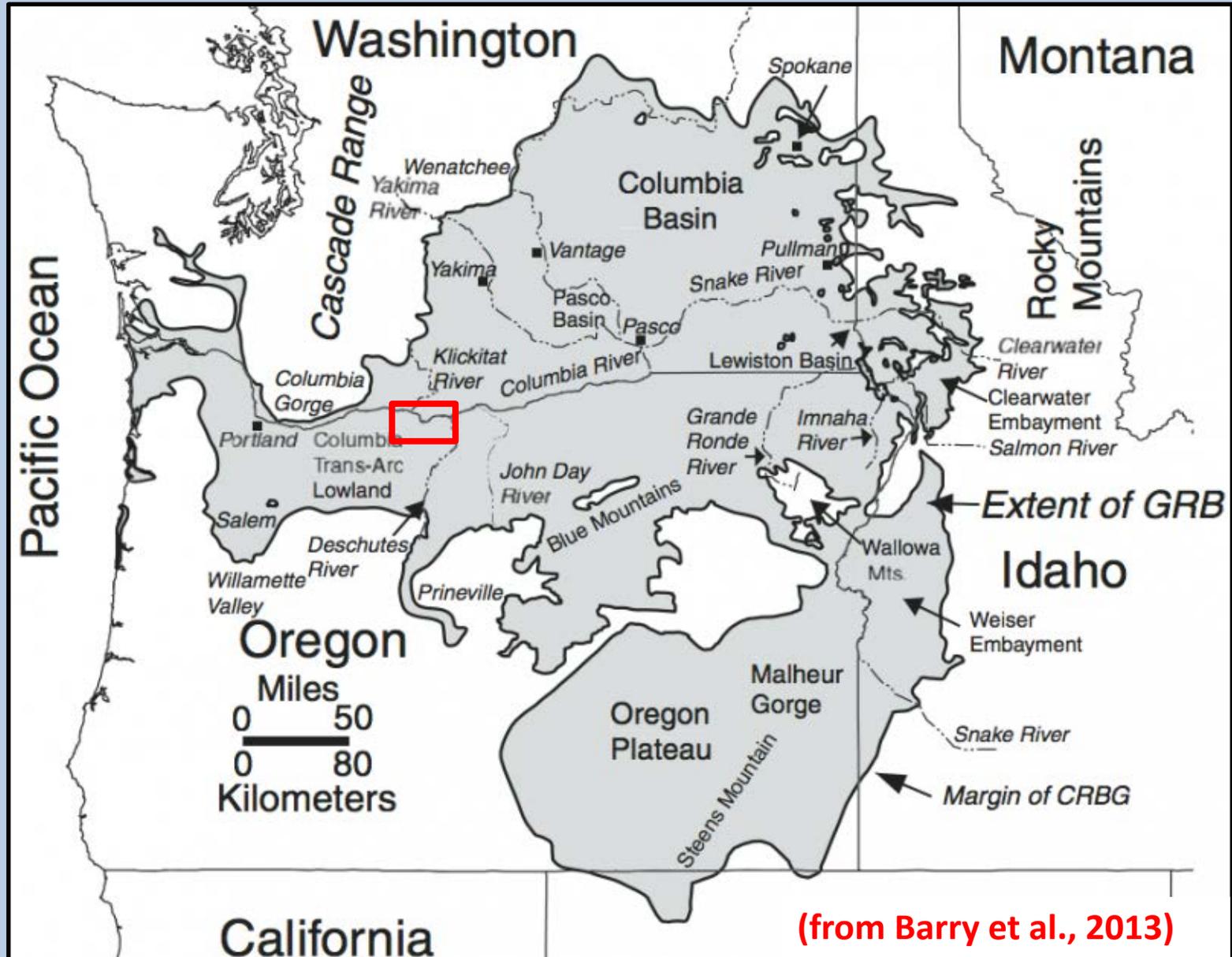
# Groundwater Issues in Parts of Wasco County

