Groundwater Resource Concerns: 2021 Assessment

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DEPARTMENT

Oregon Water Resources Commission
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Photo: OWRD staff gathering water level data from an observation well

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Outline

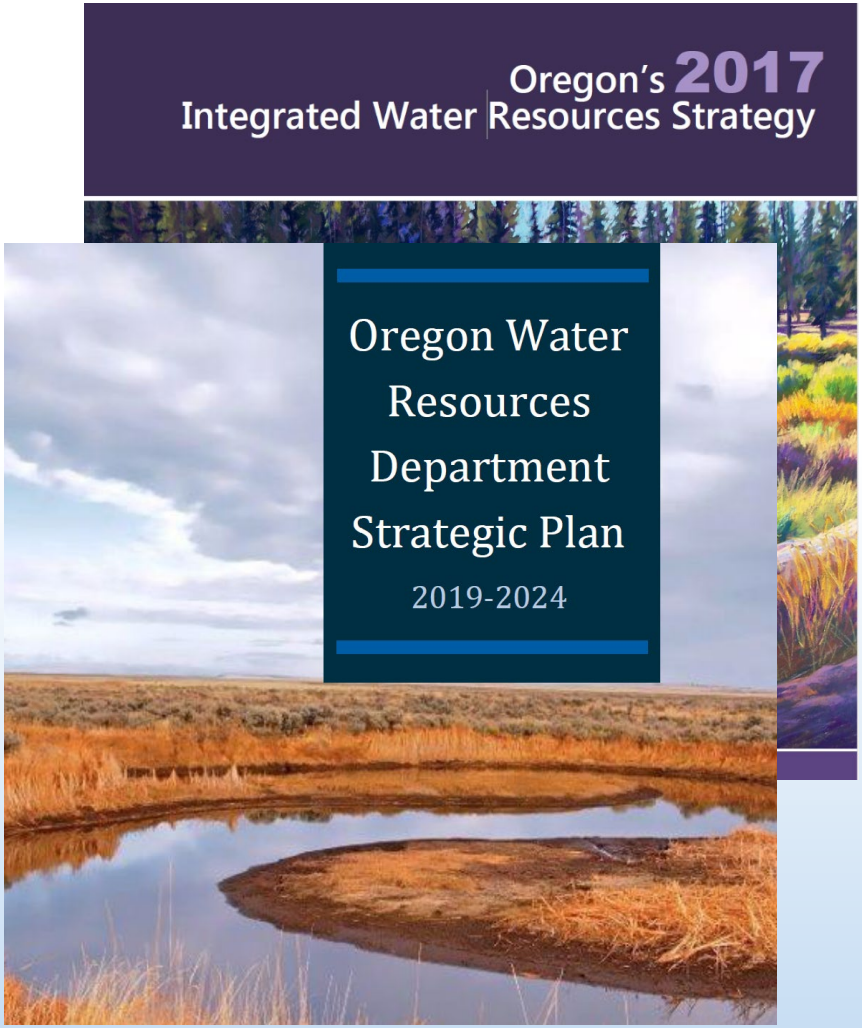
- Background
- Data Sources
- Concerns Map
- Conclusions
- Applications

Photo: Springs along the Crooked River

Working the Plan (and Strategy)

- IWRS RAs 1A and 1B: Conduct groundwater investigations and improve data collection

- Strategic Plan Priorities:
  - Understand Oregon's expected future water supply
  - Maintain technical excellence and improve customer service



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Improved Data Collection and Application

- Past Commission information items regarding:
  - Data collection (Oct 2016)
  - Use of data in water right reviews (Aug 2017)
  - Data system upgrades and interconnections

- This assessment focuses on synthesizing available data to improve communication of our current statewide understanding of groundwater resources –in the form of "concerns"

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Goals of Evaluating Groundwater Resource Concerns (2021 Assesment)

- Synthesize newly available data
- Enable objective, repeatable evaluation that can be regularly updated
- Identify areas for study and management
- Communicate concerns about the groundwater resources of Oregon using an effective “at a glance” summary graphic

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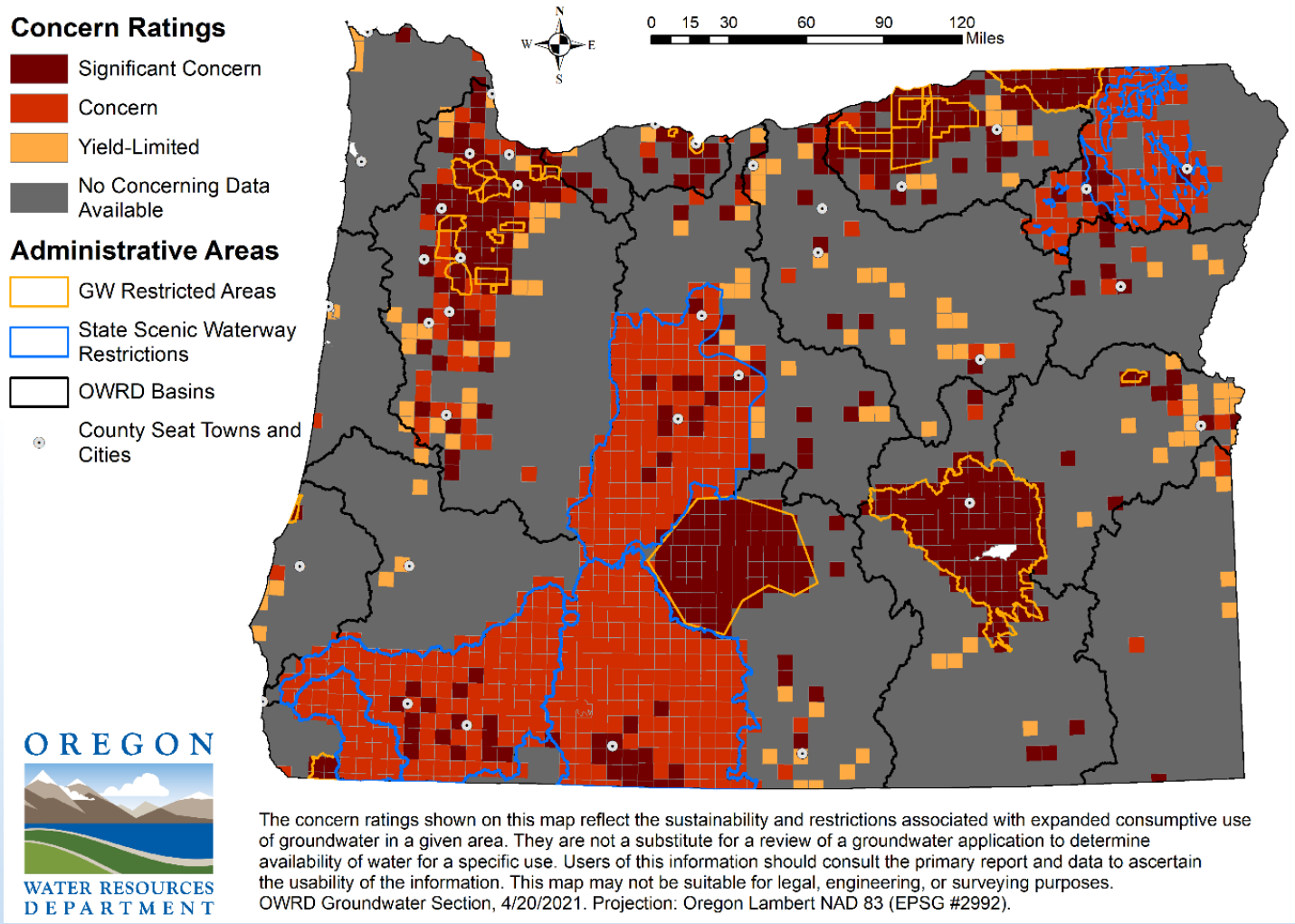
Groundwater Resource Concerns 2021



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The concern ratings shown on this map reflect the sustainability and restrictions associated with expanded consumptive use of groundwater in a given area. They are not a substitute for a review of a groundwater application to determine availability of water for a specific use. Users of this information should consult the primary report and data to ascertain the usability of the information. This map may not be suitable for legal, engineering, or surveying purposes.
OWRD Groundwater Section, 4/20/2021. Projection: Oregon Lambert NAD 83 (EPSG #2992).

