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WATER RESOURCES DEPARTMENT

Item B - Groundwater Allocation Process Rulemaking

Oregon Water Resources Commission

September 28, 2023

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Presentation Outline

- Short background and reason for rulemaking
- Rulemaking key issues
- Rulemaking schedule

Short Background and Reason for Rulemaking

Key Groundwater Concepts

- Groundwater is a flowing component of the water cycle
- The source of groundwater pumped from wells is:
  - storage (gw levels)
  - streamflow depletion (gw discharge to springs and stream baseflow)

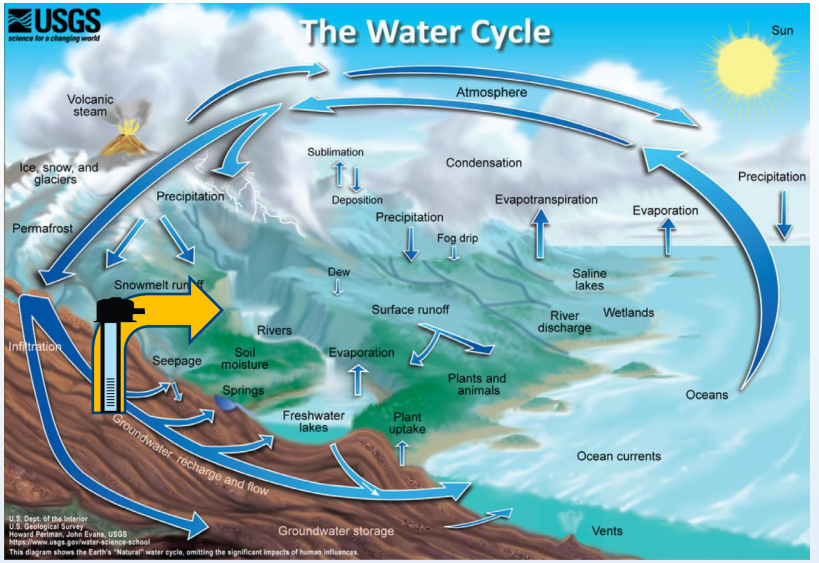

Photo: OWRD, Unnamed spring discharging to the Metolius River
Figure Source: USGS (https://www.usgs.gov/special-topics/water-science-school/science/fundamentals-water-cycle)

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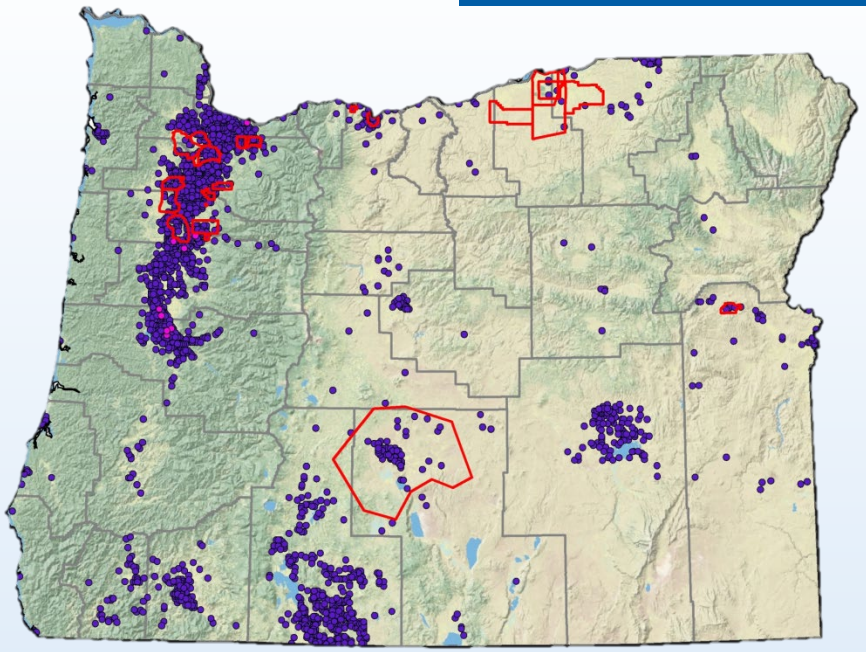
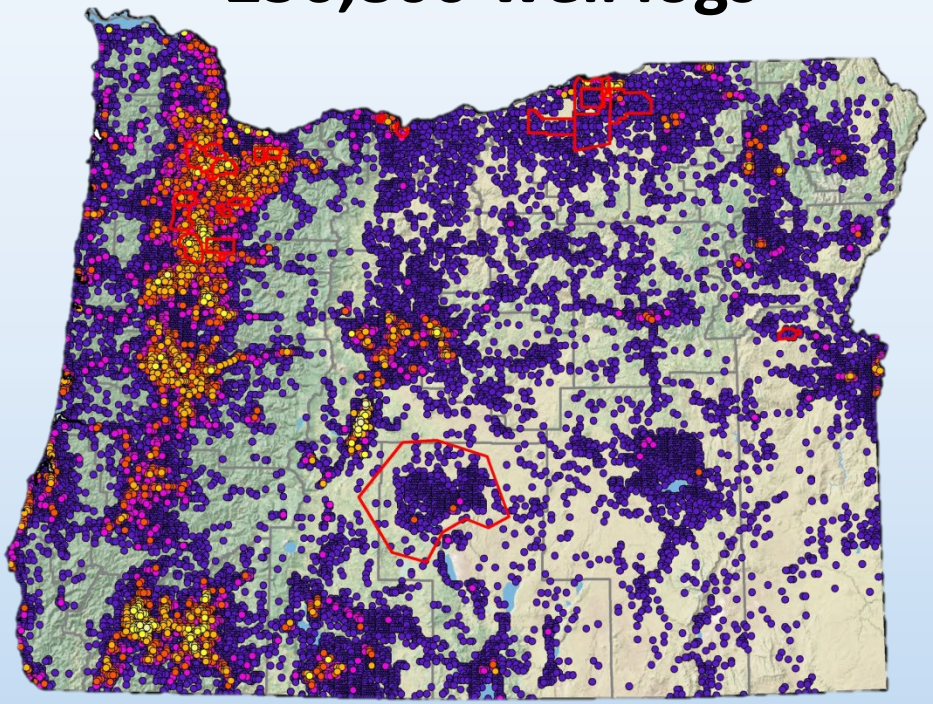
Groundwater Development