**Josh Hackett, Hydrogeologist  
Groundwater Hydrology Section**

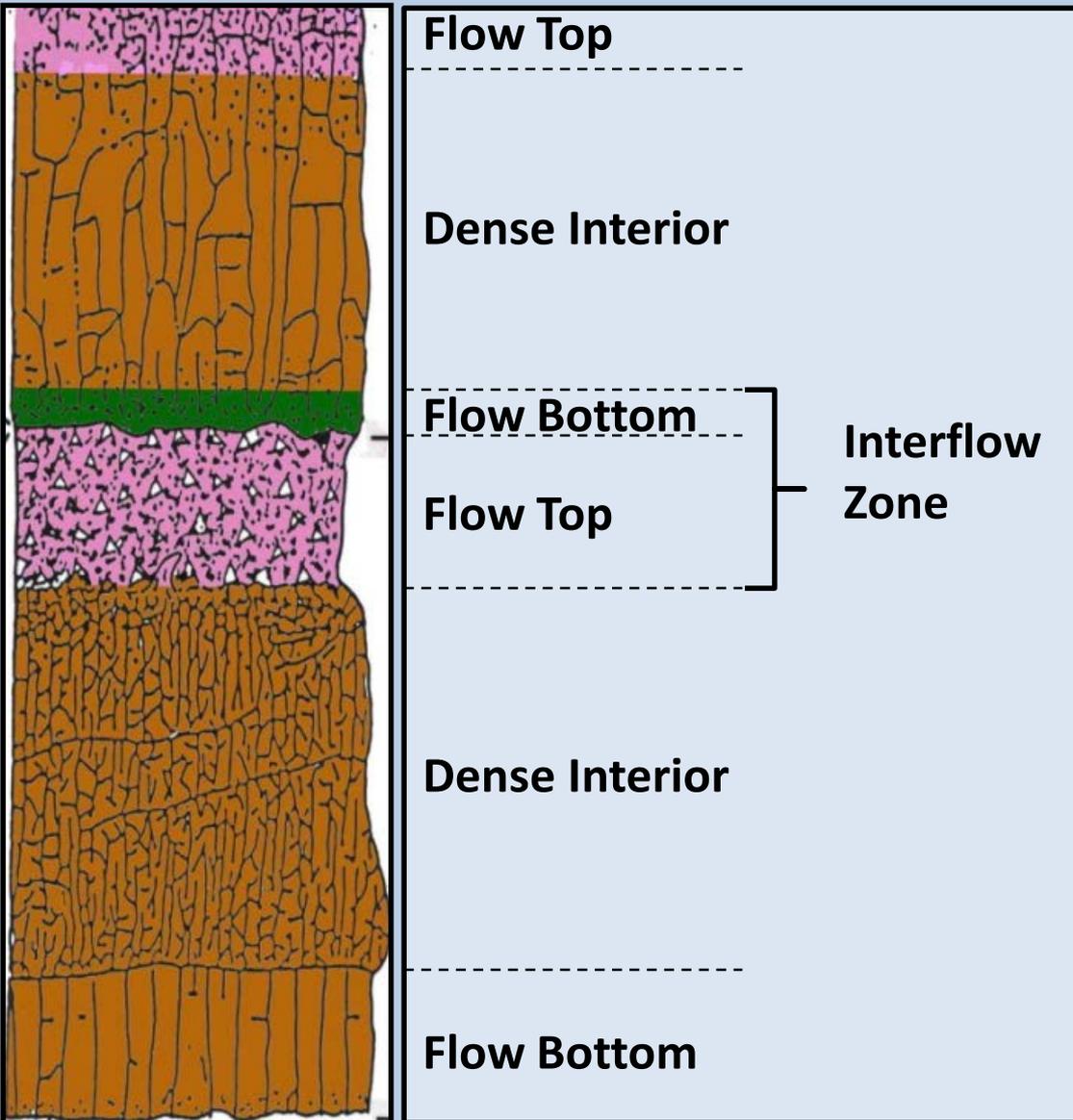




# The Setting:



# Structure of Columbia River Basalt Flows

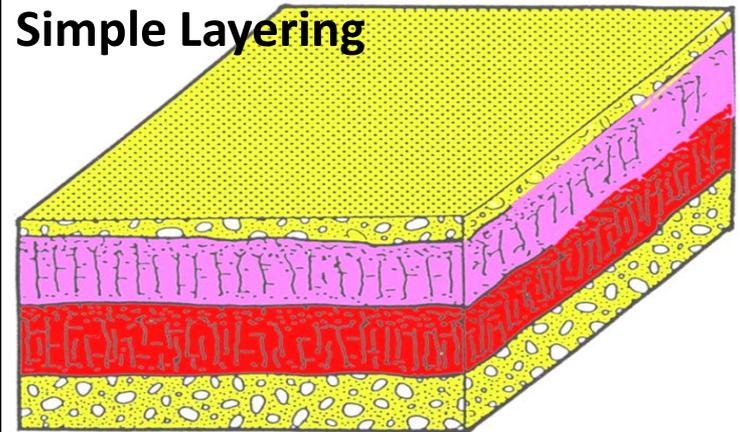


- 1) Flow Top