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Concern Categories

- Significant Concern:
  - New groundwater irrigation prohibited by rule,
  - Insufficient capacity of the resource, or
  - Excessive water level declines
- Concern:
  - New groundwater irrigation restricted by rule,
  - Likely connected surface water is unavailable, or
  - Moderate water level declines
- Yield-limited:
  - Well yield is insufficient to meet typical irrigation demand
- No Concerning Data Available:
  - Insufficient data, or
  - Available data indicates no concern

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Summarizing Groundwater Data by Township

Pros:

- See the entire state
- Variability within basins
- Independent boundaries from surface water features
- Incorporate data without precise locations
- Reliable statistics

Cons:

- Aggregate point data
- Imperfect overlay with restricted areas
- Neglect fine-scale features like faults and aquifer contacts

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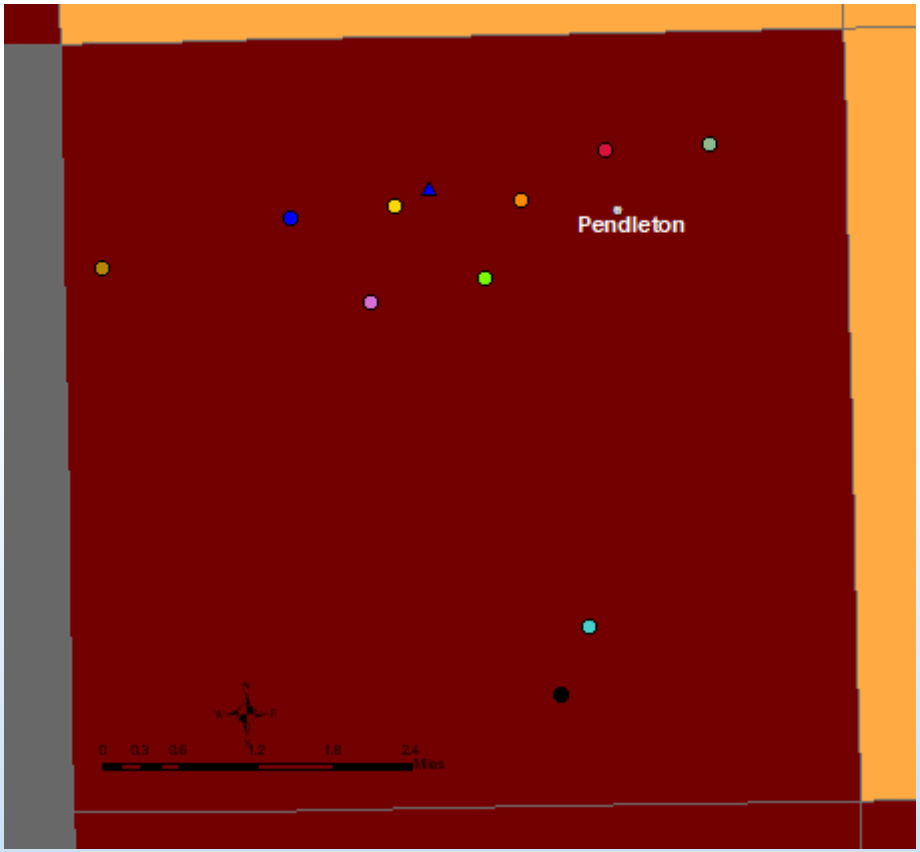
Summarizing by Townships: 2N/32E



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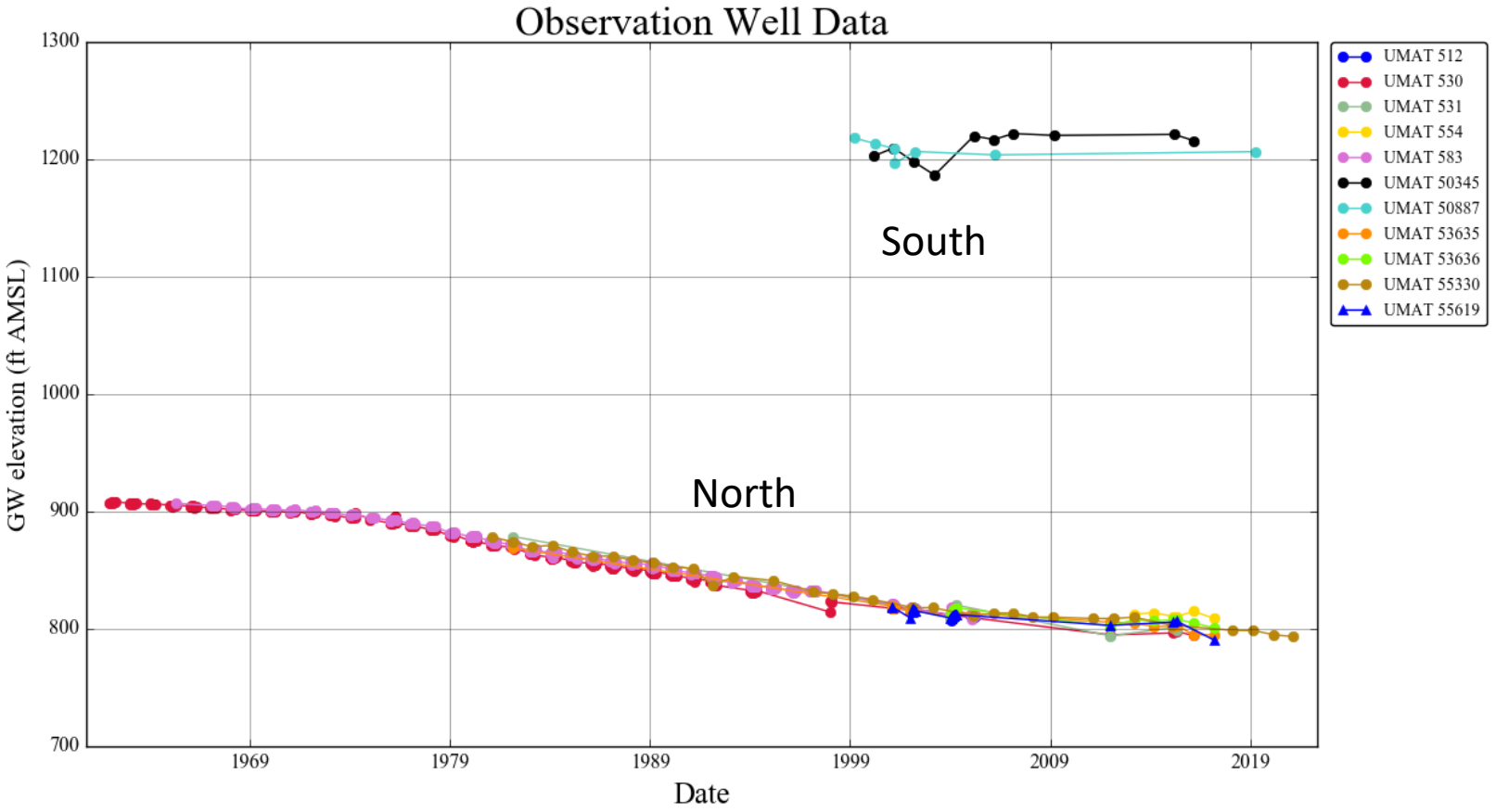

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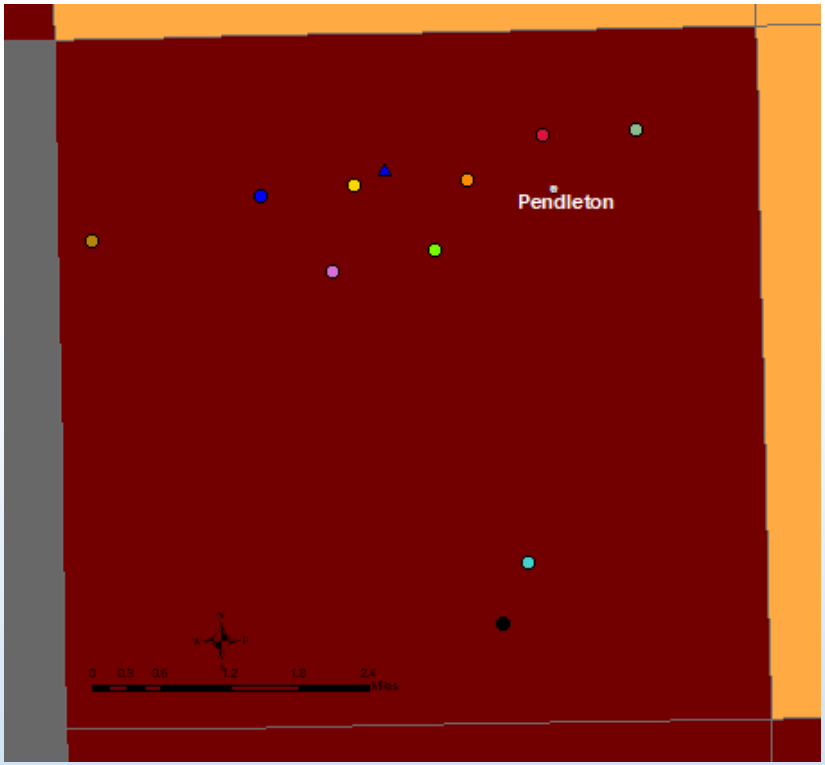