1955
4,660 well logs

2016
256,800 well logs



Density of Water Well Logs per 640 Acres

1 - 16	(<= 1 well / 40 acres)
17 - 32	(<= 1 well / 20 acres)
33 - 64	(<= 1 well / 10 acres)
65 - 128	(<= 1 well / 5 acres)
129 - 256	(<= 1 well / 2.5 acres)
257 - 320	(<= 1 well / 2.0 acres)
>320	(<= 1 well / 1.0 acres)

Counties

Ground Water Restricted Areas

Source: OWRD

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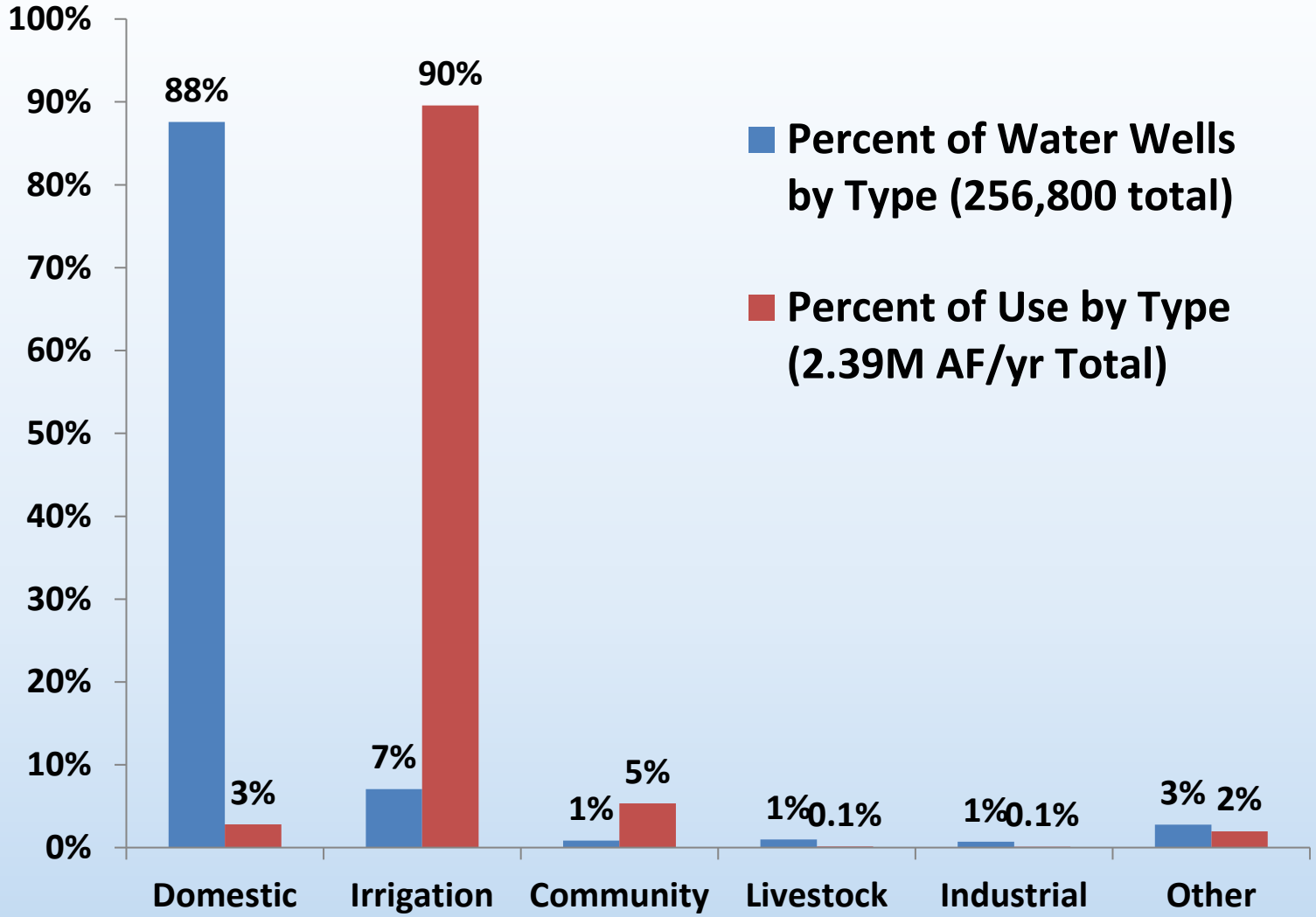
Water Use in Oregon (2010)