- 2) Dense Interior
- 3) Flow Bottom

Interflow zones (flow top & flow bottoms) can host aquifers

Interiors separate aquifers

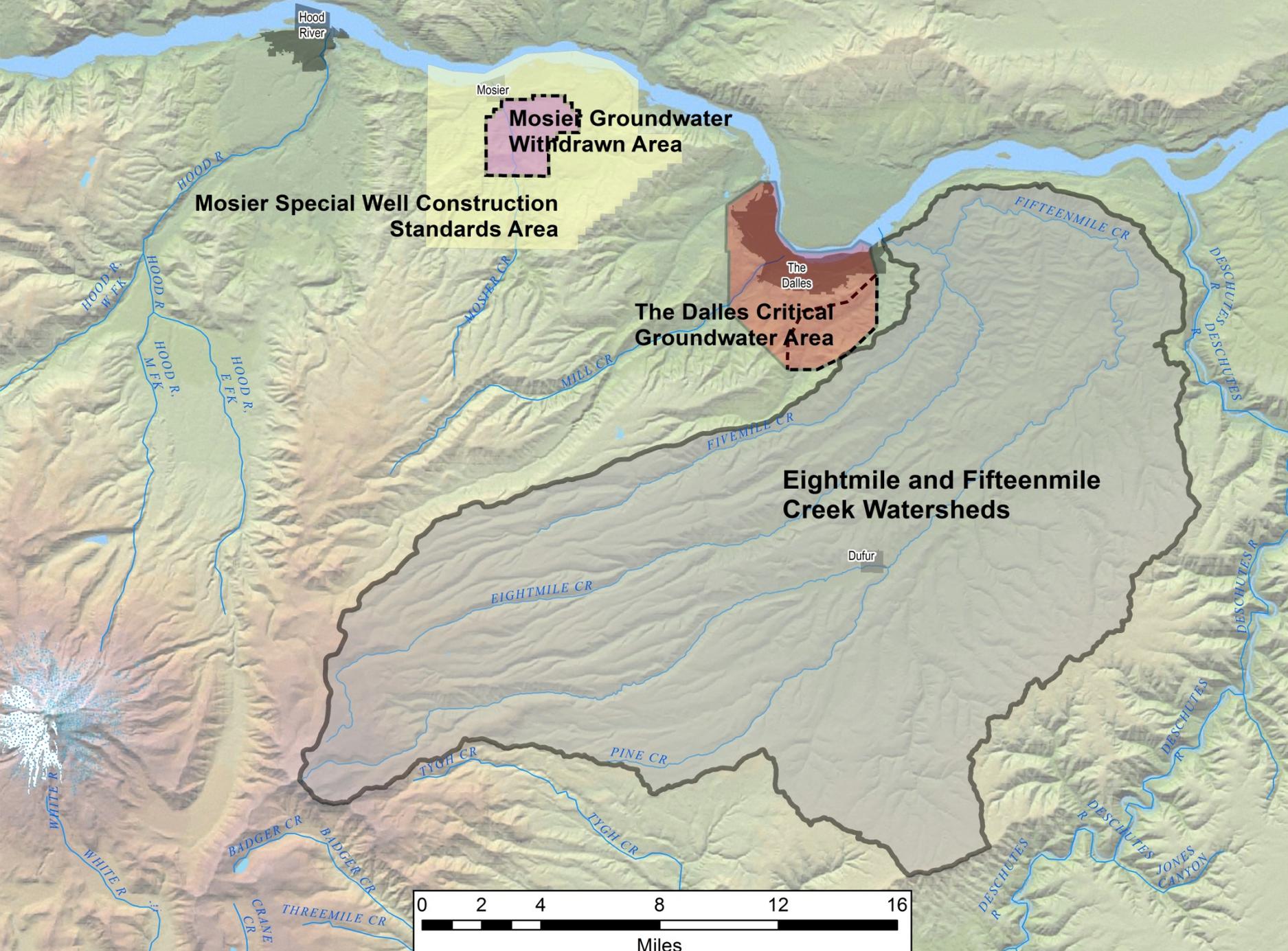
Simple Layering



# Potential Causes:

- Overuse
- **Commingling Wells**





