OREGON
WATER RESOURCES DEPARTMENT

Groundwater Allocation Process Rulemaking

Oregon Water Resources Department

Rules Advisory Committee Meeting #7

December 14, 2023

Welcome & Agenda

OREGON WATER RESOURCES DEPARTMENT

Meeting Agenda

Schedule	Topic	Lead/Presenter
8:30 am	Welcome & Agenda	Annette Liebe
	RAC Meeting 6 – Draft Summary	Travis Brown
	Ongoing Outreach Efforts	Laura Hartt
	Determining Hydraulic Connection	Travis Brown
Break (as needed)		
	Reasonably Stable Groundwater Levels • Technical methodology • Revised proposed rule language (Div 8)	Ben Scandella
	Overview of House Bill 2018 • What data are we getting	Justin Iverson
11:15 am	RAC Roundtable – Discussion	Annette Liebe
11:30 am	Public Comment	Laura Hartt
By noon	Schedule, Wrap-up, & Next Steps	Laura Hartt

RAC 6 Meeting Summary

OREGON WATER RESOURCES DEPARTMENT

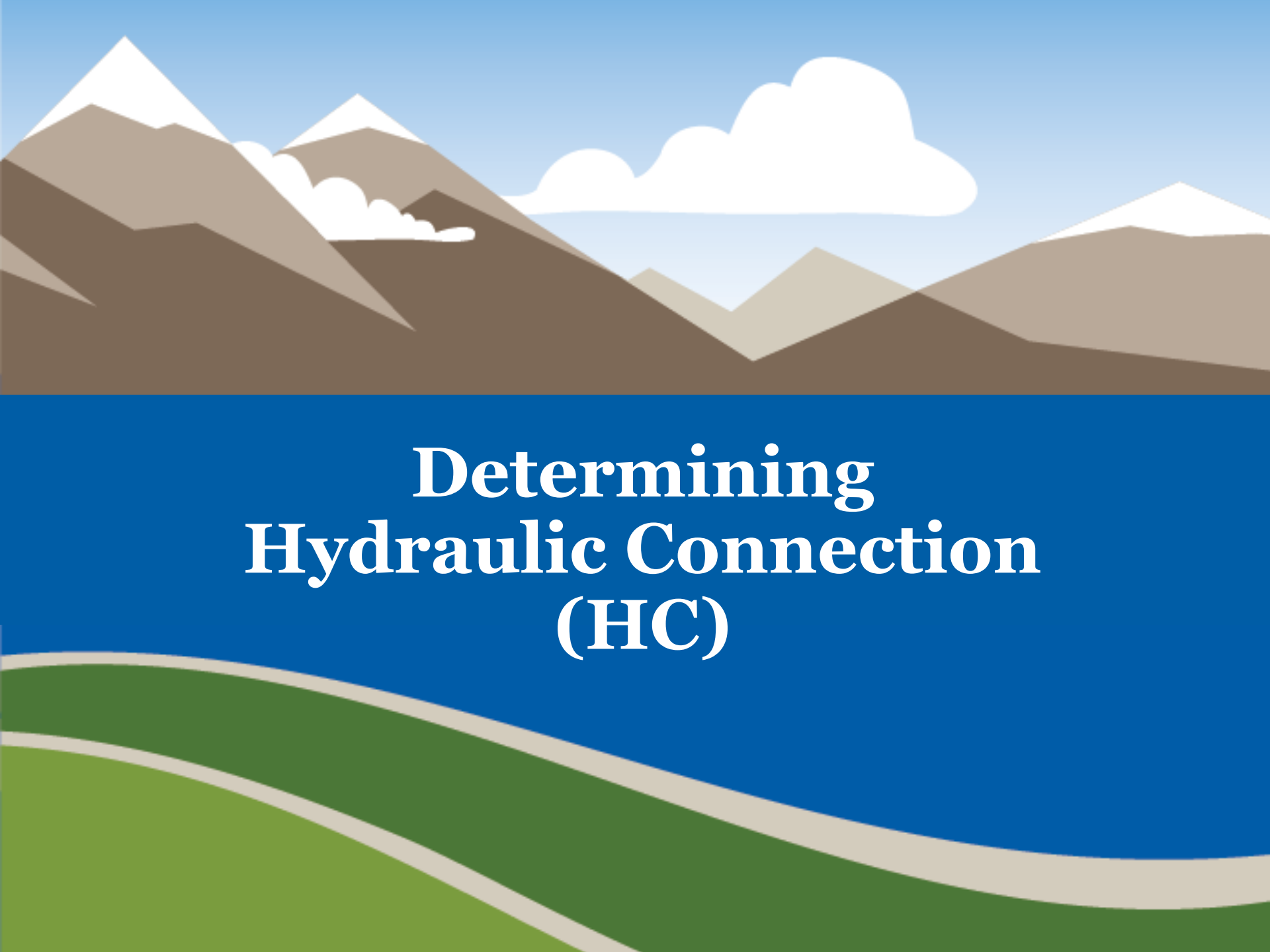
RAC 6 Meeting Summary

Any questions, comments, corrections?

Ongoing Outreach Efforts

Recent Presentations & Conversations

- Water Resources Commission (Sept/Nov)
- Groundwater Advisory Committee (Sept/Nov)
- Oregon Water Law Conference (Oct)
- Tribal-State Cultural Resources Cluster (Oct)
- House Committee on Agriculture, Land Use, Natural Resources and Water (Nov)
- Oregon Water Utilities Council (Nov)
- Local Governments (ongoing)
- Department of Land Conservation & Development, other sister agencies (ongoing)



Determining Hydraulic Connection (HC)

HC Assessment: Importance

A finding of Hydraulic Connection (HC) is a prerequisite for a finding of Potential for Substantial Interference (PSI)

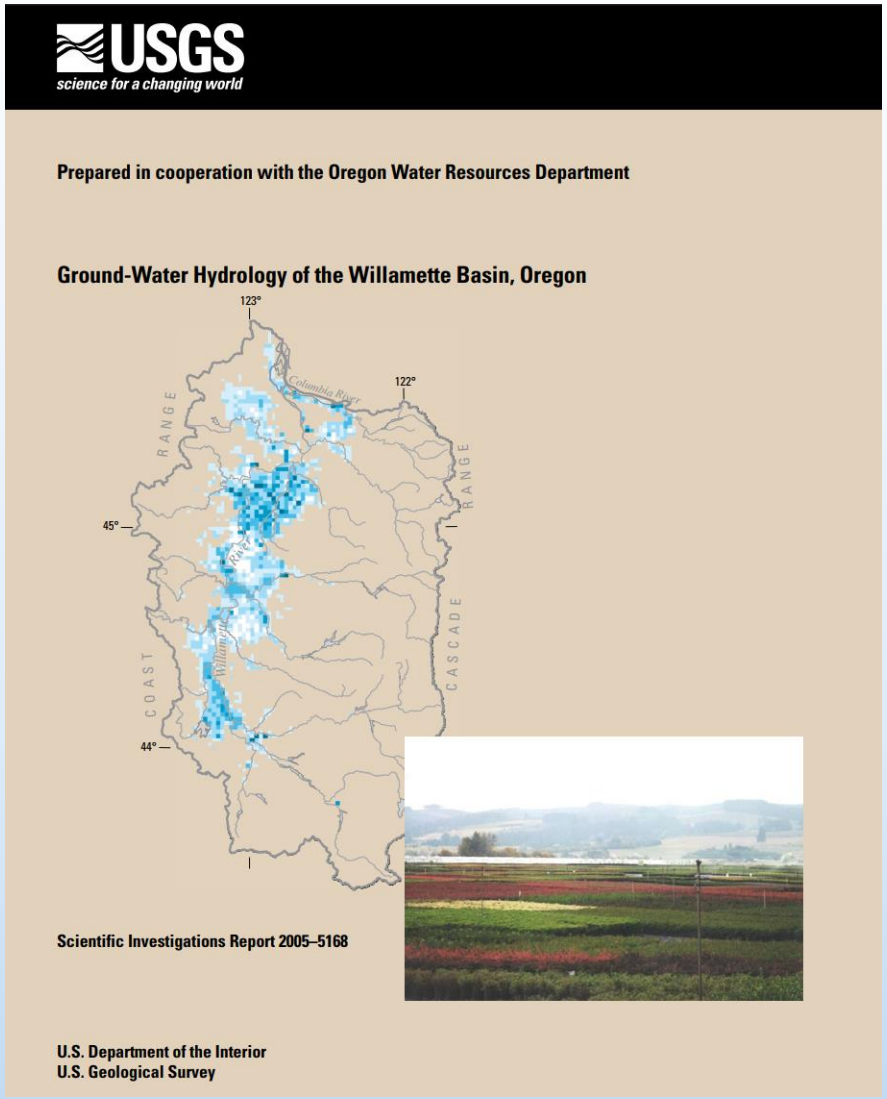
OAR 690-009-0020(3) Hydraulic Connection

(3~~6~~) "Hydraulic Connection" or "Hydraulic Interconnection" means saturated conditions exist that allow water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources. ~~means that water can move between a surface water source and an adjacent aquifer.~~