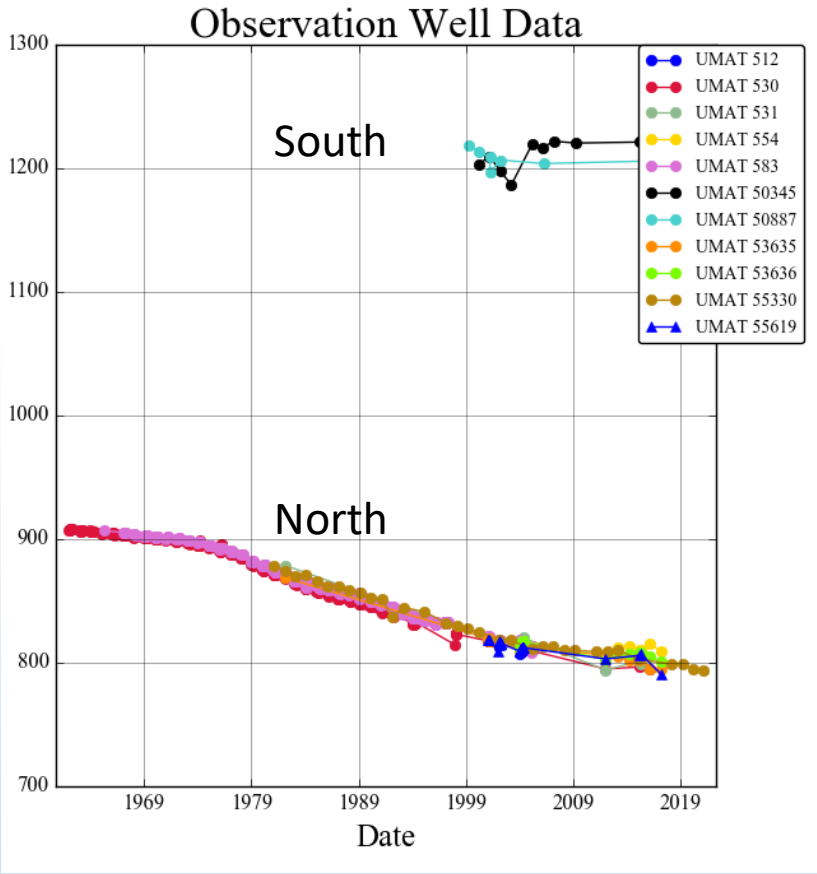

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Data Sources

- Groundwater declines
- Exceeded decline permit conditions
- Groundwater review findings
- Low-yielding wells
- Groundwater Restricted Areas
- State Scenic Waterways
- August availability of connected Surface Water

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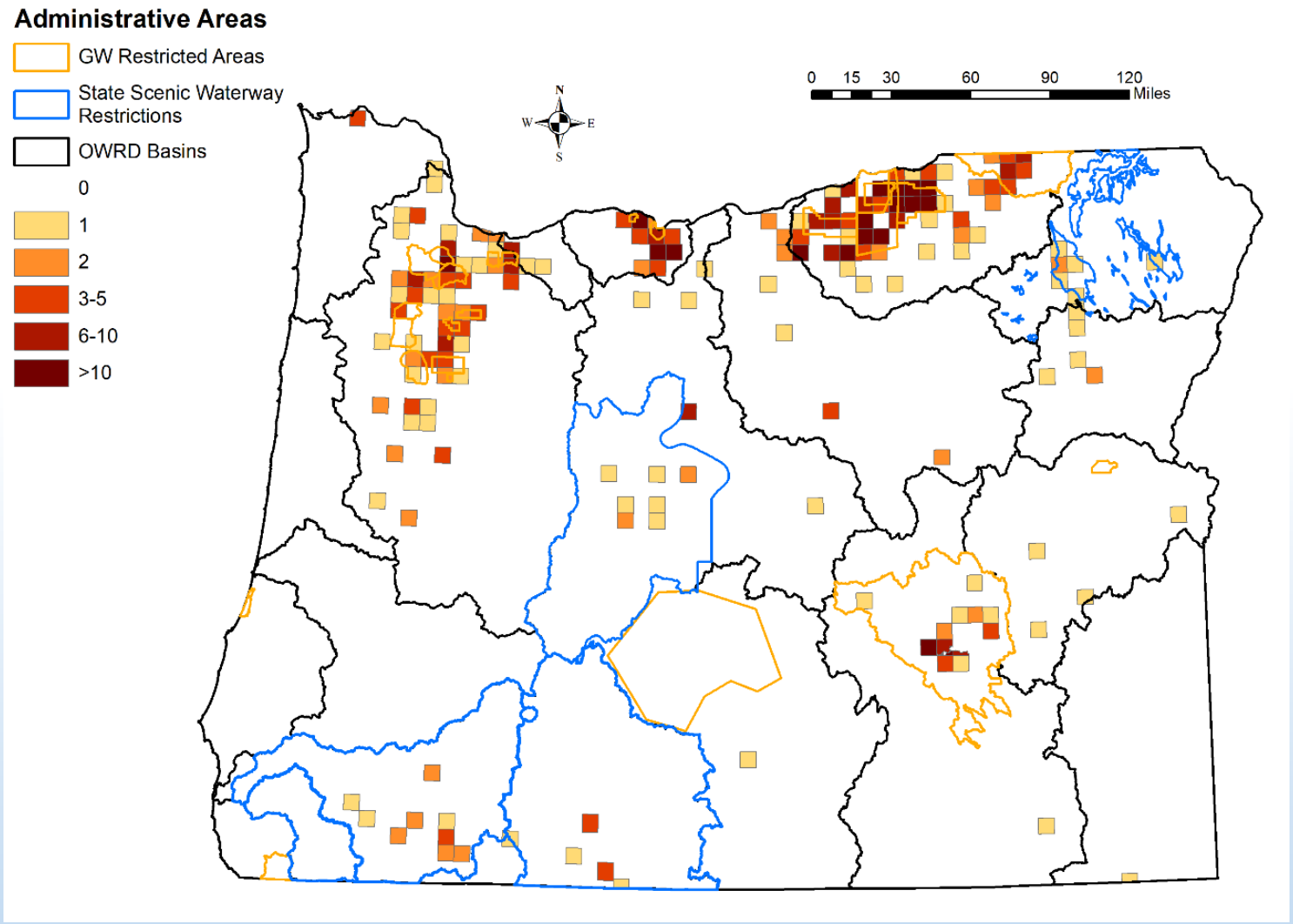
Excessive Groundwater Declines



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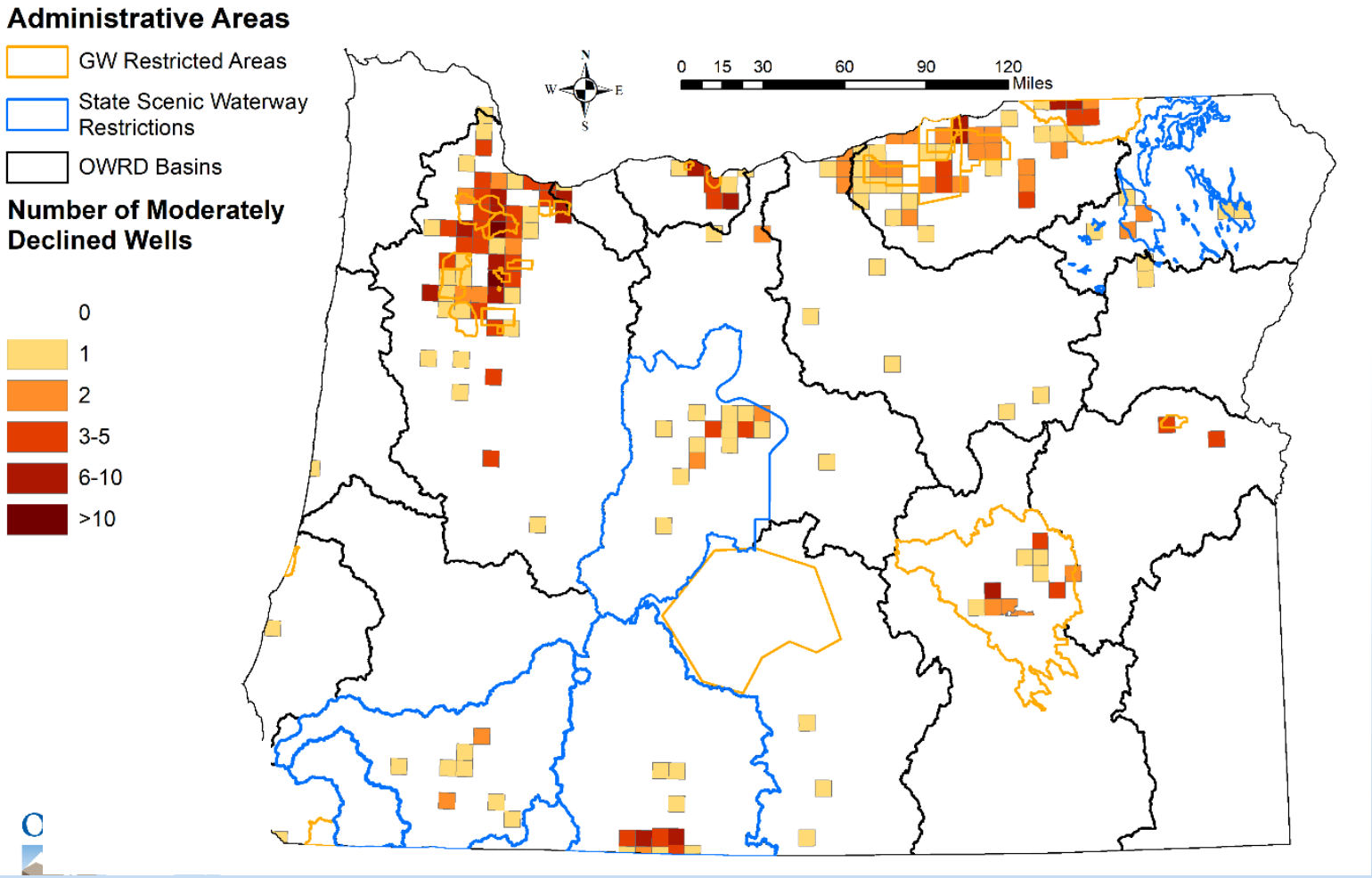
Moderate Groundwater Declines