Hood River

Mosier

**Mosier Groundwater Withdrawn Area**

**Mosier Special Well Construction Standards Area**

The Dalles

**The Dalles Critical Groundwater Area**

**Eightmile and Fifteenmile Creek Watersheds**

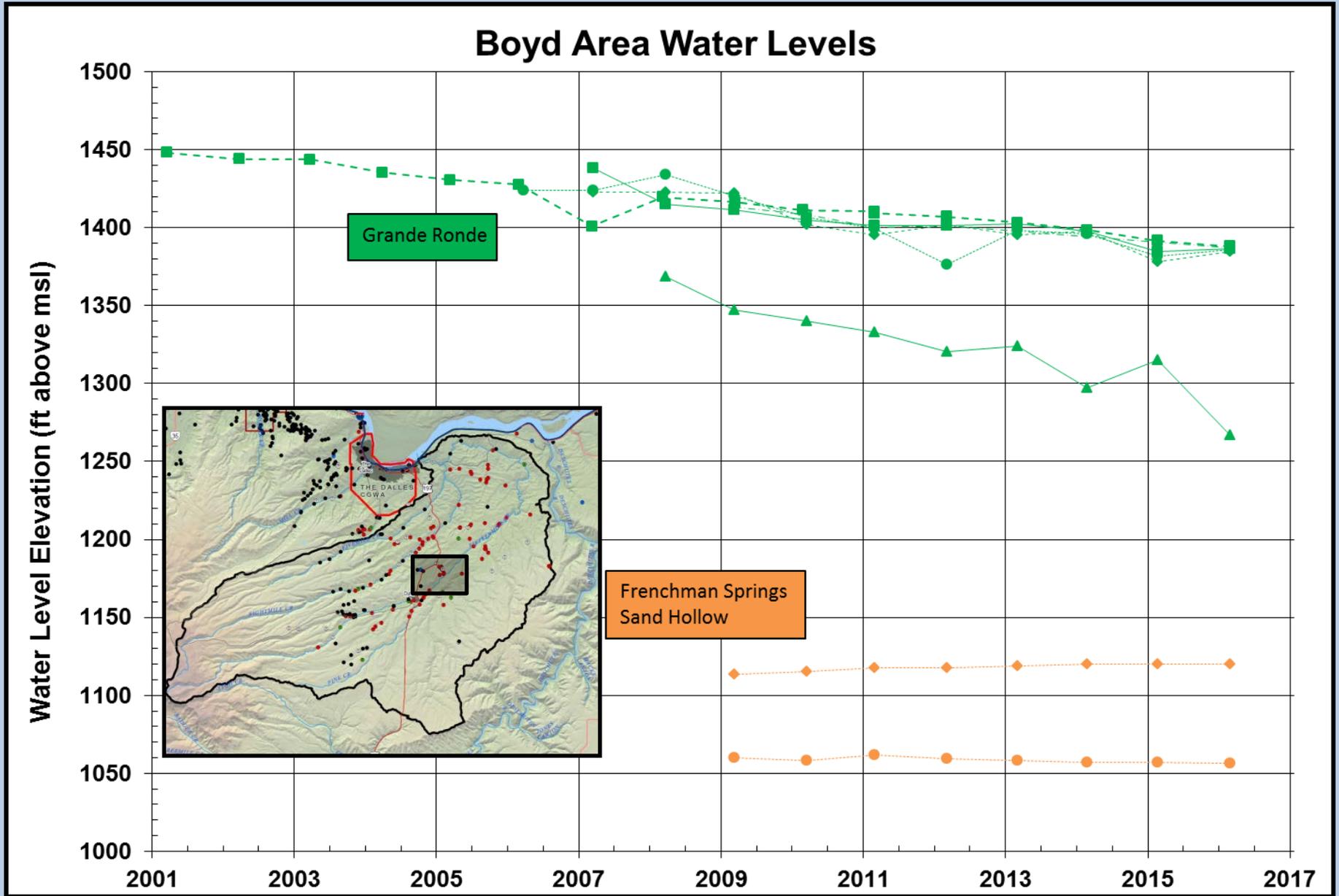