HC Assessment: Process

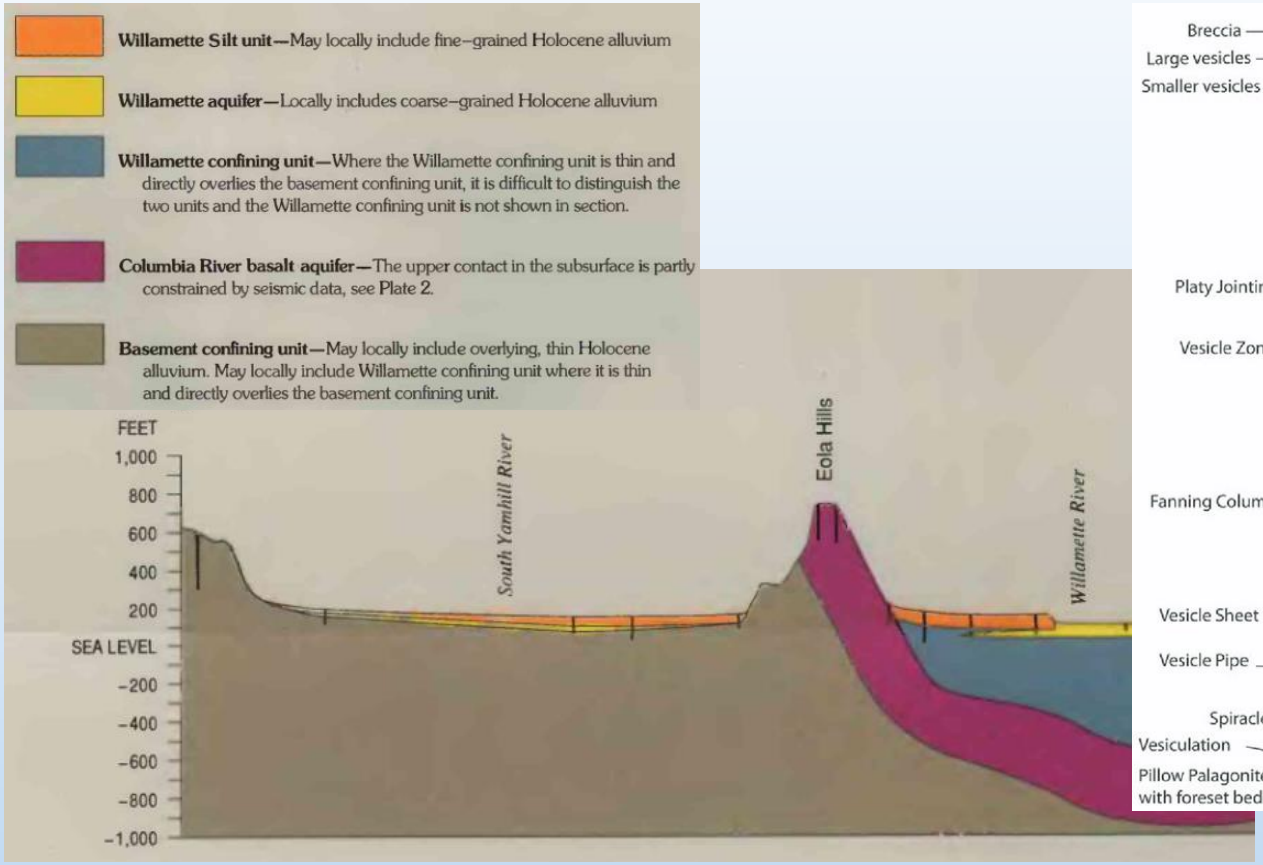
Detailed, site-specific evaluation based on a **preponderance of the evidence**, including:

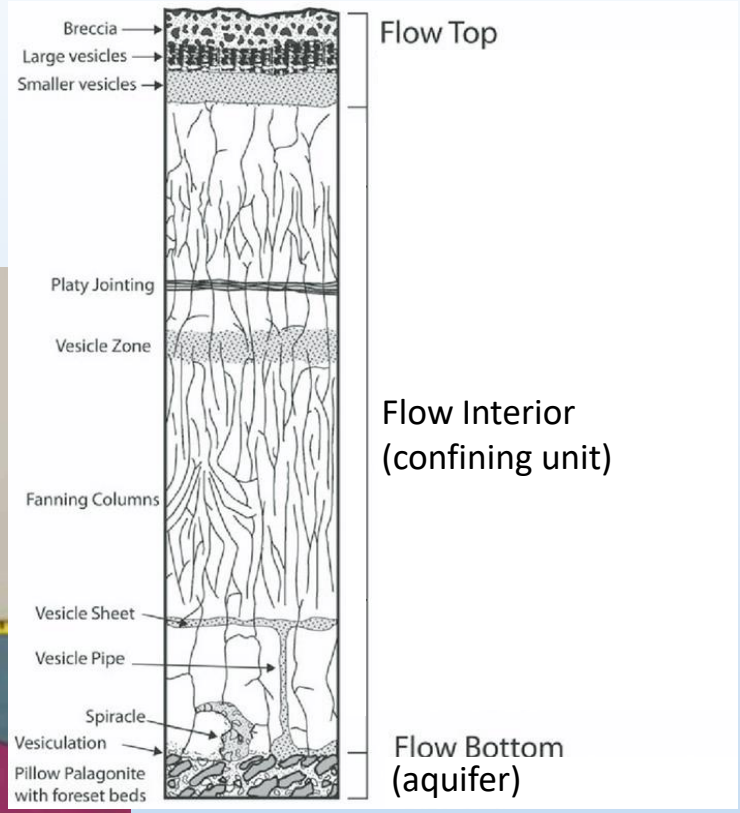
- Conceptual model
- GW and SW elevation data
- Stream periodicity
- Other relevant and available data, including information from application and public comments



HC Assessment: Conceptual Model

To find HC, conceptual model must allow for flow between surface water and aquifer





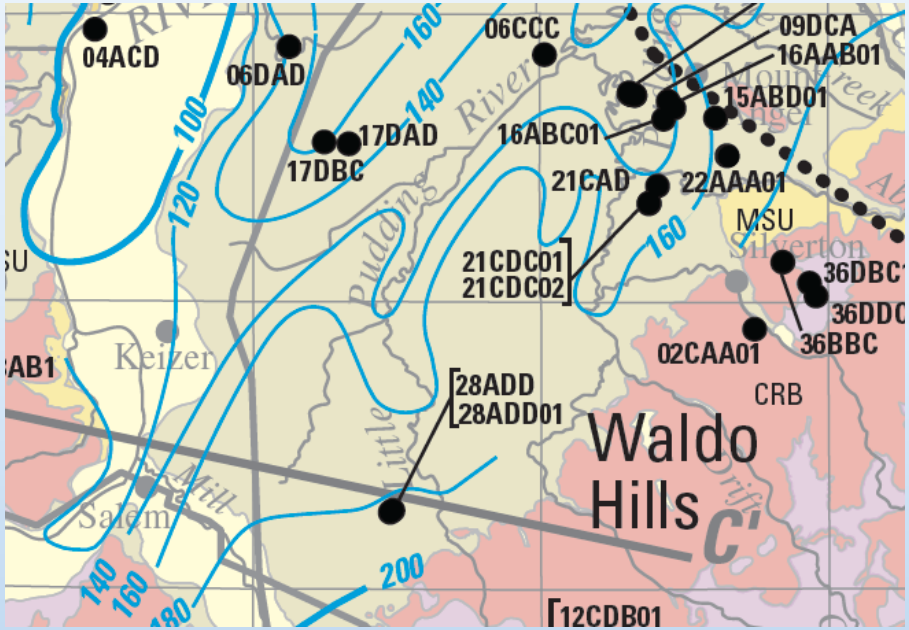
Sources: USGS PP-1424-A, Plate 3 & modified from Reidel et al., (2013), GSA Special Paper 497

HC Assessment: GW & SW Elevation Data

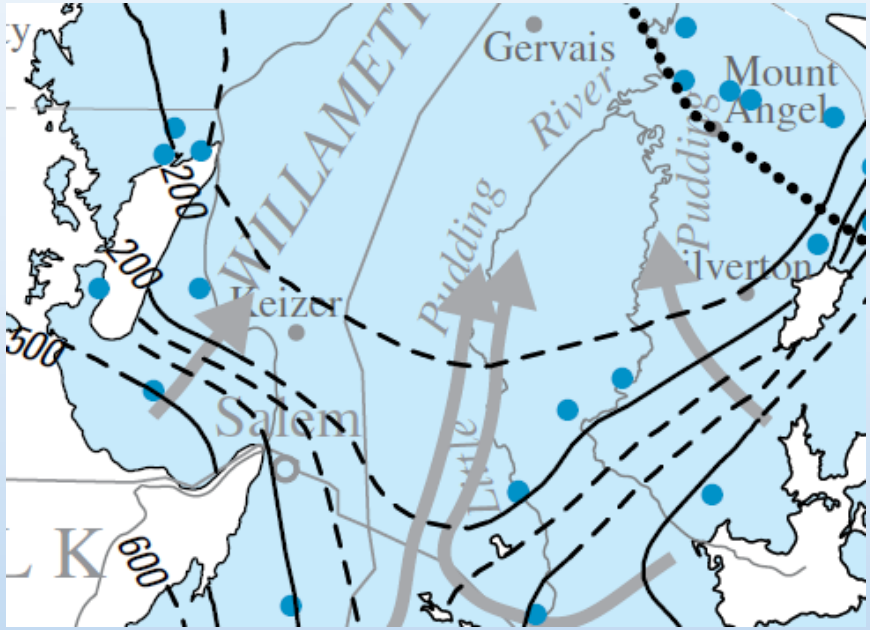
HC: GW elevation (near SW) ≈ SW elevation

Water table/potentiometric mapping shows GW flow toward (gaining)/away from (losing) SW