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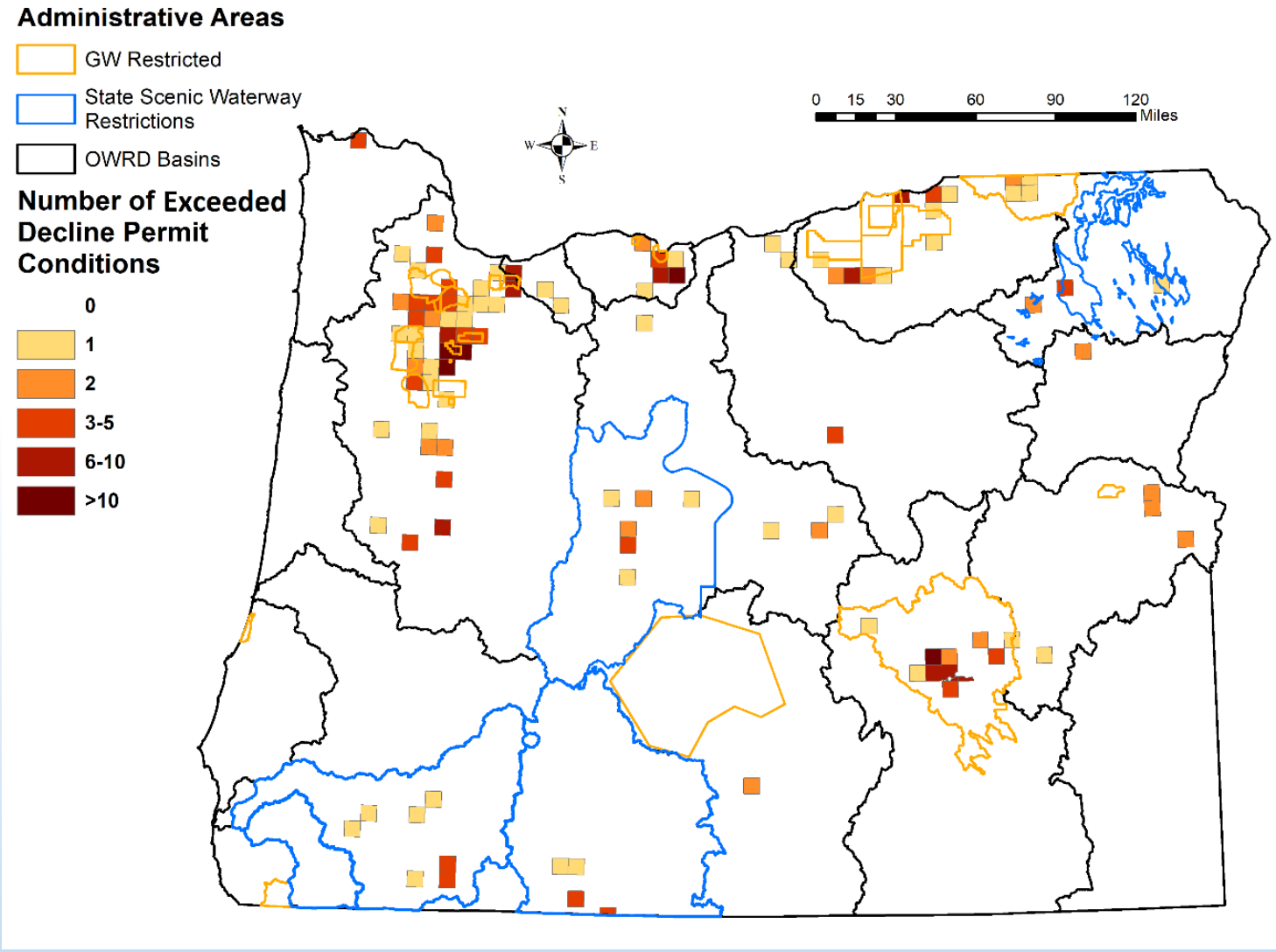
Exceeded Permit Conditions



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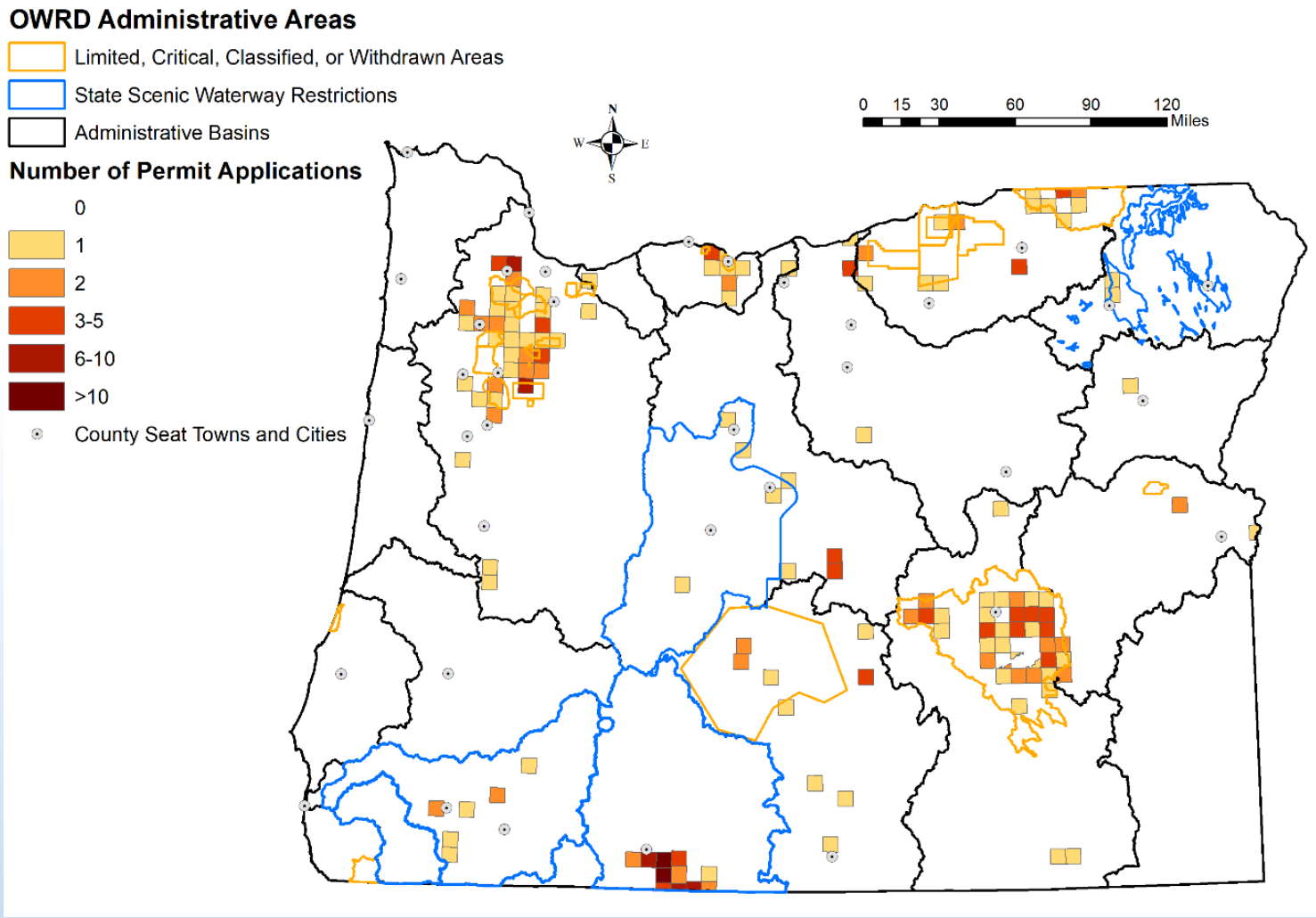
Findings of Use Beyond the Capacity of the Groundwater Resource