Source: USGS (Maupin and others, 2014, Estimated use of water in the United States in 2010: U.S. Geological Survey Circular 1405, 56 p., https://dx.doi.org/10.3133/cir1405)

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Current GW Allocation Process

Groundwater allocation has contributed to:

- groundwater level declines
- reduced surface water baseflow

Photo: OWRD, Crooked River

Commission Request

Update groundwater allocation rules to be more sustainable and protective of existing water users, both instream and out-of-stream.

Photo: OWRD, Hibbard Spring

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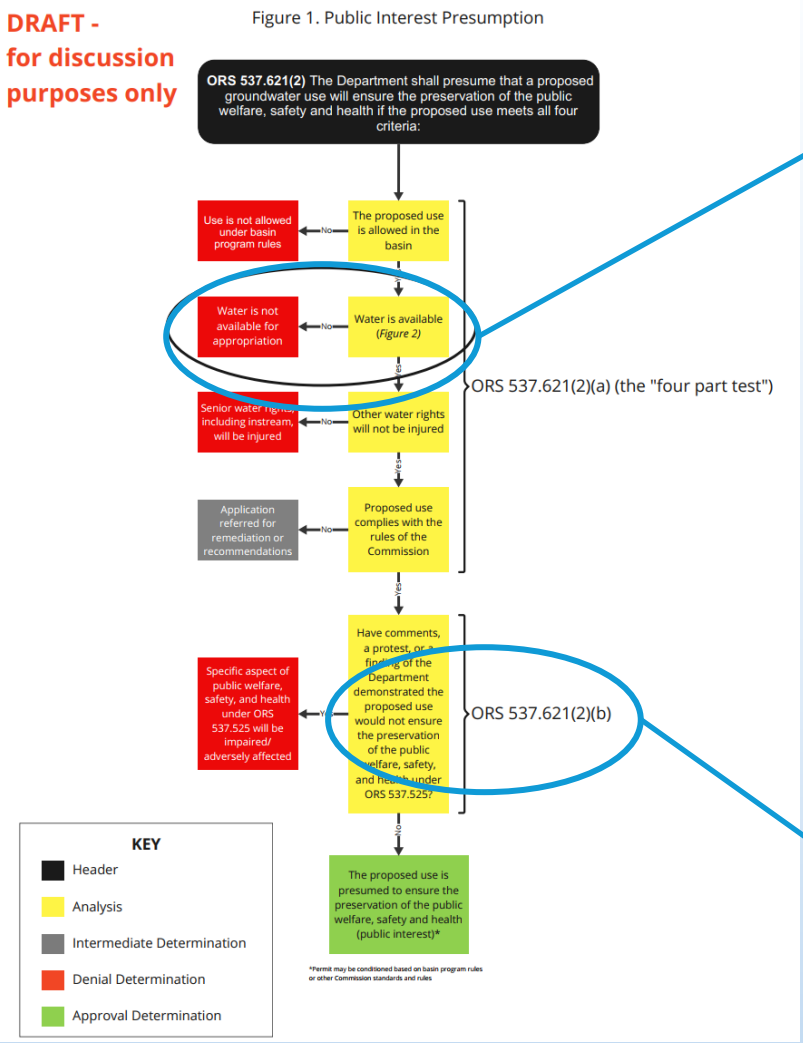
Agency Response