Alluvial Aquifer System



Columbia River Basalt Aquifer System



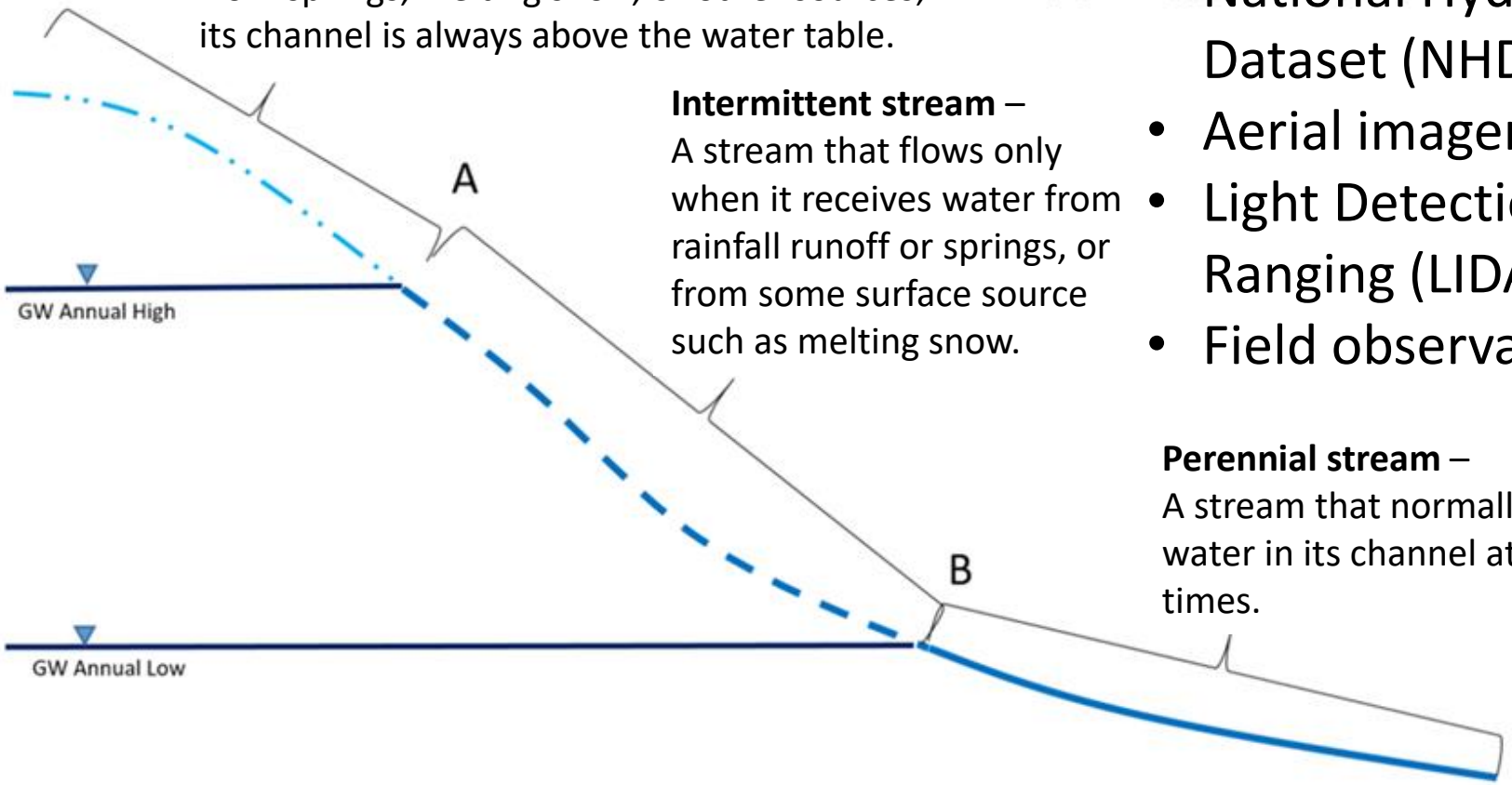
Source: USGS SIR 2005-5168, Plate 1 & Fig. 19

HC Assessment: Stream Periodicity

Ephemeral stream – A stream or part of a stream that flows only in direct response to precipitation; it receives little or no water from springs, melting snow, or other sources; its channel is always above the water table.

Intermittent stream – A stream that flows only when it receives water from rainfall runoff or springs, or from some surface source such as melting snow.

Perennial stream – A stream that normally has water in its channel at all times.



Data Sources:

- Topographic maps
- National Hydrographic Dataset (NHD)
- Aerial imagery
- Light Detection and Ranging (LIDAR)
- Field observation

Sources: OWRD; USGS (https://water.usgs.gov/water-basics_glossary.html)

OREGON WATER RESOURCES DEPARTMENT

HC Assessment: Other Relevant Data

Other relevant data sources, where available:

- Water level time series
- Seepage runs
- Streambed temperature profiling
- Hydrogeochemistry (specific conductance, isotopes, major ions, etc.)

OREGON WATER RESOURCES DEPARTMENT

HC Assessment: Summary

- Do not presume Hydraulic Connection
- Assessments are site-specific and evidence-based
- Assessment process will not be changed by proposed rules

Proposed Rules: HC → PSI → SI/UI

OAR 690-009-0040:

(2) A determination of hydraulic connection is a prerequisite for a determination of the potential for substantial interference.

…

(4) The potential for substantial interference with a surface water source exists if the well(s) under consideration will, over the full term of the proposed or authorized groundwater use, obtain water from streamflow depletion.

(5) For the purposes of issuing a permit for a proposed groundwater use, a finding of potential for substantial interference with a surface water source may mean that water is not available for the proposed groundwater use if the use will substantially interfere with a surface water source as per the definitions in OAR 690-008-0001 and OAR 690-300-0010.

Proposed Rules: HC → PSI → SI/UI

OAR 690-008-0001(10):

(10) "Substantial interference", "substantially interfere", "undue interference", or "unduly interfere" means the spreading of the cone of depression of a well to intersect a surface water source or another well, or the reduction of the groundwater levels as a result of pumping or otherwise extracting groundwater from an aquifer, which contributes to:

(a) Depletion of a surface water source with which the groundwater use has the Potential for Substantial Interference (OAR 690-009-0020(4)) and that:

(A) is already over-appropriated during any period of the year and is the source for a surface water right having a priority date senior to the priority date(s) of the groundwater appropriation(s); or

(B) is administratively or statutorily withdrawn with an effective date senior to the priority date(s) of the groundwater appropriation(s); or

Proposed Rules: HC → PSI → SI/UI

OAR 690-008-0001(10):

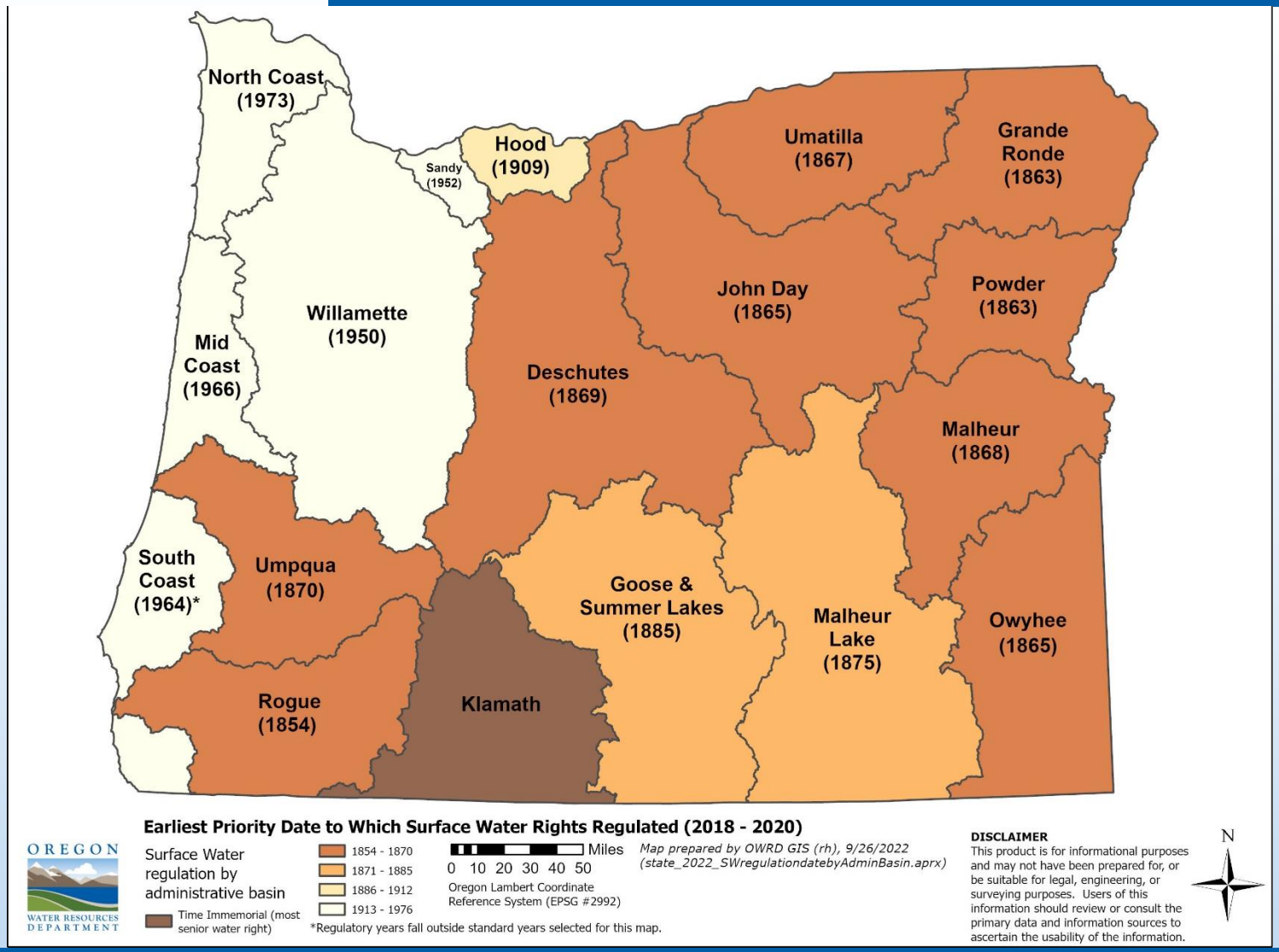
(a) Depletion of a surface water source with which the groundwater use has the Potential for Substantial Interference (OAR 690-009-0020(4)) and that:

(C) is restrictively classified with an effective date senior to the priority date(s) of the groundwater appropriation(s); or

(D) is the source for one or more existing surface water rights that have been regulated off due to insufficient supply to satisfy senior surface water rights and that have priority dates senior to the priority date(s) of the contributive groundwater appropriation(s) or is subject to a rotation agreement to address limited surface water supplies among surface water rights that have priority dates senior to the priority date(s) of the groundwater appropriation(s); or

(E) has a minimum perennial streamflow or instream water right that is unmet during any period of the year and has an effective date or priority date that is senior to the priority date(s) of the groundwater appropriation(s).