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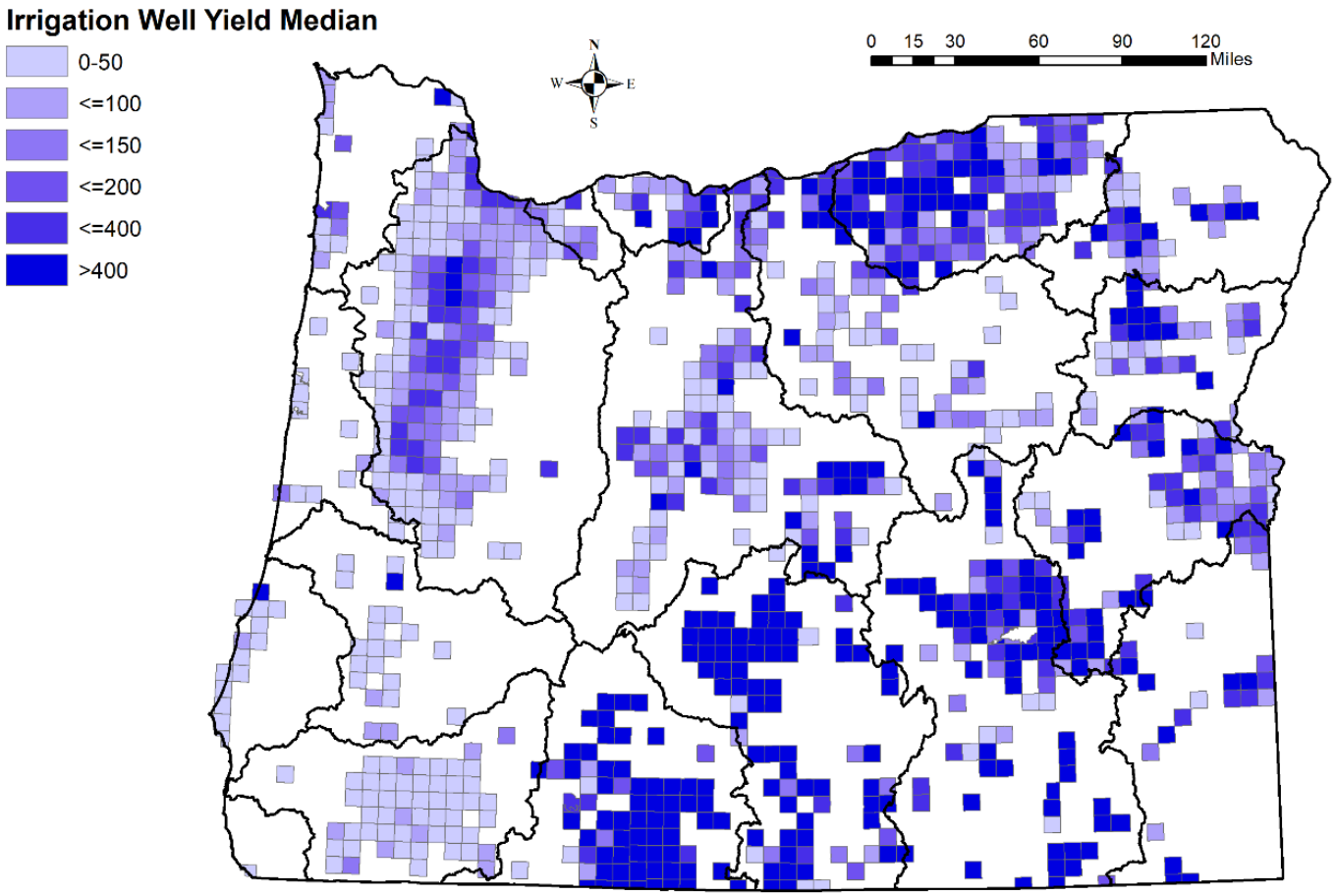
Low-Yielding Wells



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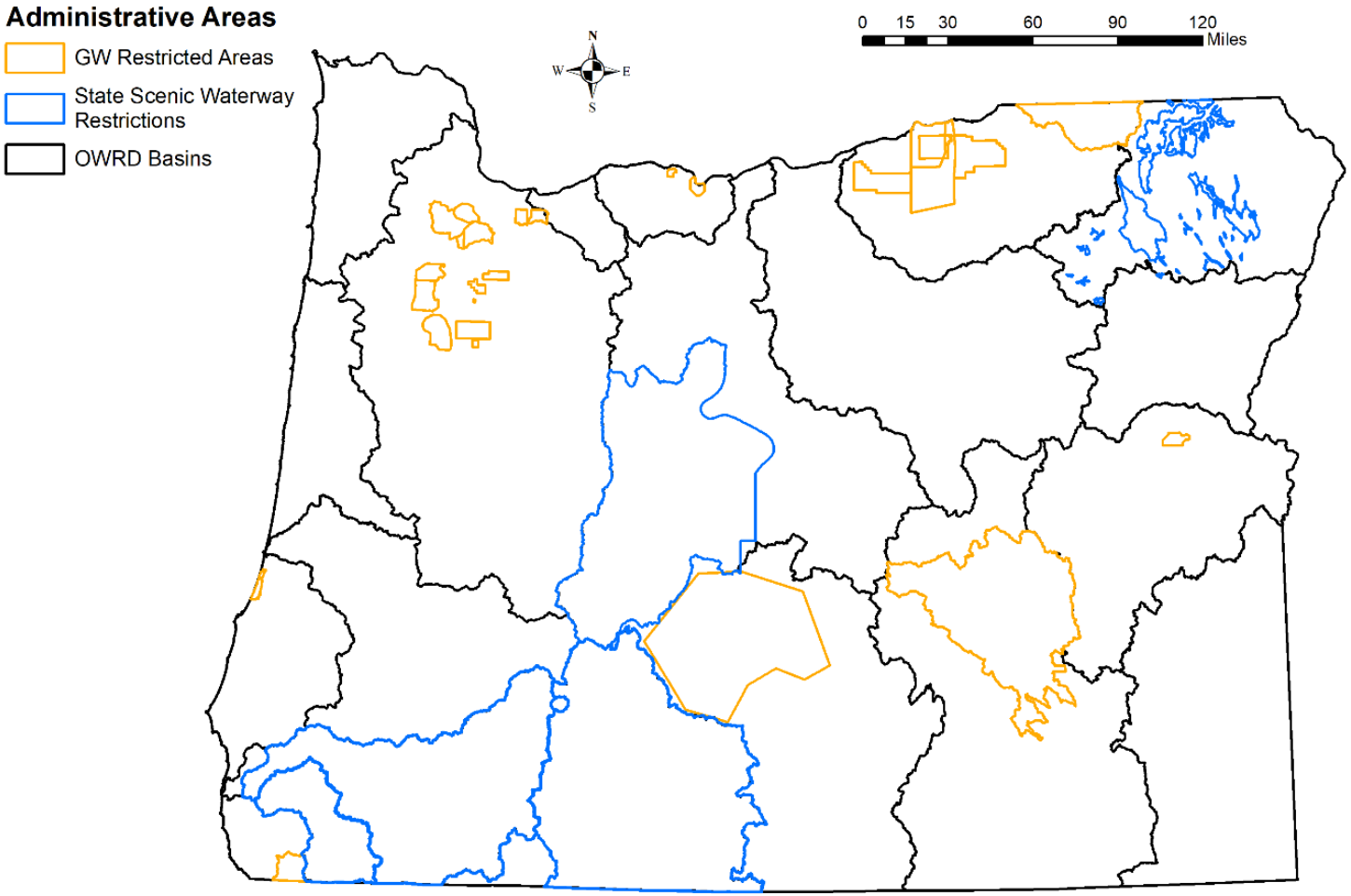
Groundwater Restricted Areas and State Scenic Waterways with Measurably Reduced Flows