Dufur



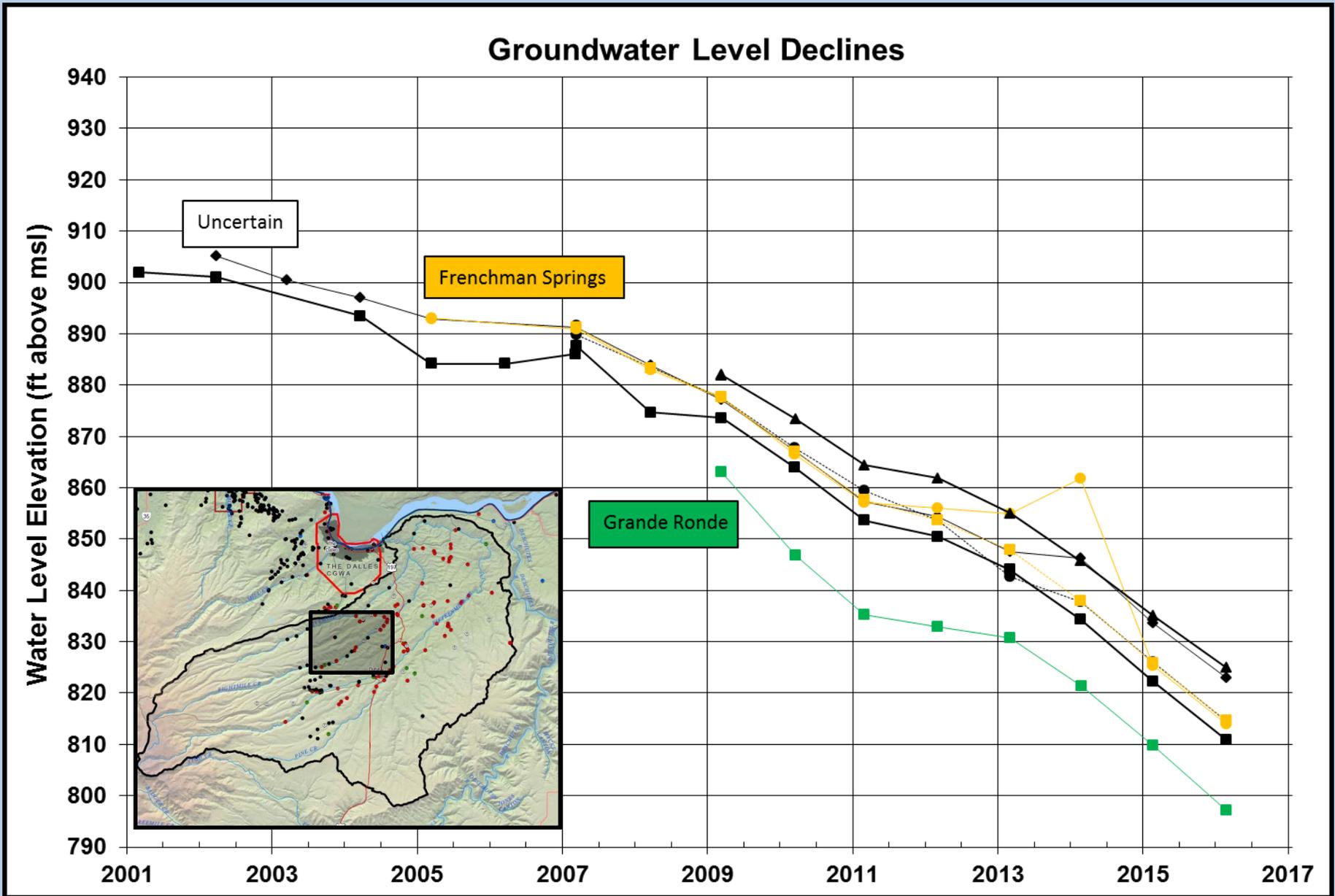
# 15 Mile Area Data Collection

- **Groundwater Level Measurements**
  - 80+ wells measured quarterly
- **Stream Gaging / Seepage Runs**
- **Drill Cuttings Samples**
  - 22 wells – 14 with complete chemical analysis
- **Surficial Geologic Mapping**
  - 6+ quadrangles
- **Groundwater pumpage data**
  - Read flowmeters and calculate use where available
  - Flowmeters required on newer water rights