Capture –Regulation History



Source: OWRD

Reasonably Stable Groundwater Levels - Methodology

OREGON WATER RESOURCES DEPARTMENT

Goals for Reasonably Stable

- Consistent with hydrogeologist interpretation
- Consistent (limit switching between stable and not) within the dynamically stable range
- Sensitive to declines
- Limit (and define) the burden of collecting water levels
- Transparent and easy to implement

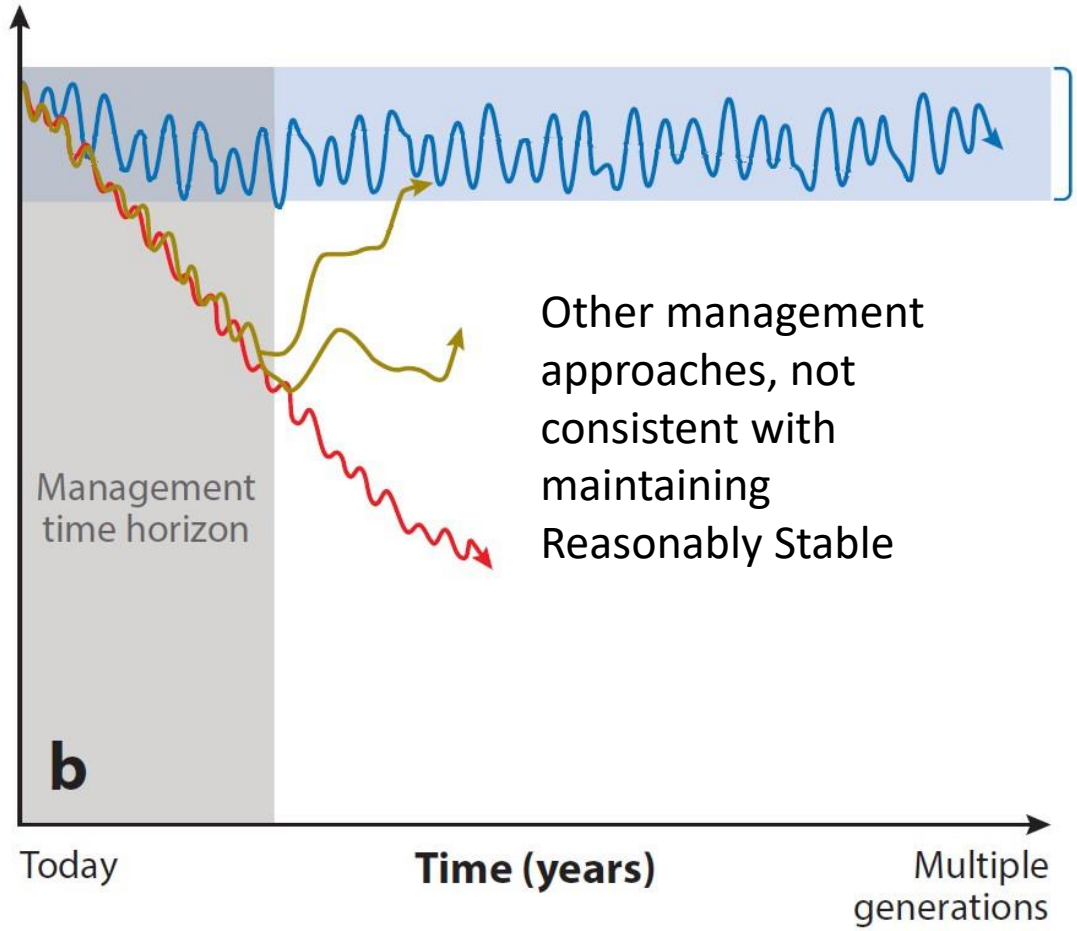
OREGON WATER RESOURCES DEPARTMENT

Summary of Reasonably Stable

- Rate of decline limited to ~~0.5~~ XX feet/year, using the slowest rate among preceding averages from 5 through 20 years
- Decline from ~~highest known~~ pre-development limited to ~~25~~ YY feet
- At least 4 measurements span 5 years
- Findings persist 5 years over breaks

OREGON WATER RESOURCES DEPARTMENT

Dynamically Stable Range



- Range of water levels
- Fluctuate around a constant value within management time horizon

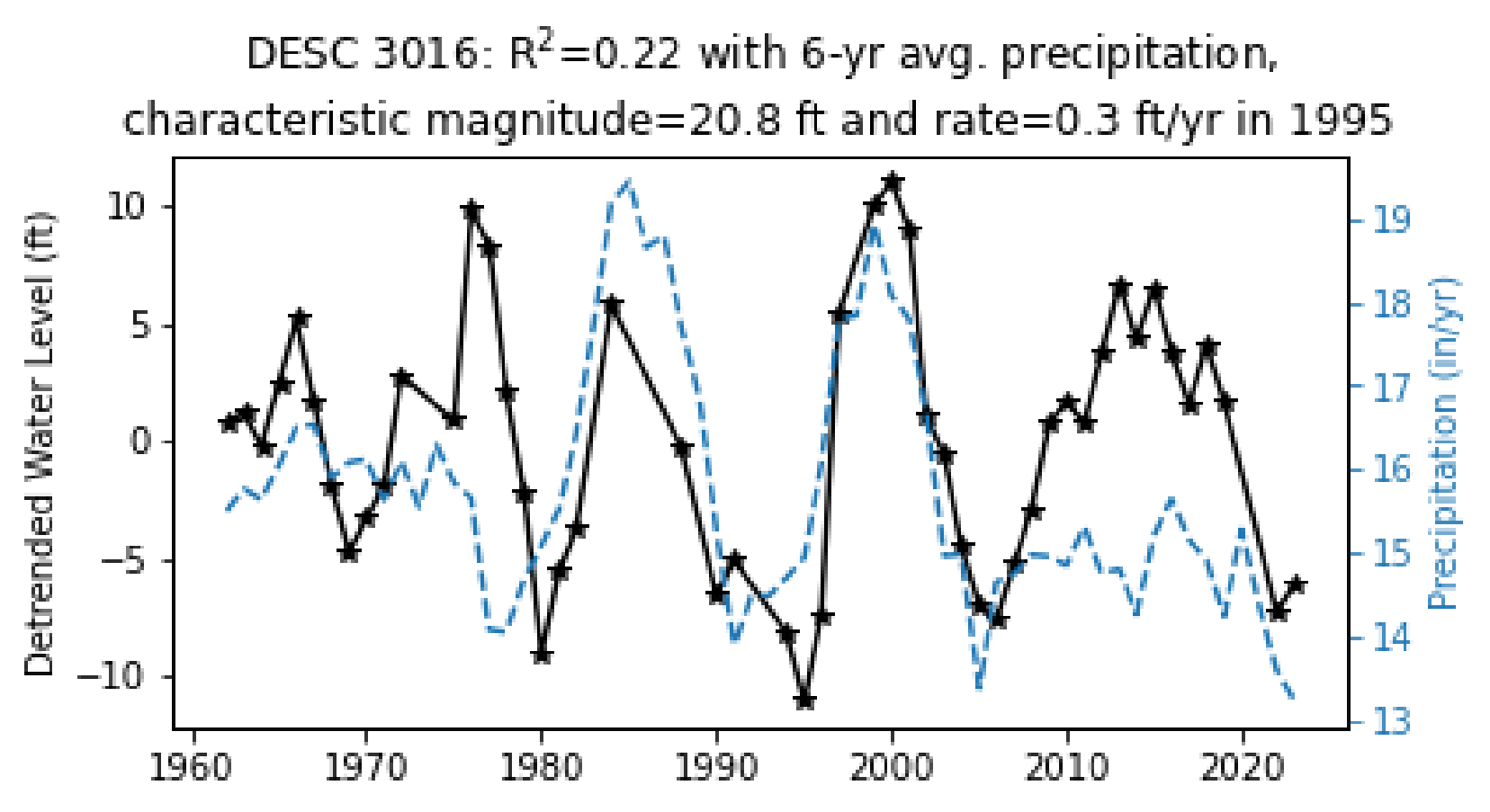
OREGON WATER RESOURCES DEPARTMENT

Evaluation of Dynamically Stable Range

- Select wells to represent “stable”:
  - Correlated with precipitation averaged 2 to 10 years*
  - With long-term rate of decline < 0.5 ft/yr
- Process data:
  - Remove the best-fit linear trend
  - Cluster similar wells to reduce spatial bias*
- Evaluate:
  - Total decline and rate of decline*
  - Maximum values in each well
  - Percent of time passing test