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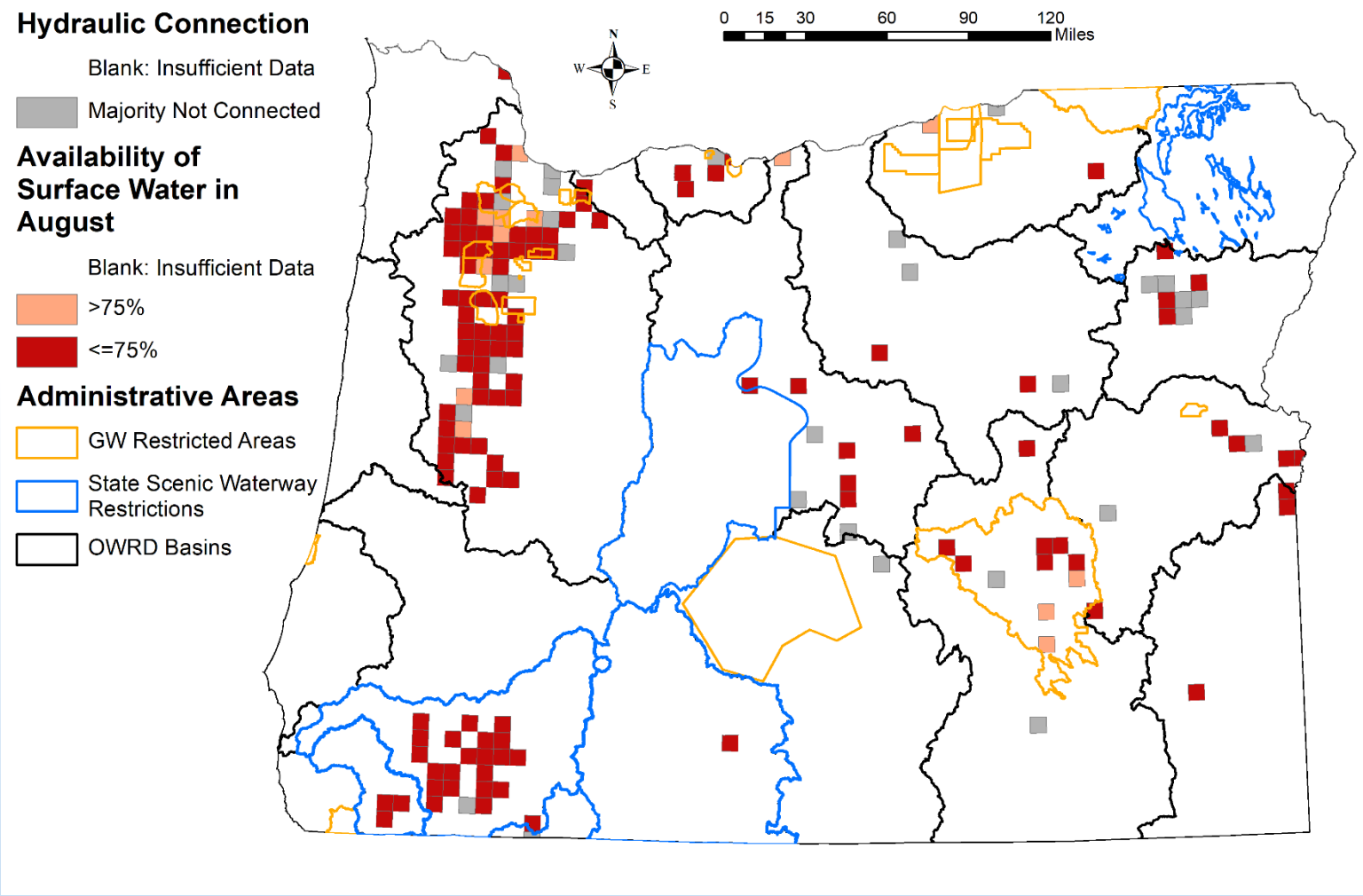
Hydraulically Connected Surface Water Sources



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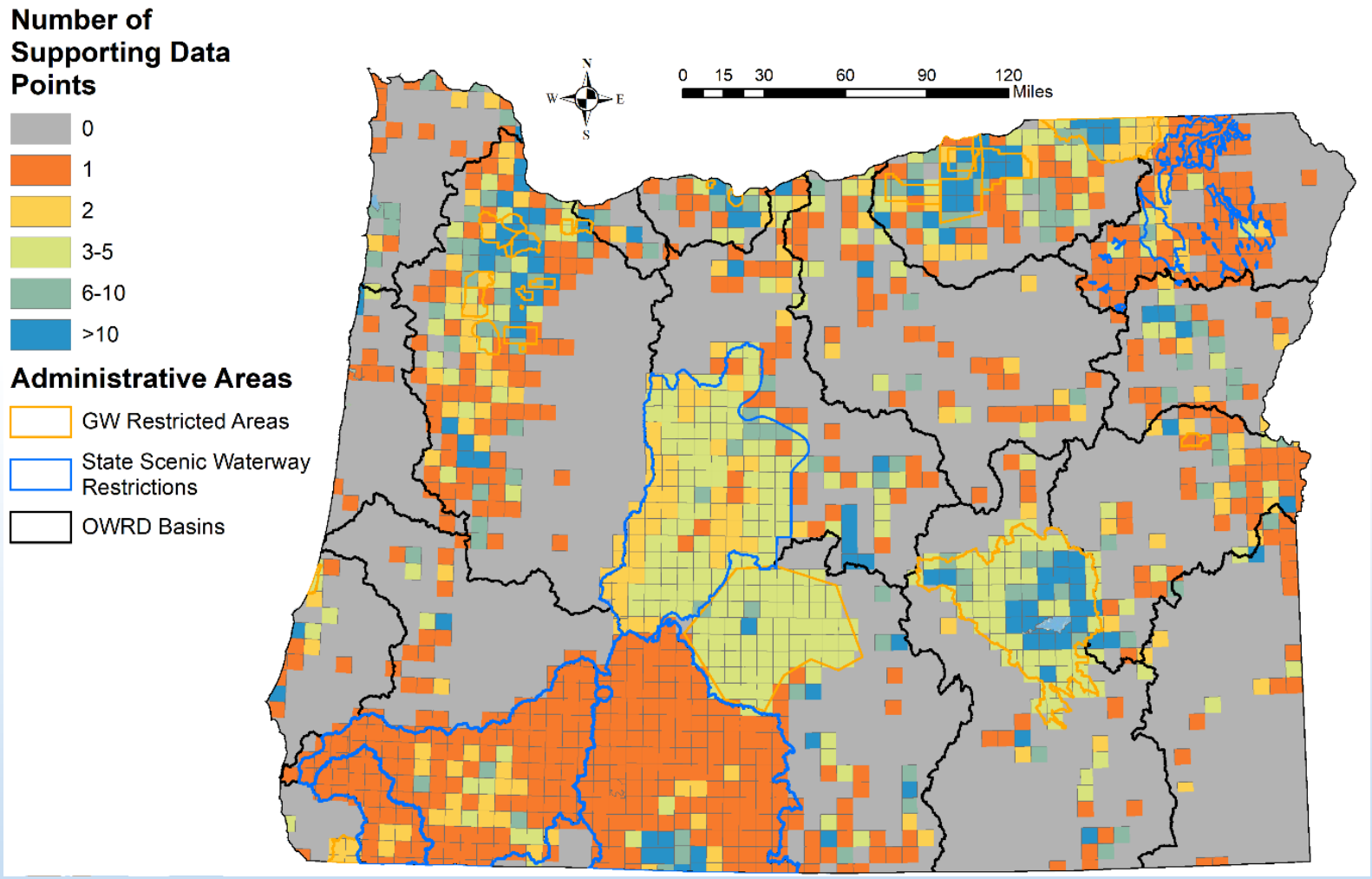
Robustness of estimates



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Important Limitations

- Treat all aquifers and wells as efficiently connected to each other within a township
- Neglect interference with senior groundwater users
- Limited evaluation of combined surface water availability (~36% of the state)