OWRD is proposing updated groundwater allocation rules that are more sustainable and protective of senior users

The process has included:

- Public outreach – 5 meetings, Fall 2022
- RAC meetings – 6 meetings since April 2023
- GWAC engagement - 7 meetings since March 2023
- Commission updates – since December 2021

Water Is Available



Three Quantitative Criteria:

- Reasonably Stable Water Levels exist
- Already over-appropriated surface water will not be further impacted over the life of the proposed water right
- The target aquifer can produce the requested rate

Other public interest criteria from statutory policy can be addressed as needed

Water is Available if…

Existing:

Requested source is not over-appropriated:

- doesn't further deplete over-appropriated surface water
  - limited to < 1 mile and < 1 year
- allocation < average annual recharge
  - defer to definition of declined excessively

Proposed:

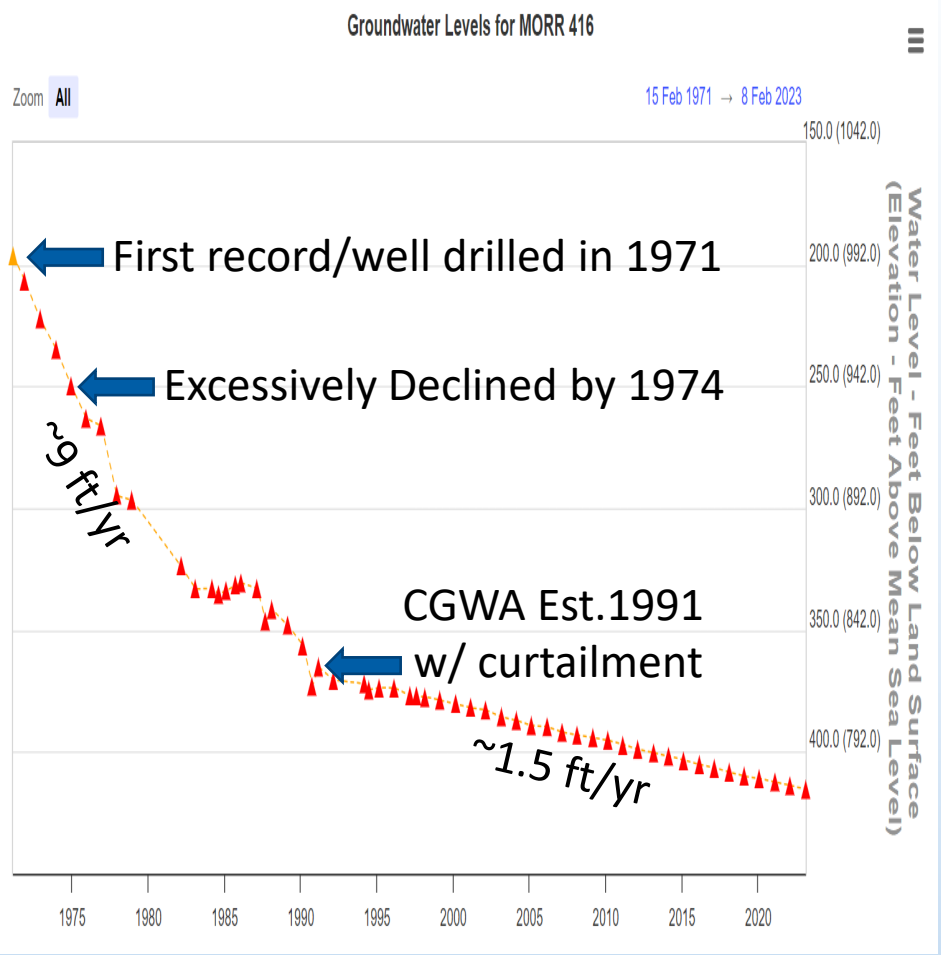
- Water levels are reasonably stable
- Substantial interference with surface water is avoided
- Target aquifer can produce requested rate

Declined Excessively

Declined Excessively is:

Lowering the annual high water level within a ground water reservoir, or part thereof, greater than

- 50 feet below the highest known water level; or
- 15% of the greatest known saturated aquifer thickness



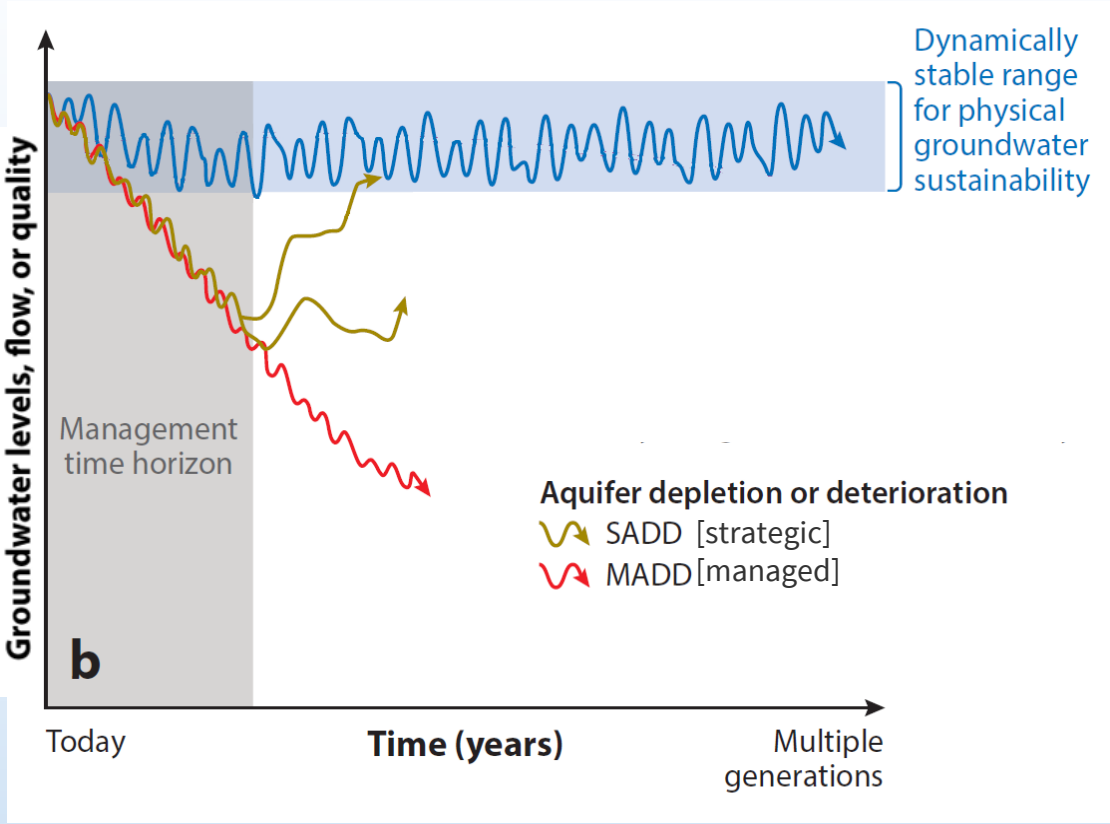
Hydrograph for MORR 416, Butter Creek Critical Groundwater Area in Morrow County, https://apps.wrd.state.or.us/apps/gw/gw_info/gw_hydrograph/Hydrograph.aspx?gw_logid=MORR0000416

Key Issue 1: Defining "Reasonably Stable Water Level"

Sustainable Means:

"Groundwater sustainability is maintaining long-term, dynamically stable storage [water levels] and flows [from recharge to discharge areas] of high-quality groundwater …"

– Gleeson et al, 2020



Excerpted and modified from: Gleeson and others, 2020, Annual Review of Earth and Planetary Science, 48, 431-63 (Figure 2b). Available at: https://www.annualreviews.org/doi/10.1146/annurev-earth-071719-055251

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Reasonably Stable Water Levels

Some of the negative effects of groundwater level declines include:

- drying up of wells
- reduced streamflow
- deterioration of water quality
- increased pumping costs

Photo: OWRD, water tanks for domestic properties with dry wells

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Reasonably Stable Water Levels

Developed definition of Reasonably Stable Water Levels to:

- Accommodate dynamically stable range
- But identify declining levels relatively quickly
- Limit changes back and forth between stable and not
- Protect against long, slow declines toward levels meeting the definition of Declined Excessively

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Reasonably Stable Water Levels

In short, Reasonably Stable Water Levels defined as:

- Less than 0.5 feet water level decline averaged over 5-20 years
- No more than 25 feet of total decline from highest known water level
- Need at least 5 years of recent data, otherwise “not available”
- Option for basin program rules to provide a local definition that is no less stringent than Declined Excessively

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Allocation vs Curtailment

Reasonably Stable:

- 0.5 ft averaged over 5 to 20 years, or
- 25 feet total, or
- 8% of aquifer thickness

Declined Excessively:

- 3 ft/year for 10 years, or
- 50 feet total, or
- 15% of aquifer thickness

Key Issue 2: Redefining "Potential for Substantial Interference" (PSI) with surface water

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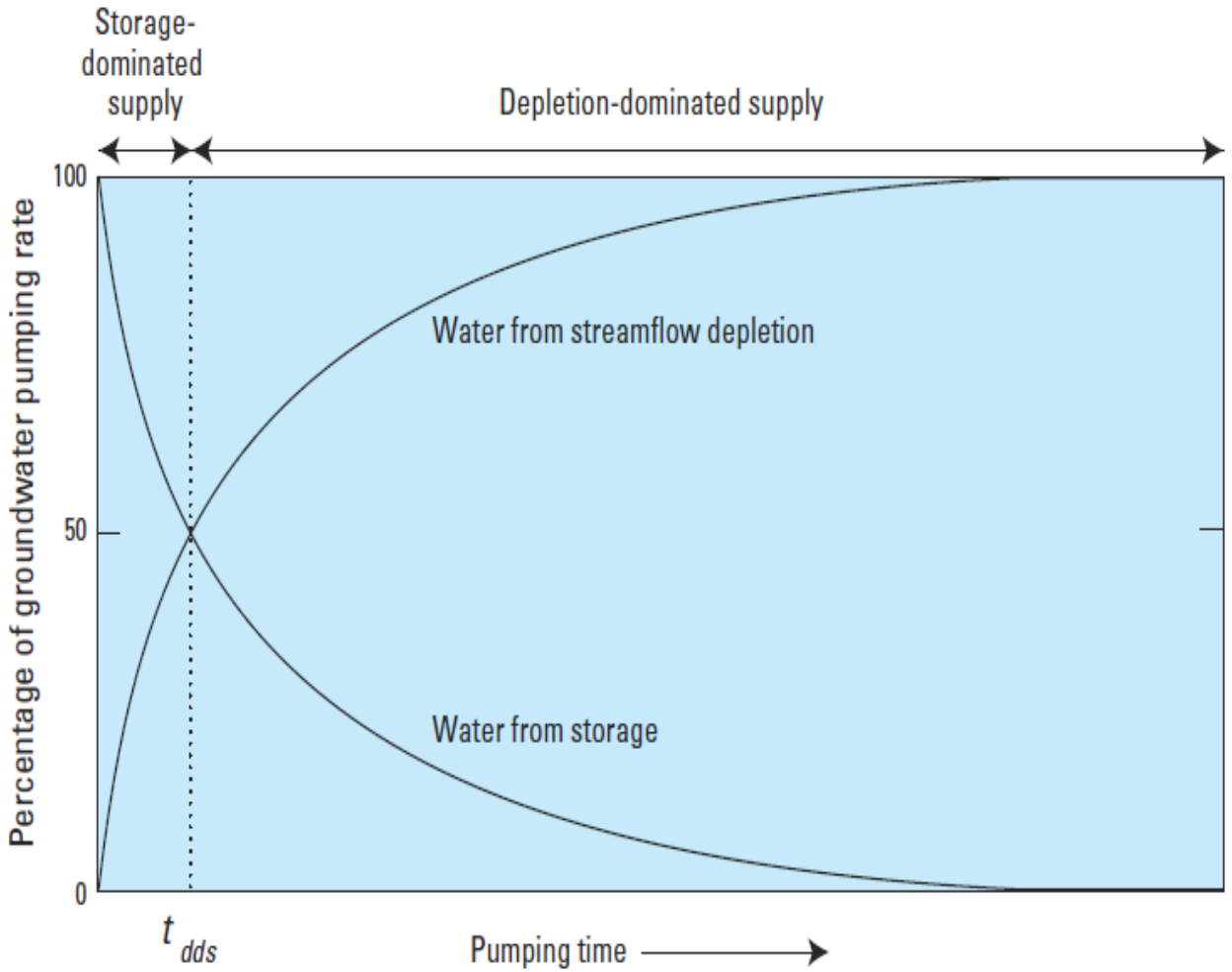
Baseflow is Groundwater