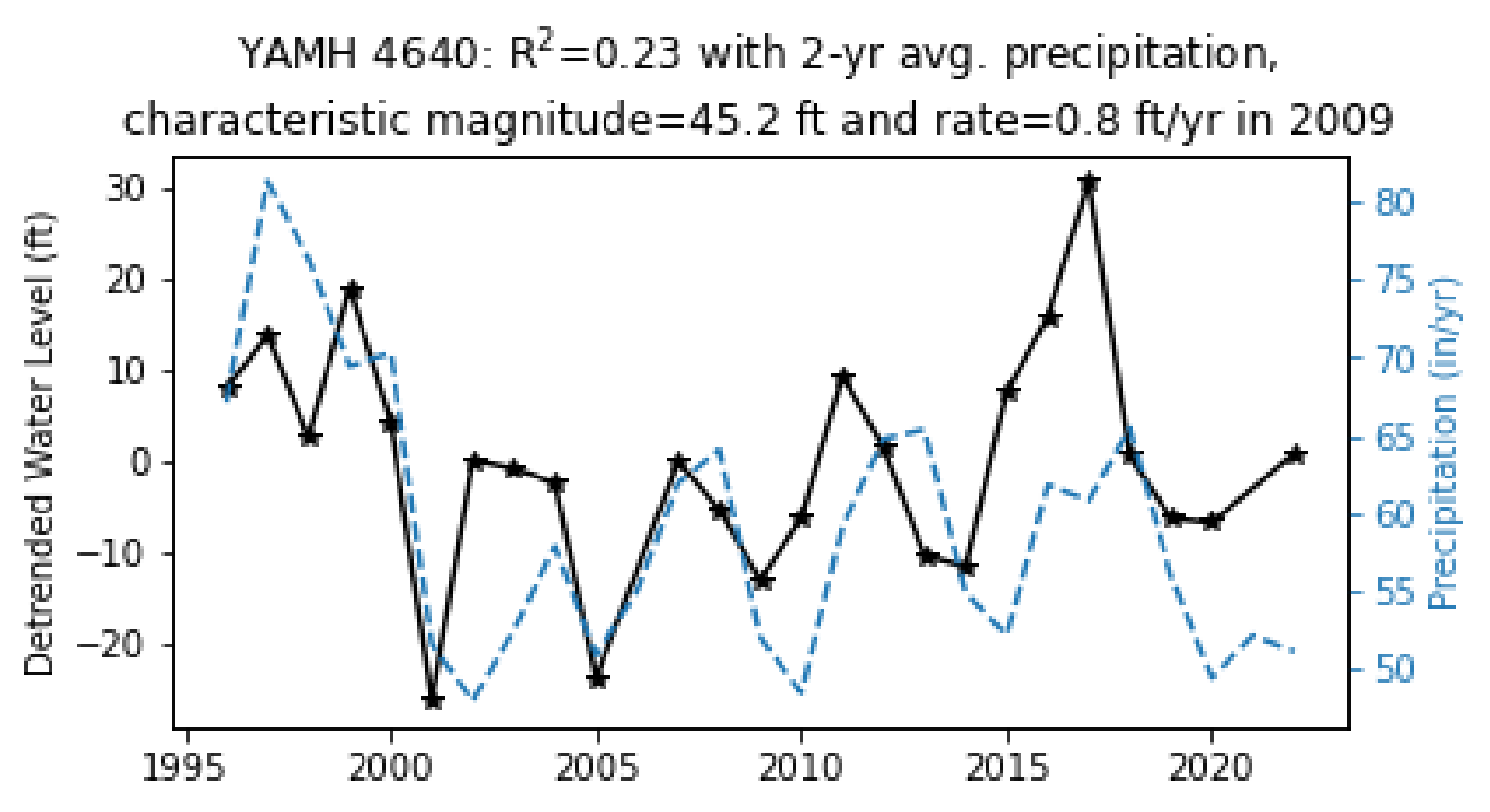
OREGON WATER RESOURCES DEPARTMENT

Wells Correlated w/Precipitation



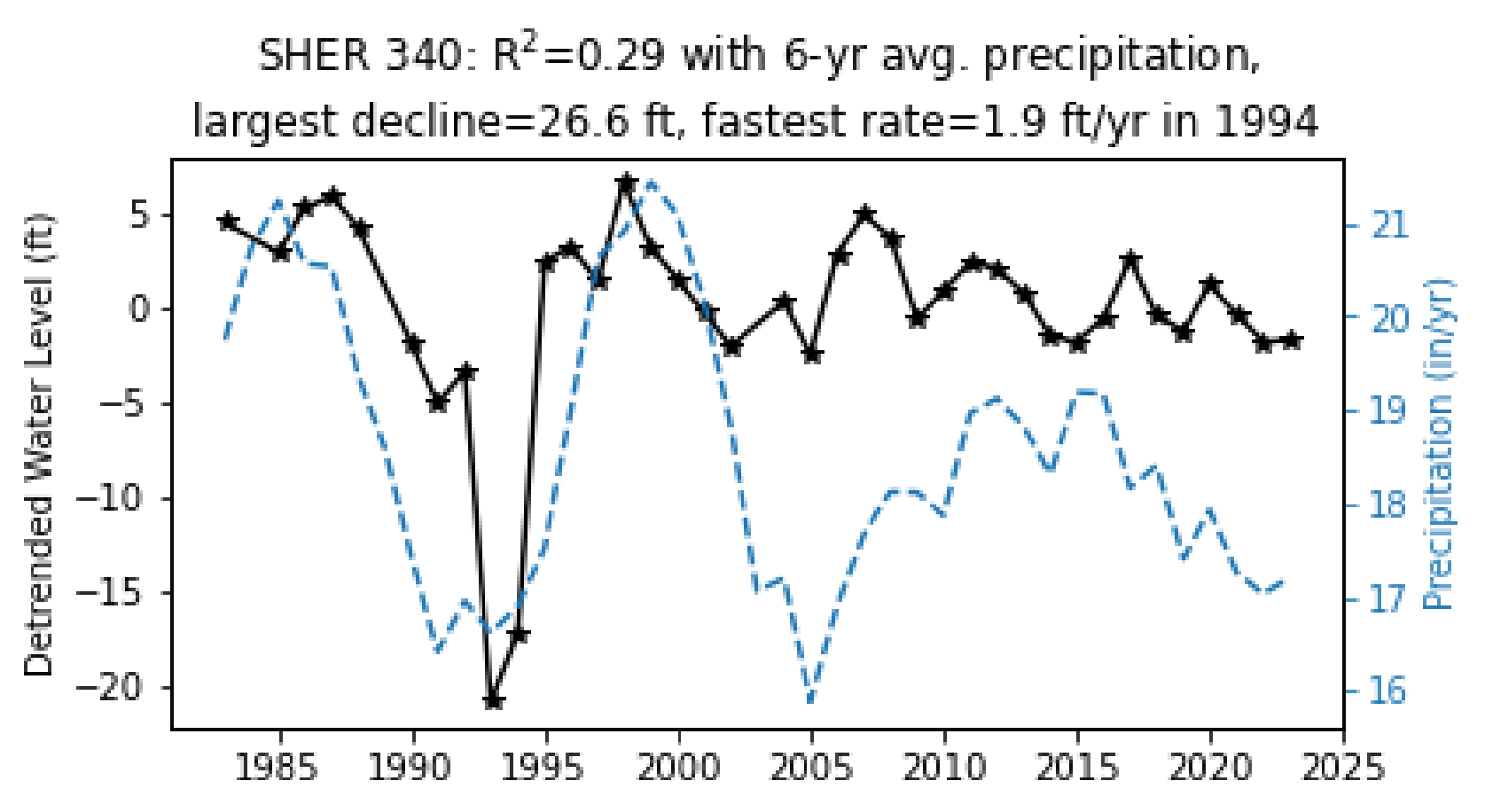
OREGON WATER RESOURCES DEPARTMENT

Wells Correlated w/Precipitation



OREGON WATER RESOURCES DEPARTMENT

Wells Correlated w/Precipitation

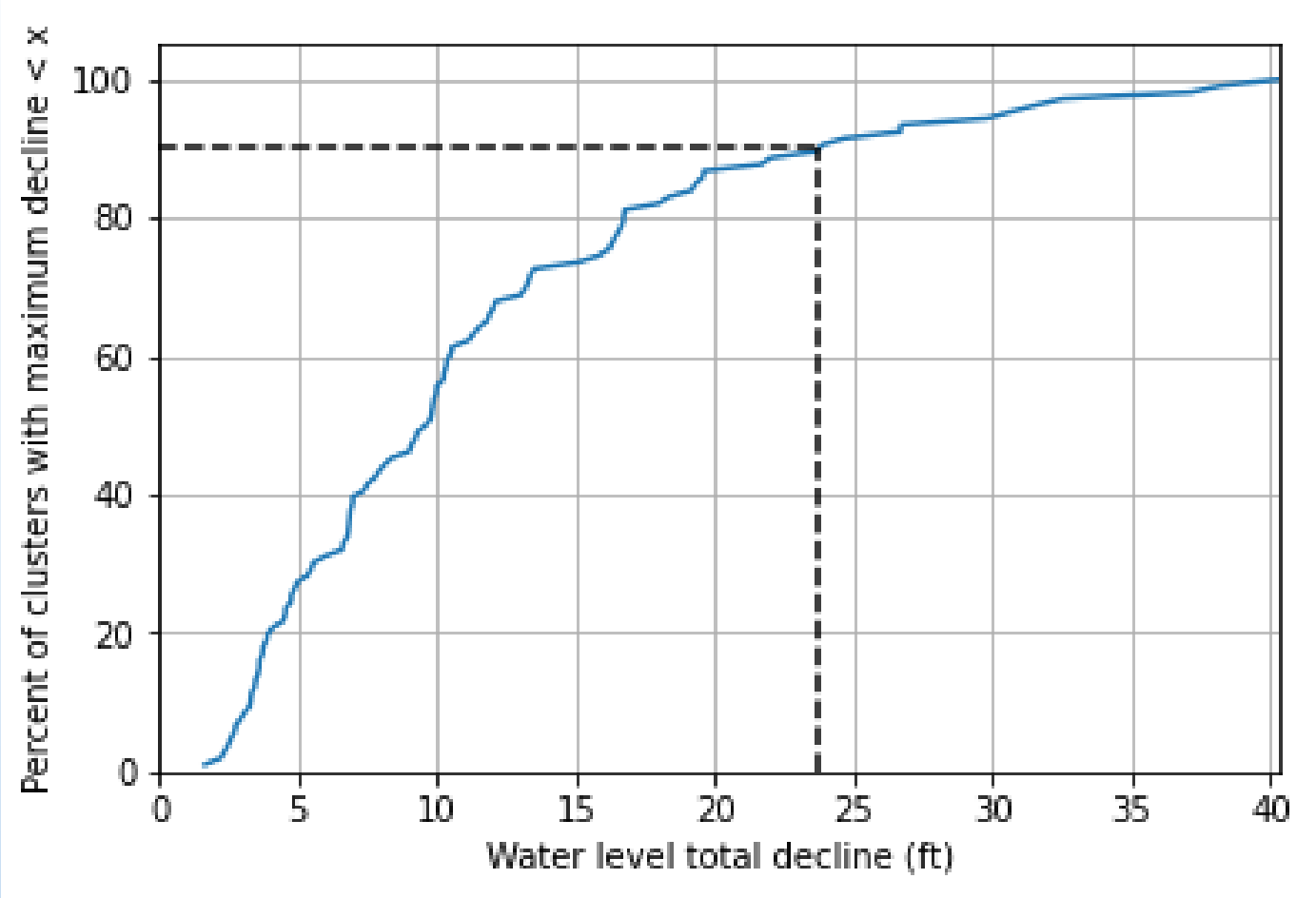


OREGON WATER RESOURCES DEPARTMENT

Total Decline Test

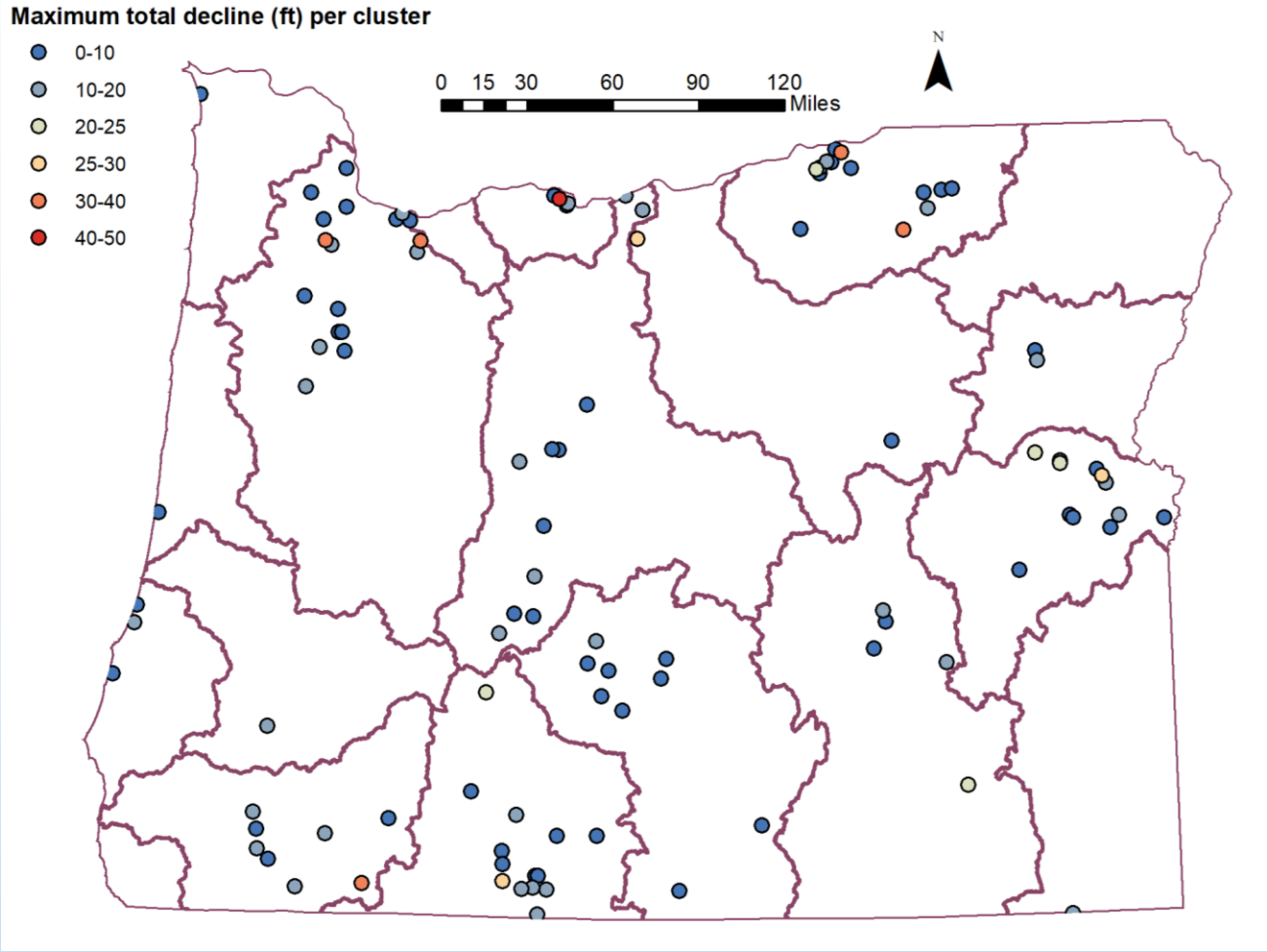
OREGON WATER RESOURCES DEPARTMENT

Total Decline: Percent of Time



OREGON WATER RESOURCES DEPARTMENT

Total Declines Spatial Distribution



OREGON WATER RESOURCES DEPARTMENT

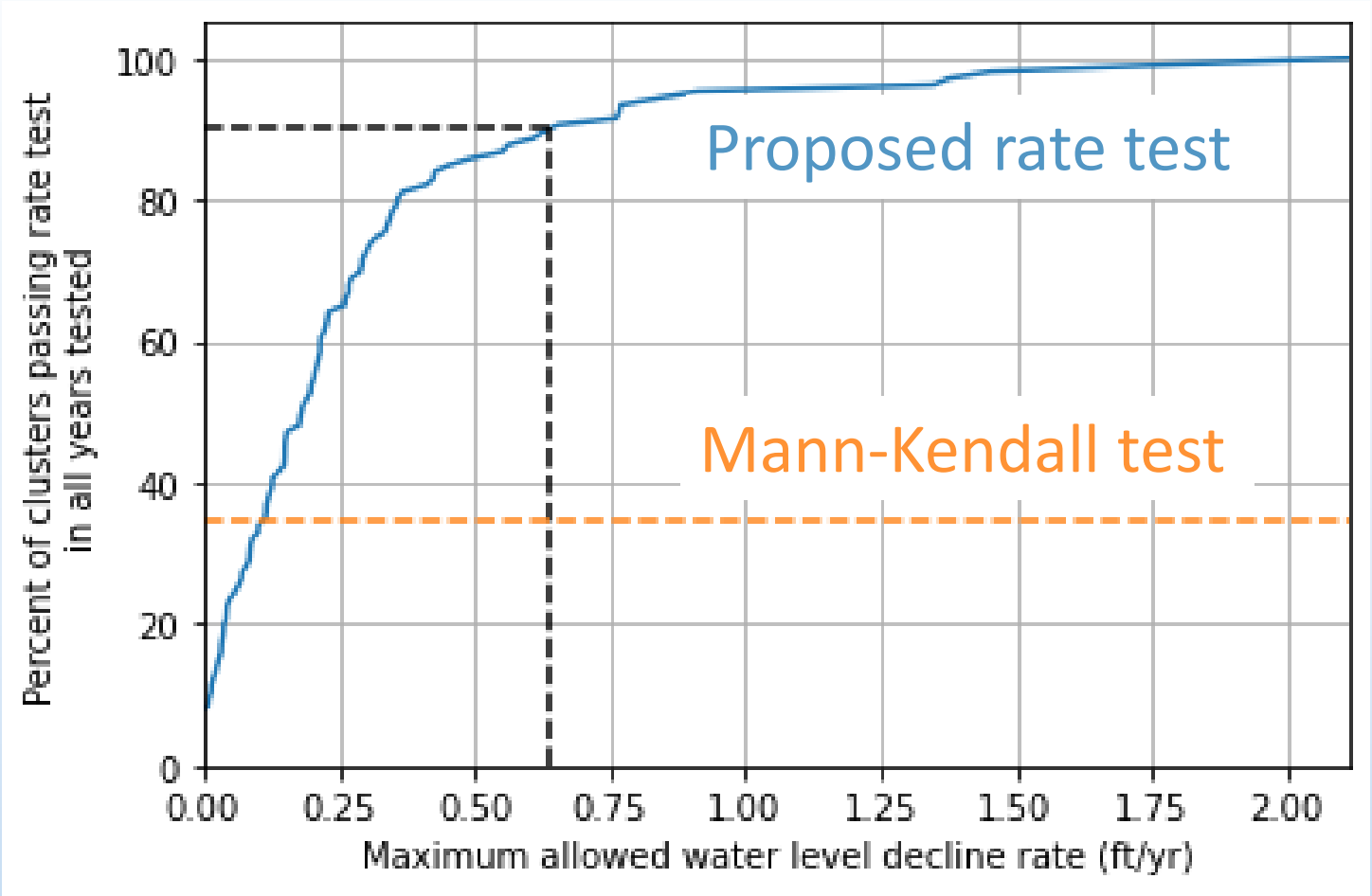
Total Decline: Percent of Time

OREGON WATER RESOURCES DEPARTMENT

Rate Test

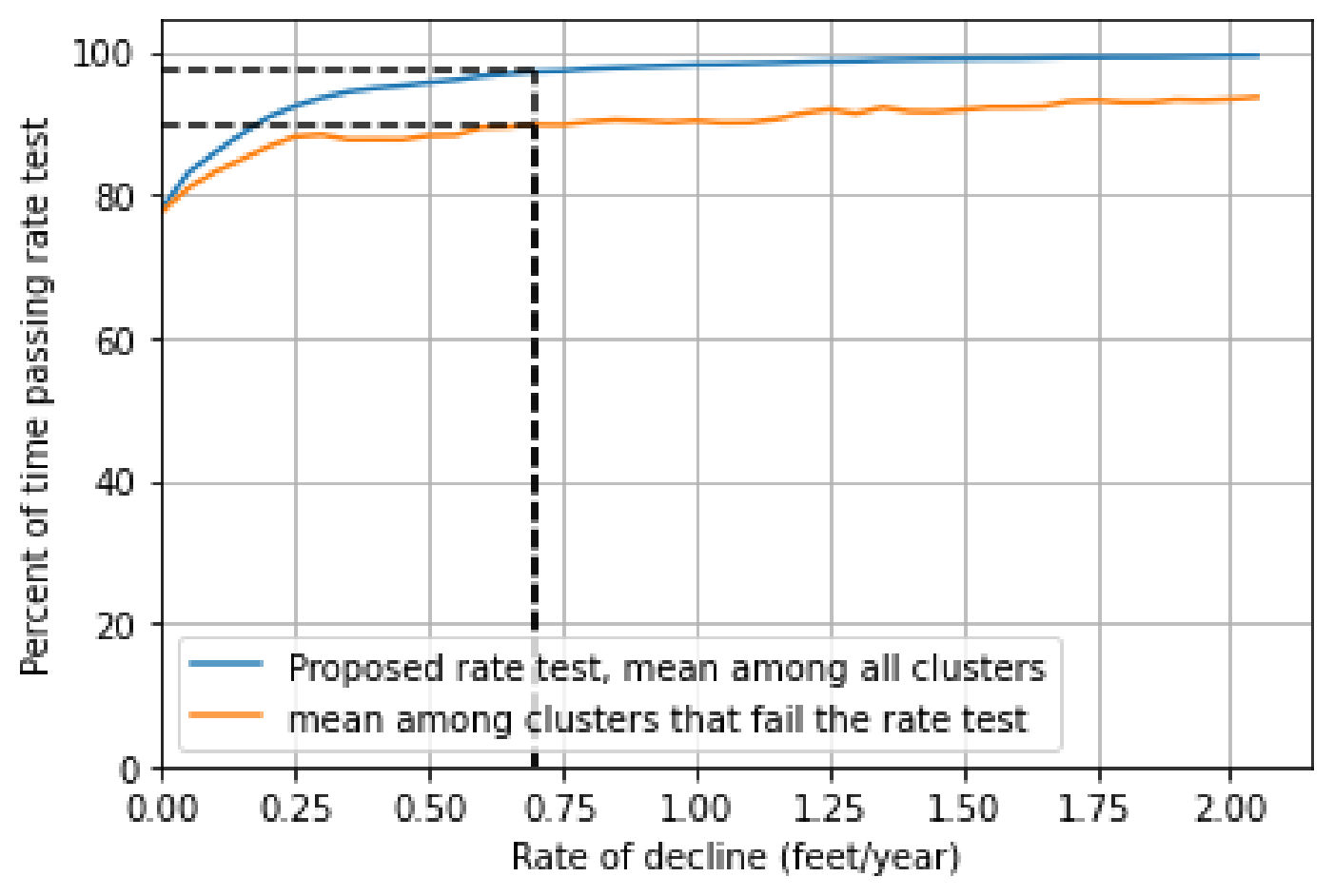
OREGON WATER RESOURCES DEPARTMENT

Rate of Decline: Percent of Well Clusters



OREGON WATER RESOURCES DEPARTMENT

Rate of Decline: Percent of Time Passing Rate Test



OREGON WATER RESOURCES DEPARTMENT

Analysis Summary

- Filtered for wells expected to represent the dynamically stable range, found 234
  - Flexible correlation with precipitation allows for local variability in hydrogeology
- Tested total declines and rates of decline
- Total declines did not vary consistently by basin
- Thresholds can include 90% of clusters
  - Water levels remain stable over 97-99% of time
  - Proposed rate test remains stable more than a standard statistical test
- Seeking technical peer-review and RAC feedback