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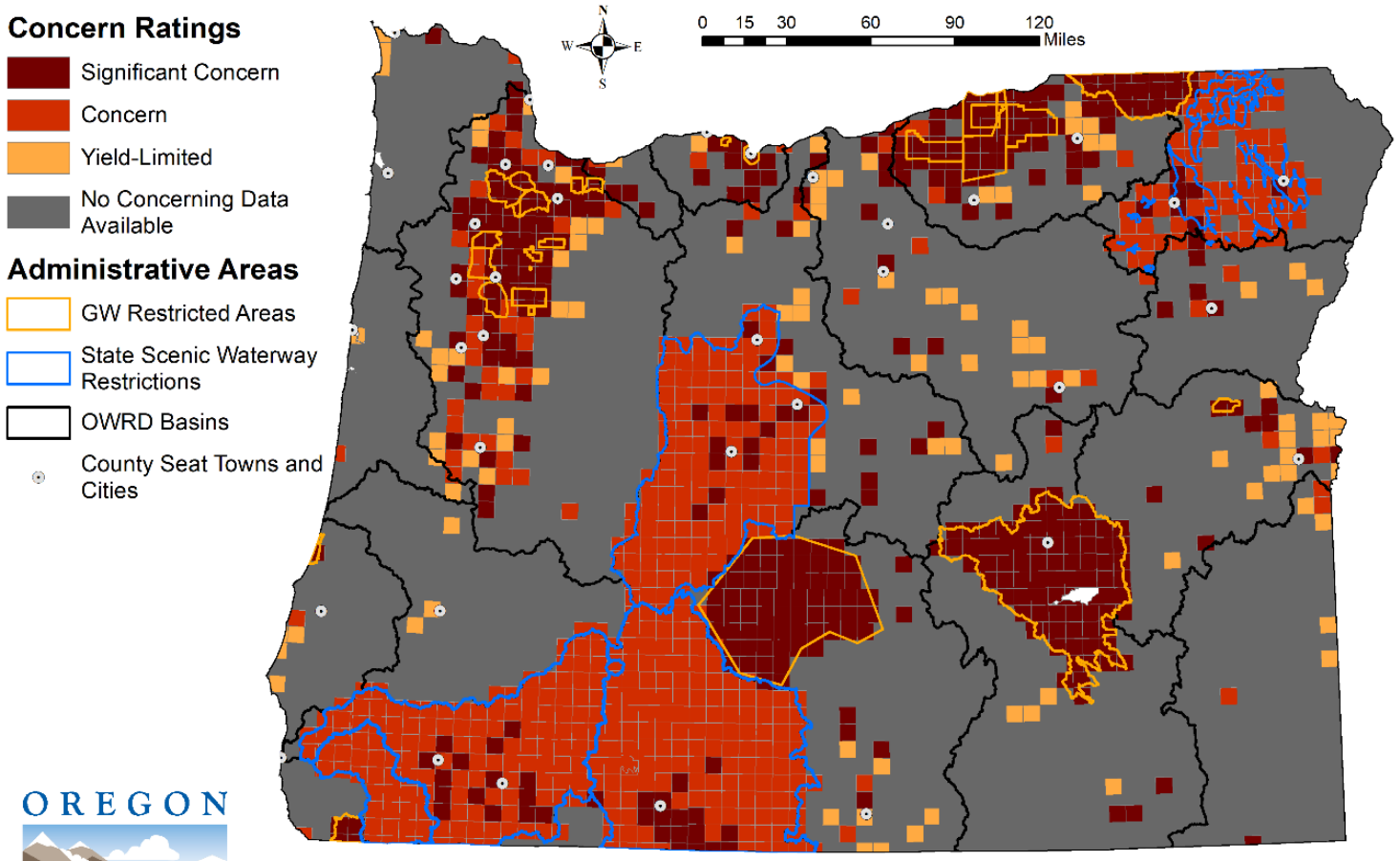

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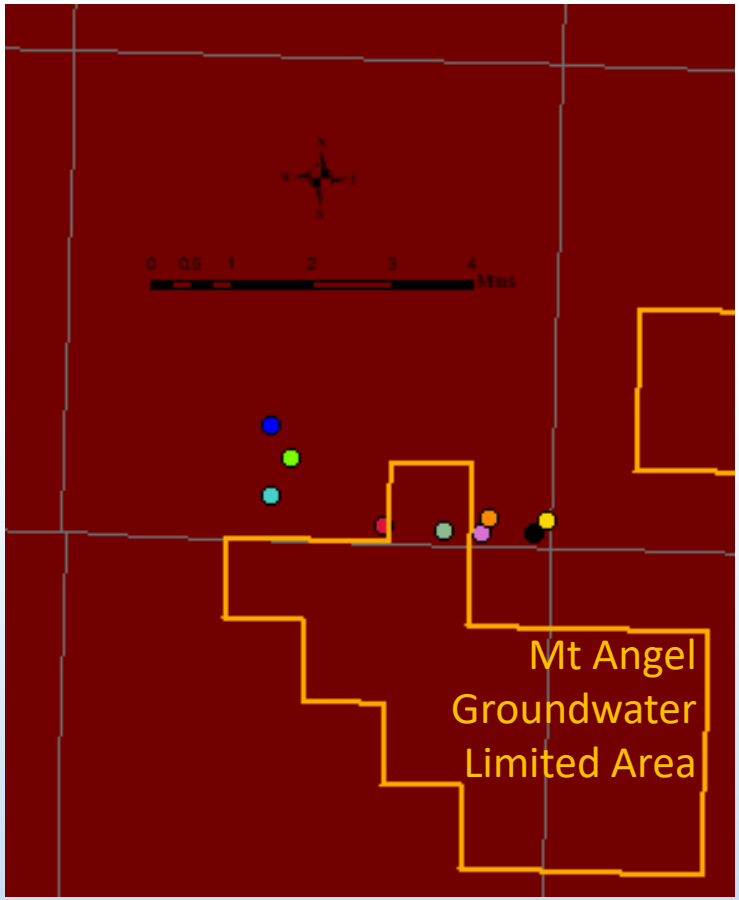
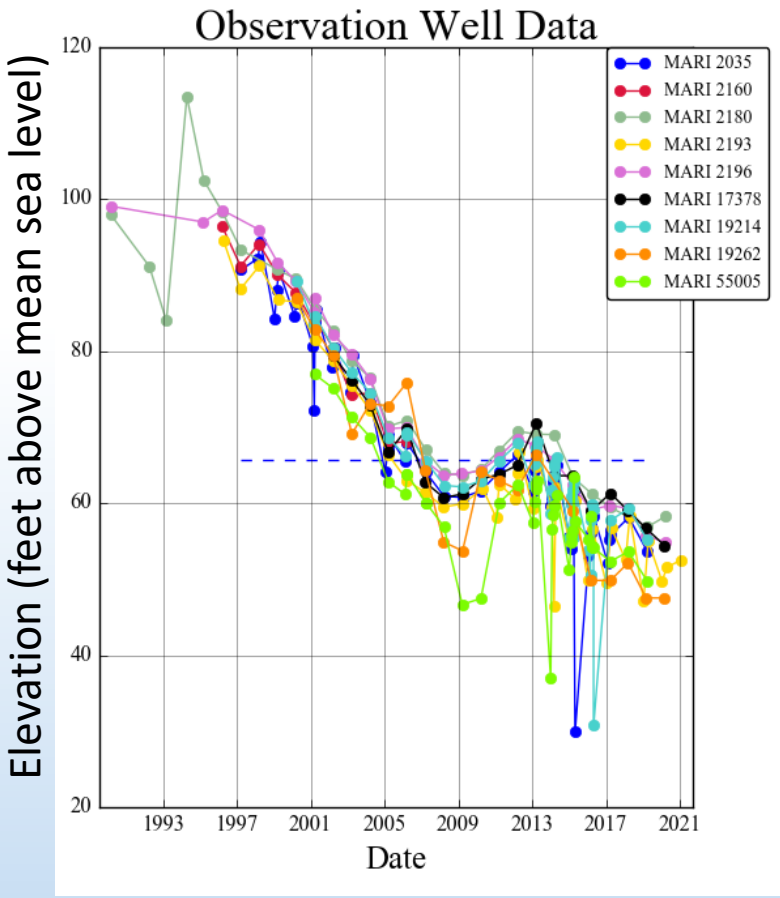
Key findings

- Of townships with significant concern, 1/3rd are outside of Groundwater Restricted Areas or State Scenic Waterways
- Since 2010, 80% of applications for Groundwater permits and limited licenses are in areas of concern or significant concern
- Over half of Oregon lacks data accessible for this concerns analysis