Photo: OWRD, Eagle Creek

The Source of Water to Wells

- Hydraulically connected wells capture surface water when pumped
- Given enough time, 100% of pumping rate will be supplied by surface water depletion

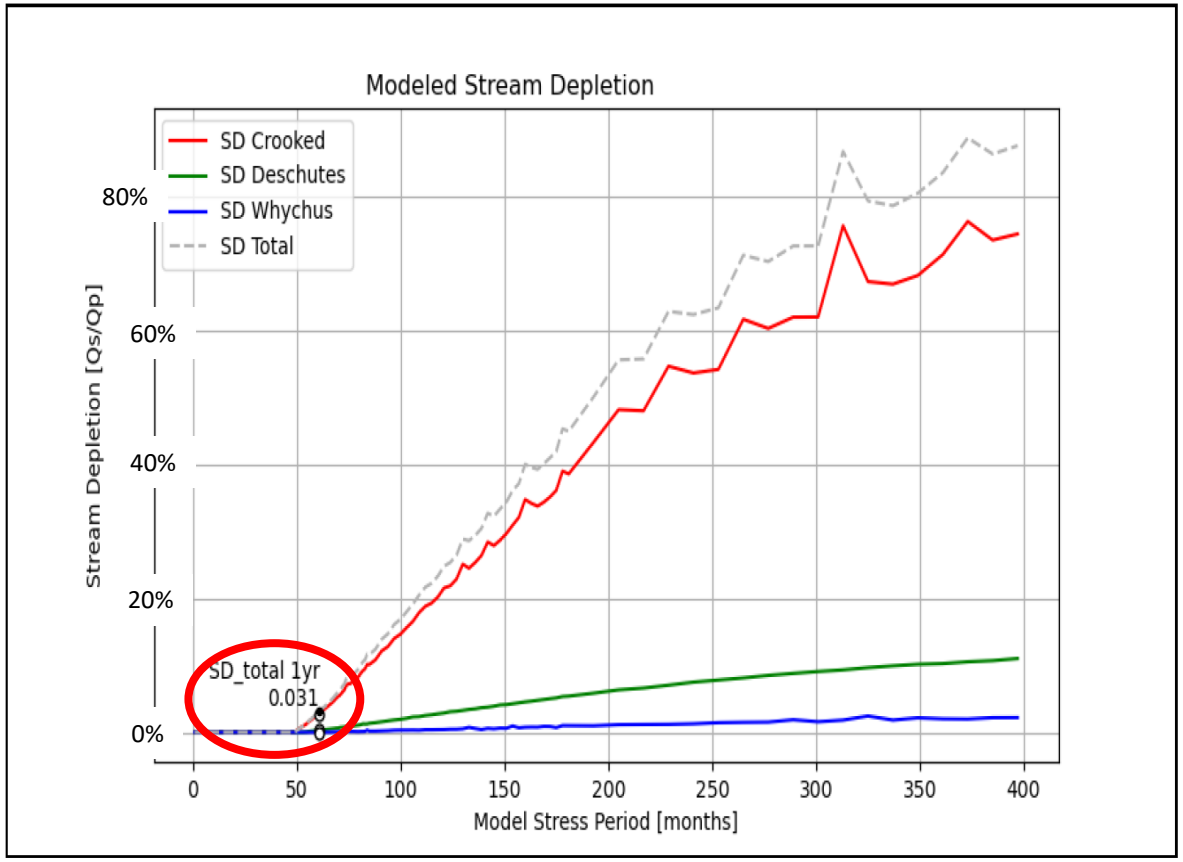


Source: Barlow, P.M., and Leake, S.A., 2012, Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow: U.S. Geological Survey Circular 1376, 84 p. (Also available at *http://pubs.usgs.gov/circ/1376/*.)

Longer-Term Impacts Example

- Current allocation practice assesses impacts after 1 year and within 1 mile
- In this case >80% of the pumping rate comes from stream depletion after 30 years pumping 4 wells located 20+ miles from streams

Figure 1: Stream-depletion curve, pumping starts at month 49 and continues at a constant rate for 29 years until the end of the model scenario (month 397).