Reasonably Stable Groundwater Levels - Draft Rules (Div 8)

690-008-0001(9) – Reasonably Stable Groundwater Levels

(9) "Reasonably Stable Groundwater Levels" means:

(a) The Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof:

(A) indicate no decline or an average rate of decline of less than ~~0.5~~ XX feet per year over any immediately preceding averaging period with duration between 5 and 20 years. Four Annual High Water Levels are required to calculate the rate of change, and at least one of these must have been measured between 5 and 20 years before the year under evaluation. If either of these conditions is not met, then data are insufficient to perform this test, and the Department will presume that water levels are not reasonably stable; and

(B) compared with the ~~highest known~~ pre-development static water level, have not declined or have declined by less than ~~the smaller of25~~ YY feet ~~and 8% of the greatest known saturated thickness of the groundwater reservoir~~.

690-008-0001(9) – Reasonably Stable Groundwater Levels

(9) "Reasonably Stable Groundwater Levels" means:

…

(b) Water level data must be available in the year under evaluation to perform the tests in (a). However, in the absence of current data, a finding of reasonable stability may be presumed to persist for a maximum of 5 years beyond the most recent Annual High Water Level.

(c) If groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir, then water levels may be presumed to be reasonably stable.

690-008-0001(9) – Reasonably Stable Groundwater Levels

(9) "Reasonably Stable Groundwater Levels" means:

…

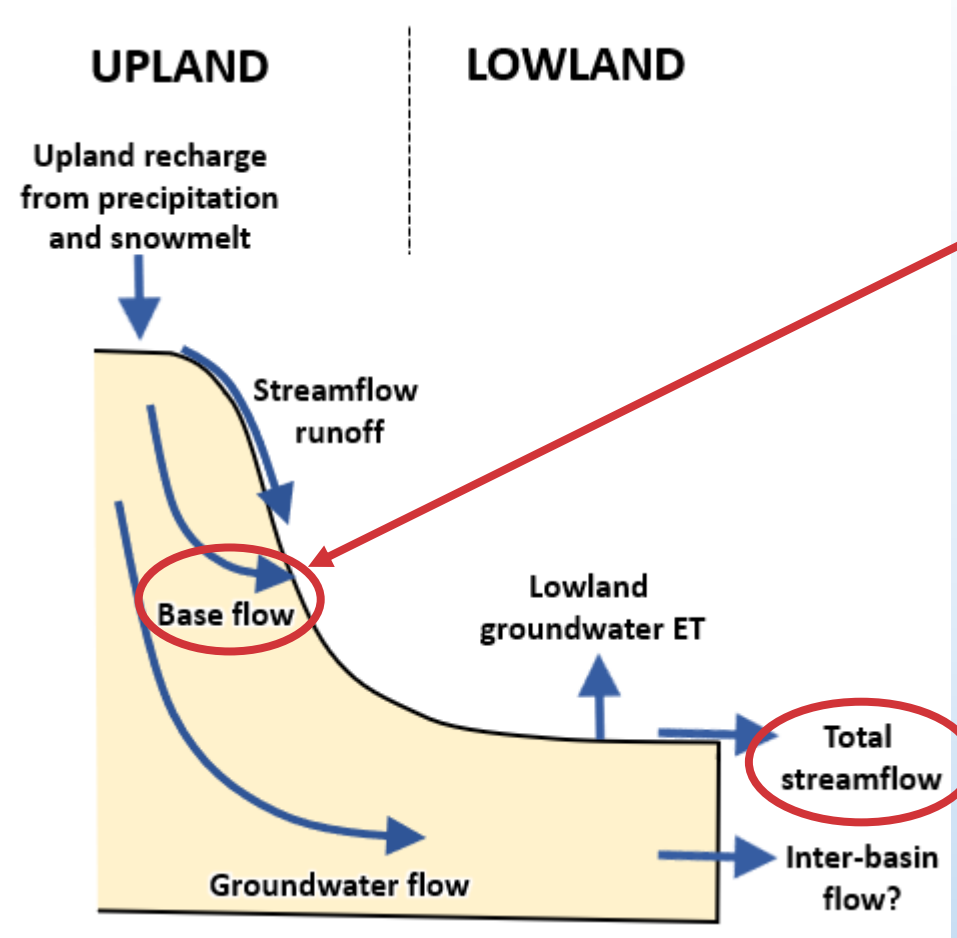
(d) The limits in part (a) of this definition may be superseded by limits defined in a basin program rule adopted pursuant to the Commission's authority in ORS 536.300 and 536.310. ~~However, the maximum allowable rate of decline in the revised part (a)(A) may not exceed 3 feet per year, and the maximum allowable total decline in part (a)(B) may not exceed the smaller of 50 feet and 15% of the greatest known saturated thickness of the ground-water reservoir.~~

(e) This definition does not apply to Critical Groundwater Areas designated under 690-0010.

Overview of House Bill 2018

OREGON WATER RESOURCES DEPARTMENT

HB 2018: Groundwater Budgets



Phase 1 expected in 2026

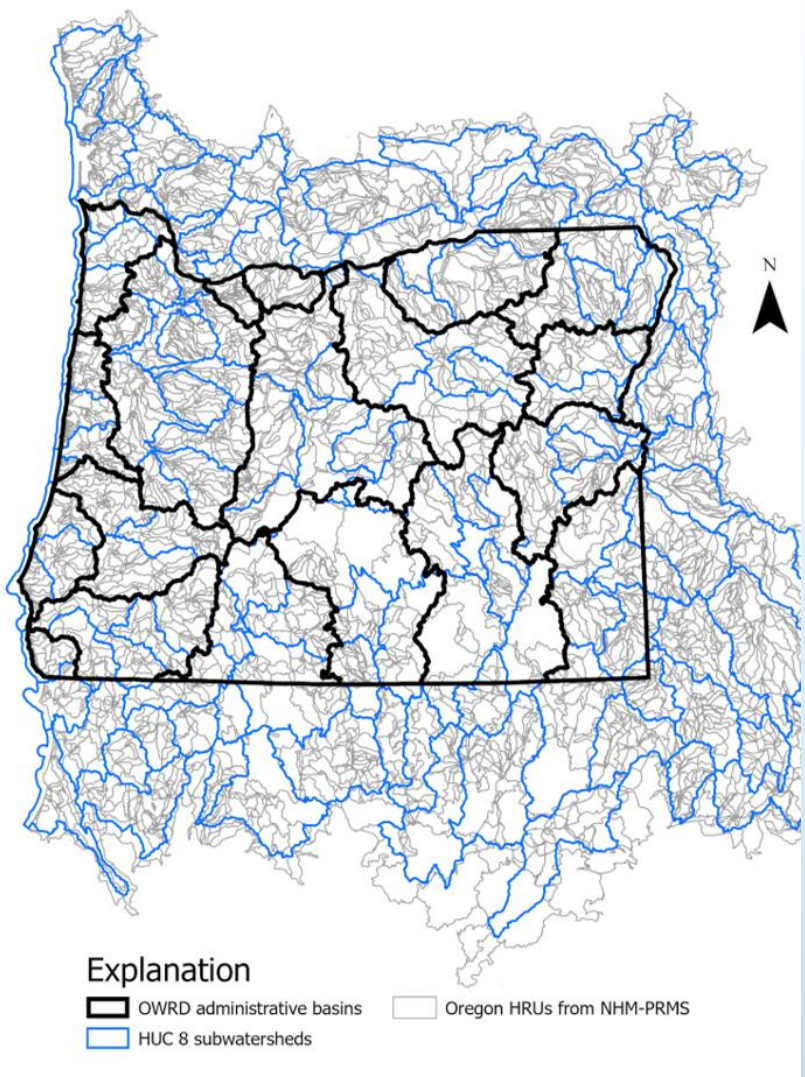
- Deliverables include:
  - Initial baseflow estimation report
  - Collection and analysis of specific conductance (SC) data to support refined baseflow estimates
  - Comparison of the USGS national hydrologic model (NHM-PRMS) with Oregon gage data

Source: USGS

HB 2018: Groundwater Budgets

Phase 2 expected in 2032

- Deliverables include:
  - Updated baseflow estimation report using SC data collected in Phase 1
  - Oregon-specific hydrologic model (PRMS) further calibrated with Oregon gage data
  - Modeled groundwater recharge estimates