Concerning Data in 5S/1W, Outside of Mt. Angel Groundwater Limited Area





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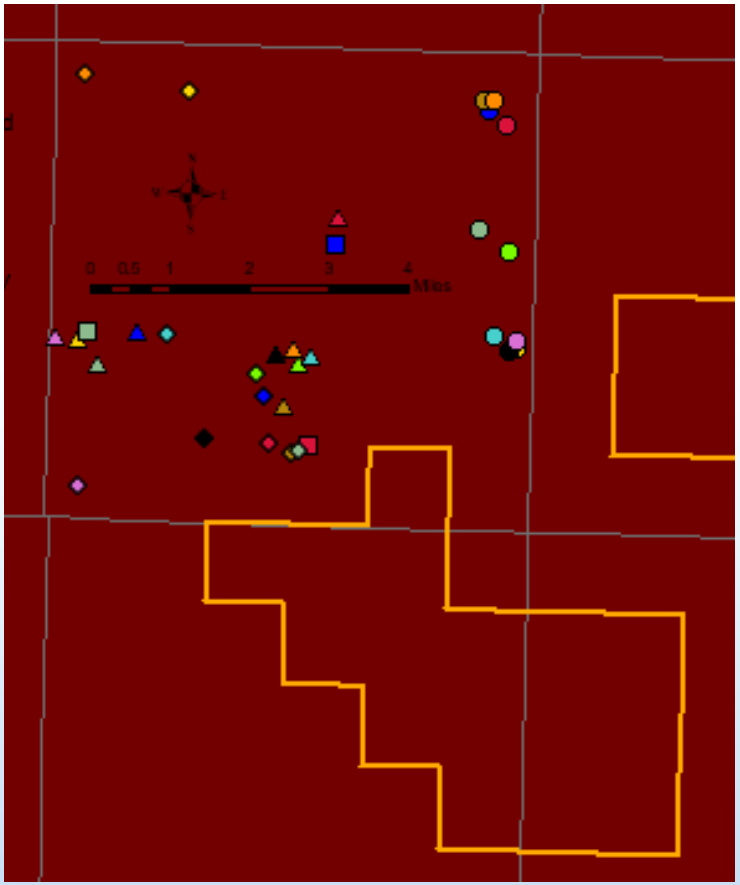
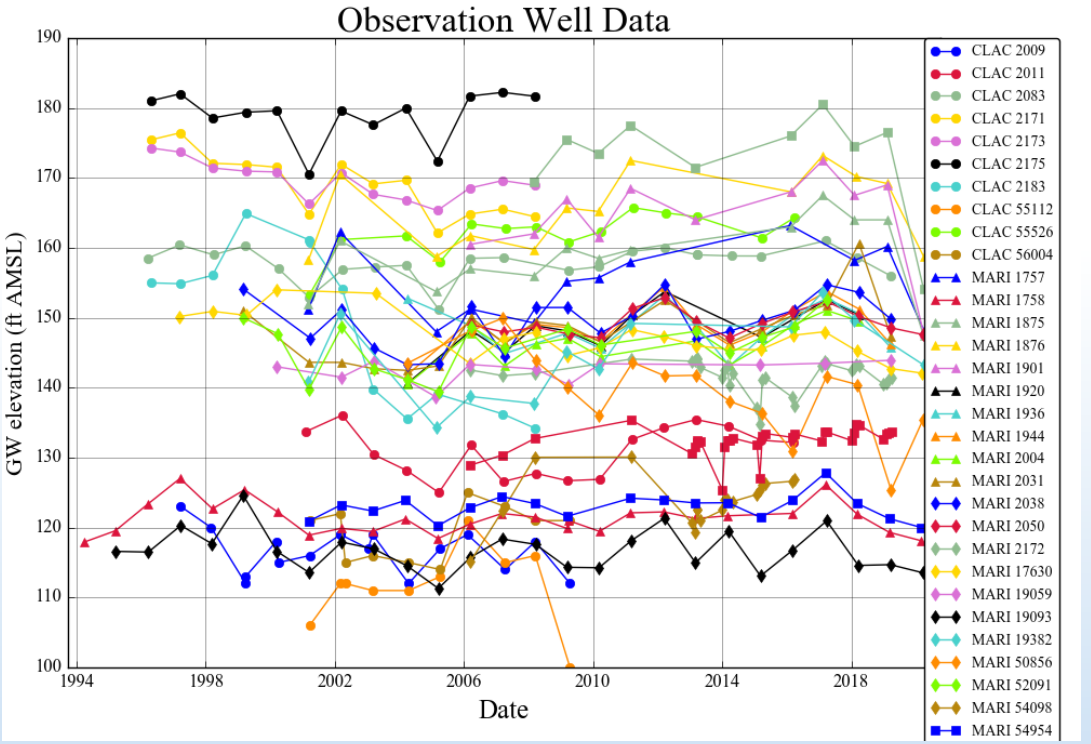
Sedimentary Aquifer System Shows Stable Water Levels





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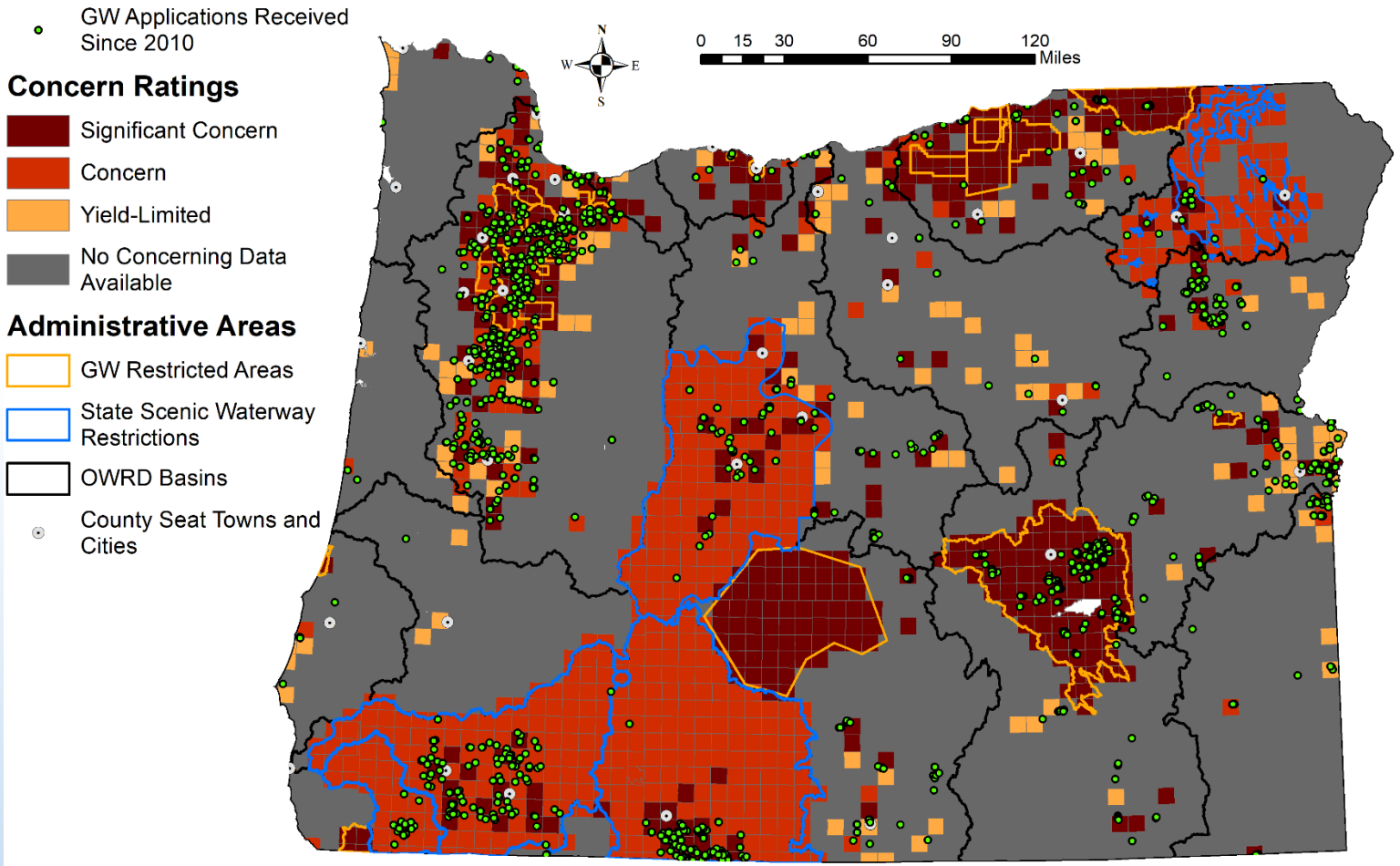
Most new applications are in concerning areas, and…



…Majority of Applications Approved Despite Concern in Township

- Poorly connected aquifers or otherwise limited spatial extent of concerns – potential for more concerning and less concerning areas within the same township
- Limitations on distance and timing for evaluation of stream depletion under Division 9 rules – applicants focus on locations and aquifers where applications are more likely to be approved

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Future Applications

- Communicate with stakeholders, stimulate conversations
- Inform prioritization of monitoring, planning, and basin studies
- Re-evaluate Groundwater Restricted Areas - current and future
- Inform discussion of how to avoid groundwater over-appropriation in basins not yet fully studied

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Questions / Discussion