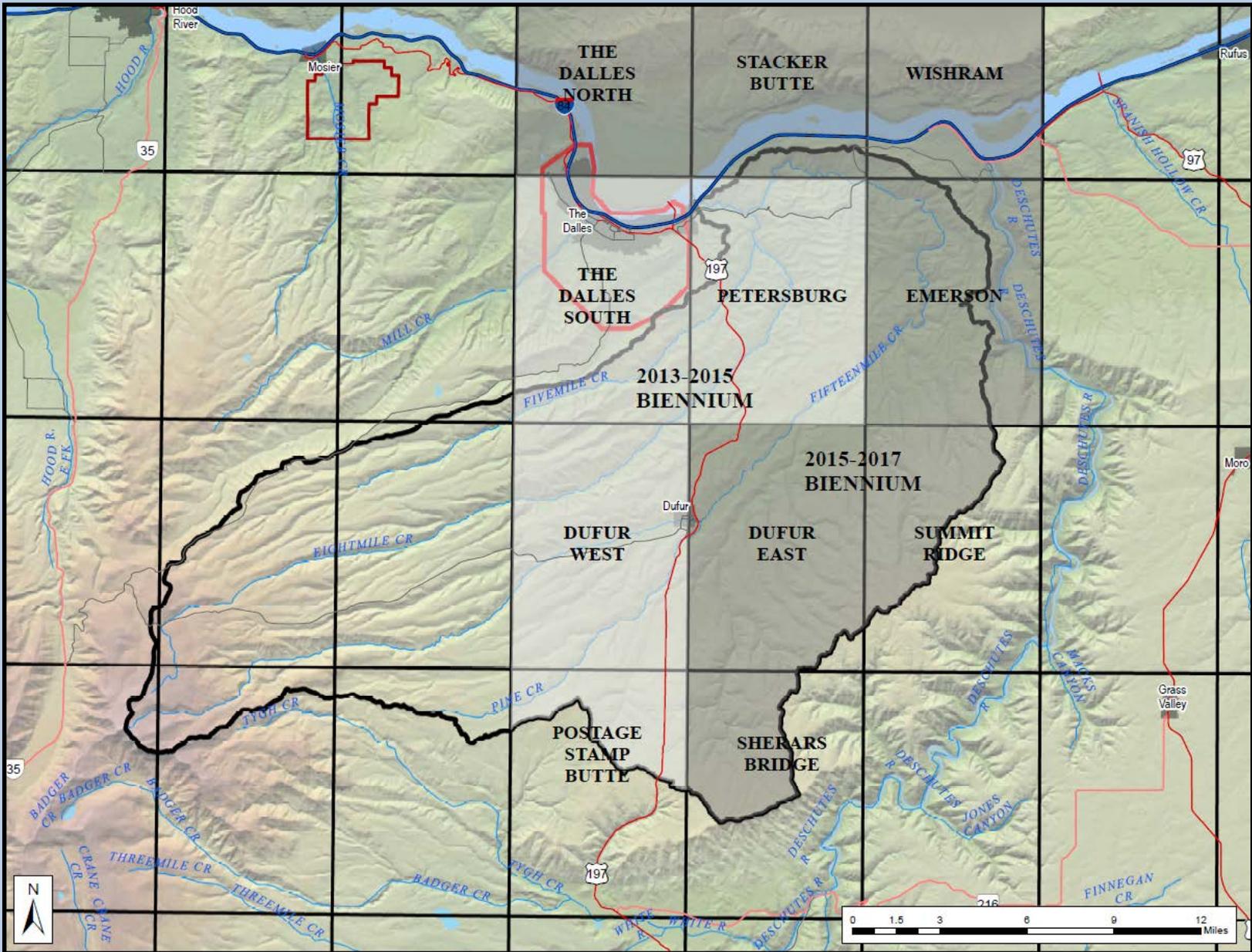
# Boyd Area Water Levels



# Area of Declining Water Levels

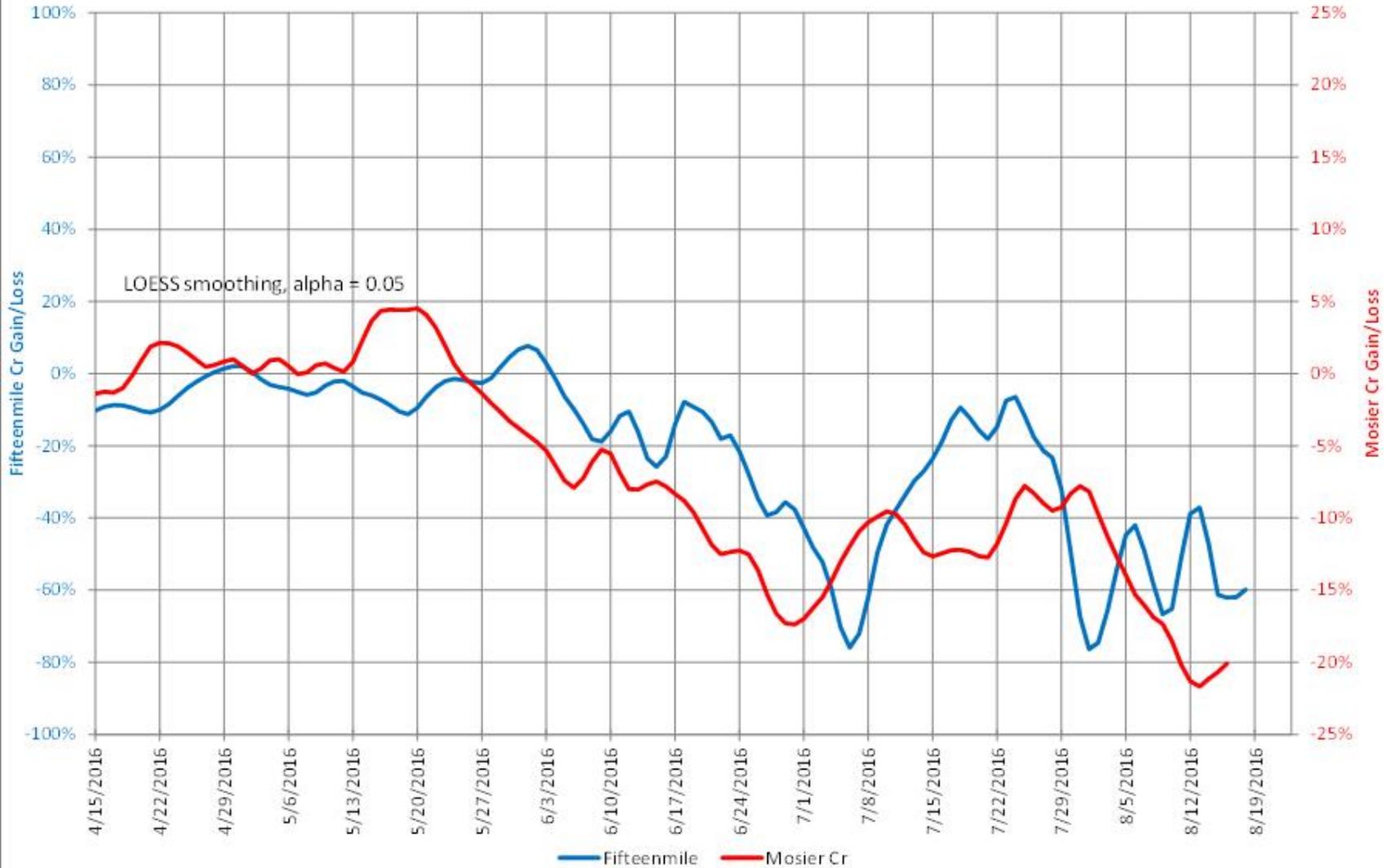


# Geologic Mapping - Quadrangles



# Stream Gaging

Fifteenmile Cr (blw Pine Cr) and Mosier Cr  
Gains/Loss



# WHAT WE HAVE LEARNED

Data Source	Known	Unknown
Water Level Monitoring	<ul style="list-style-type: none"><li>- Declines occurring</li><li>- Multiple aquifers</li><li>- Similar trends over large area</li><li>- Some wells commingle</li></ul>	<ul style="list-style-type: none"><li>- Due to overdraft, commingling, or both?</li><li>- Total number of wells that commingle</li></ul>
Geologic Mapping	<ul style="list-style-type: none"><li>- Many geologic structures</li></ul>	<ul style="list-style-type: none"><li>- Effect on GW flow?</li></ul>
Stream Gaging	<ul style="list-style-type: none"><li>- Losing reaches</li><li>- Some wells interfere with streams</li></ul>	<ul style="list-style-type: none"><li>- Total number of wells that interfere</li></ul>

# CONTINUING WORK

- **Continue monitoring groundwater trends and surface water / groundwater interference.**
  - Increase continuous water-level monitoring
  - Identify wells connected to local streams
- **Advance our understanding of geologic/hydrologic framework**
  - Incorporate surficial and subsurface geology into 3D geologic model
- **Better estimate of GW pumpage from various aquifers**
  - More flowmeters?

# QUESTIONS?



10/23/2013

# Groundwater Area Restrictions

Management Tool	What It Does
Serious Water Management Problem Area	Requires measuring devices and water use reporting; provides technical data
Classification of Water	Designates approved uses of water
Withdrawal of Water	Withdraws groundwater; no or classified new rights
Groundwater Mitigation Area	Requires mitigation for new uses; may limit new uses
Critical Groundwater Area	May require measuring devices; may reduce and redistribute groundwater use
Special Area Well Construction Standards	Extra notice before drilling; Consultation before final well seal