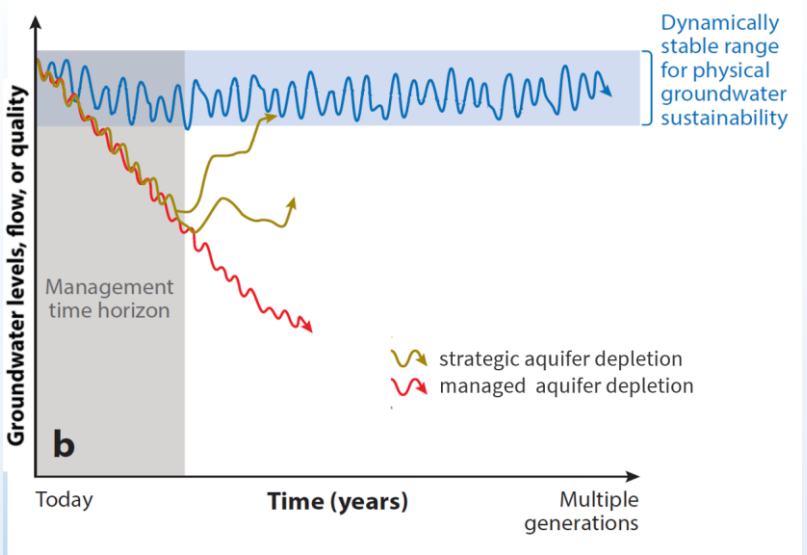


Source: USGS

Allocation Rules

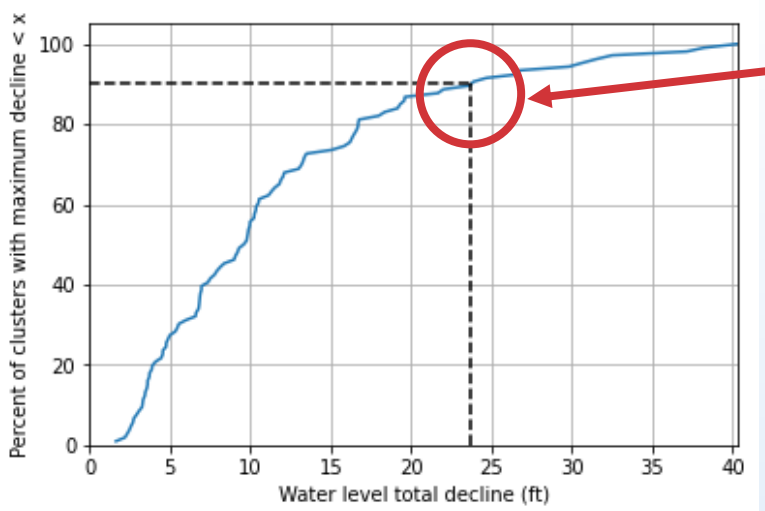
Proposed Rules are based on statute and science:

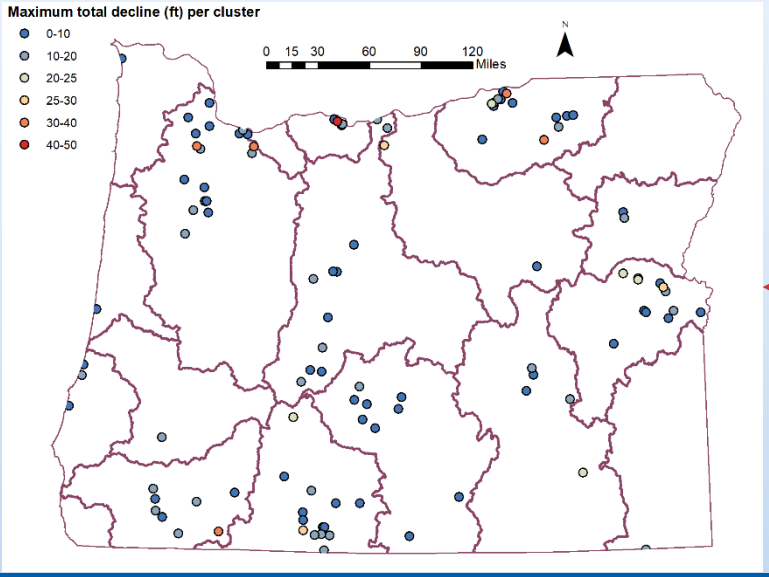
- Defines Reasonably Stable Groundwater Levels (RSGLs); evaluated against site-specific water level data
- Avoids new groundwater rights impacting already over-appropriated surface water; based on an application-specific evaluation of HC, PSI, and SI considering all available and relevant data.



Source: USGS

Allocation Rules: RSGL



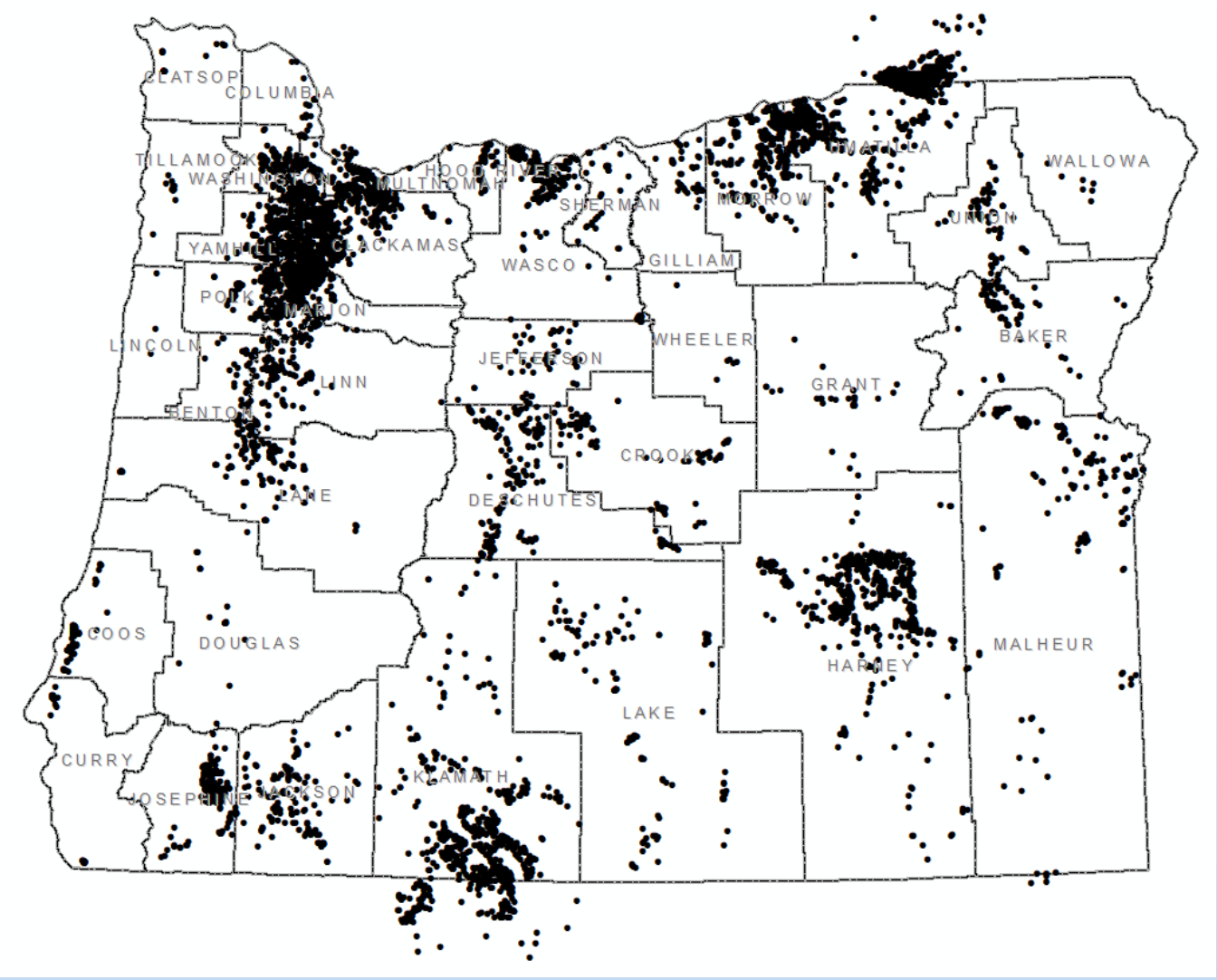


- The proposed definition of Reasonably Stable Groundwater Levels describes more than 90% of wells responding to climate (recharge) variability
- This state-wide definition is scientifically robust and more protective than existing thresholds
- Observed magnitudes of climate-correlated declines do not depend consistently on basin or climate region

Source: USGS

OREGON WATER RESOURCES DEPARTMENT

RSWL Data Availability: Wells with >4 Measurements



Allocation Rules: HC and PSI

Hydraulic Connection(HC) assessment remains unchanged:

- Preponderance of the evidence standard
- Best available data; including existing or proposed well construction information
- and generally accepted hydrogeologic principals; applied to the specific proposed use

Potential for Substantial Interference (PSI) assessment:

- Removes allowance for longer-term, cumulative impacts from new/junior gw users on existing/ senior sw rights
- Based on conditions of a tributary surface water source ; hydraulically connected to the proposed future right

Source: USGS

RAC Roundtable

Public Comment

Schedule/
Wrap Up/Next Steps

Schedule

RAC Meetings #1-8

Input on Draft Rules; Input on Draft Statement of Need, Racial Equity Impacts, Economic & Fiscal Impacts

April 2023 - January 2024

Notice of Proposed Rulemaking/

Start of 90-day Public Comment Period

Spring 2024

Public Hearings

Spring 2024

Last Day of Public Comment Period

Spring 2024

Review Public Comments

Revise Draft Rules as needed; Develop WRC Proposal

Spring 2024

WRC Decision on Proposed Rule Adoption

Summer 2024

Effective Date of Final Rule

Summer 2024

Wrap Up/Next Steps

RAC Meeting 8 Tentative Agenda

- Draft Rules Review
- Fiscal & Economic Impacts

Email Rules Coordinator (laura.a.hartt@water.oregon.gov)

- Any additional input regarding today's draft rules and other materials by January 5, 2024

OREGON

WATER RESOURCES
DEPARTMENT