Source: OWRD

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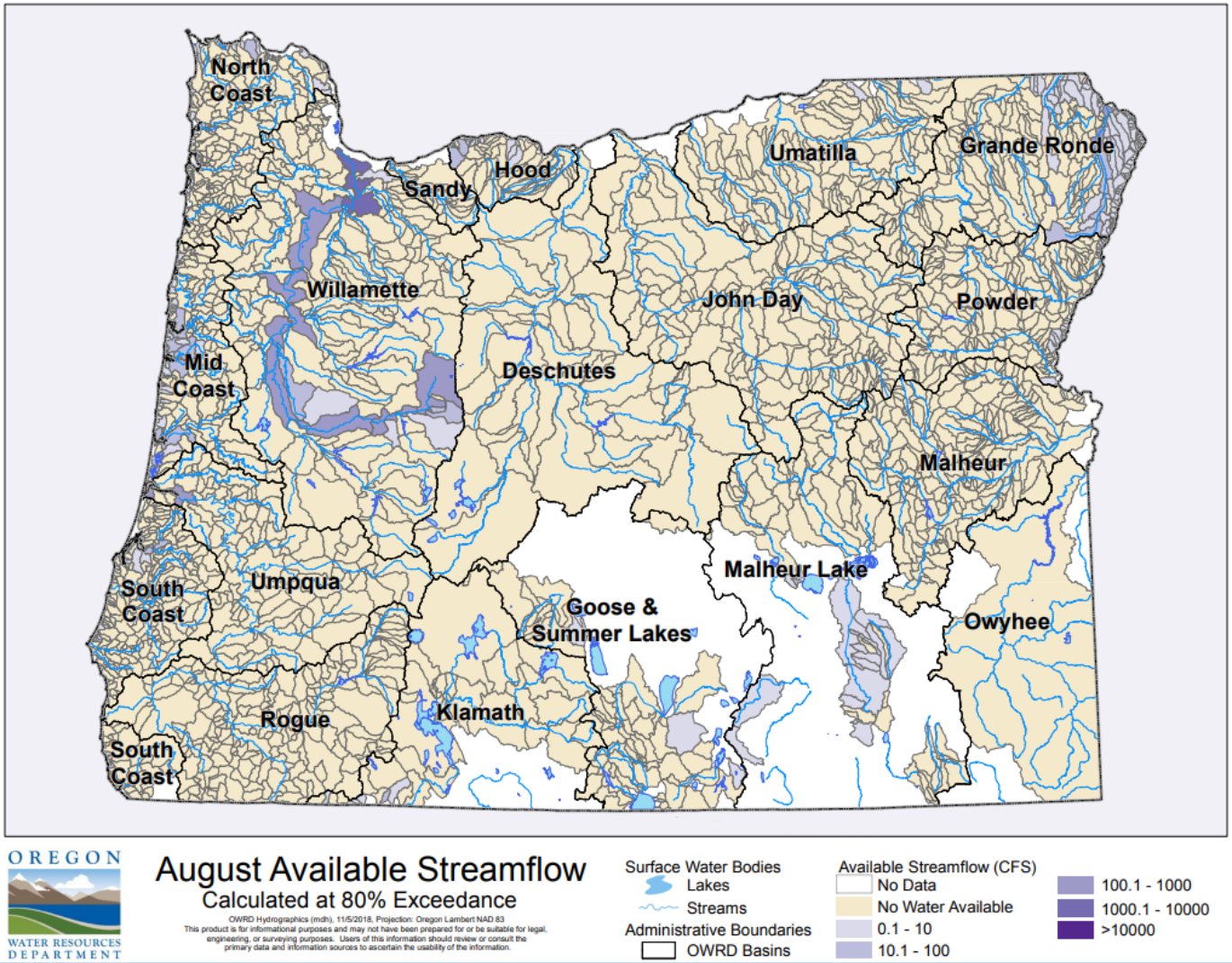
Surface Water Availability

Proposed rules mean hydraulically connected groundwater availability would closely match surface water availability



Source: OWRD

Additional RAC Comments and Concerns

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RAC Feedback

- Broad consensus that rulemaking is needed
  - Several RAC members believe draft rules meet Commission's objectives
- Failure to act may jeopardize existing water users
- Concerns about insufficient or outdated data
- Proposed rules may negatively impact:
  - Municipal growth
  - Agricultural expansion
- Solutions:
  - Conservation Incentives
  - Transfers
  - Market based approaches
  - Aquifer Storage/Recharge
  - Water Re-use

Rulemaking Status and Next Steps

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Schedule

(6) RAC Meetings

April 2023 - Sept 2023

Notice of Proposed Rulemaking/ Start of 90-day Public Comment Period

Nov 1, 2023

Public Hearings

Dec 2023 - Jan 2024

Last Day of Public Comment Period

Feb 1, 2024

Review Public Comments

Feb 2024

WRC Decision

Spring 2024

Effective Date

Spring 2024

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