Division 512 Rulemaking: Ground Water Regulation for the Malheur Lake Administrative Basin

Oregon Water Resources Department

Rules Advisory Committee Meeting

August 29, 2023

Welcome and Introductions

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Ice Breaker

- What is the one thing you hope to get out of the Division 512 Rulemaking process?

Agenda Review & Meeting Guidelines

Goal of Today's Meeting

- Review rule language on definitions and removal of old language
- Review classification language and gather input
- Review subarea criteria and discuss and see if other criteria should be considered
- Begin conversation on SWMPA (if there is time)

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Meeting Agenda

1:00 - 1:20	Welcome and Introductions
1:20 - 1:30	Removal of Old Language
1:30 - 1:35	Rule Language Discussion – Definition Section
1:35 - 2:00	Rule Language Discussion – Administrative Boundaries
2:00 - 2:30	Rule Language Discussion – Classification
2:30 - 2:40	Break
2:40 - as needed	Presentation- Subarea Boundary Criteria
4:00 - 4:30 (if time there is time)	Rule Language Discussion – Serious Water Management Problem Area (SWMPA)
4:30 – 5:00	Public Comment

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Ground Rules

- You are here to express your viewpoint
- Treat others respectfully
- If online remain muted when not speaking
- If online use “raise hand” feature to indicate that you would like to speak

RAC Operating Guidelines

RAC Role

- Attend and participate in meetings
- Provide input/advice and help Department consider various perspectives

Department Role

- Facilitate meetings
- Foster collaboration and consensus building
- Draft final rules

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Overview of Rulemaking Process For Division 512

- Rulemaking Advisory Committee RAC # 1
- Develop Initial Draft Rules
- **Rules Advisory Committee RAC(s) #2 - #5**
- Public Comment Period & Hearing(s)
- Staff Recommendation & Commission Decision

Rulemaking Timeline

Groundwater Management Tools

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Regulatory Groundwater Management Tools

Regulatory Tool	Description	What does it manage?
Withdrawal of Unappropriated Waters (Out of scope for 512 rulemaking)	Withdraws unappropriated waters from appropriation.	Future Groundwater Use
Classification of Water	Classifies or reclassifies waters of Oregon to the highest and best use and quantities of use for the future.	Future **New** Groundwater Use
Serious Water Management Problem Areas (SWMPA)	Requires reporting and measurement of water use.	Measure Present and Future Groundwater Use
Critical Ground Water Area Designation (CGWA)	A CGWA designation allows for control of current groundwater use.	Present Groundwater Use
Groundwater Mitigation Area (Out of scope for 512 rulemaking)	Affects groundwater allocation in Deschutes Basin.	Future Groundwater Use

Regulatory/Voluntary Groundwater Control Tools

Regulatory		
Tool	**Descriptions**	**What does it control?**
Permit Conditions	OWRD regulates groundwater use based on permit conditions.	Present Use

Voluntary		
Tool	**Description**	**What does it control?**
Voluntary Agreements	An agreement between groundwater users within the same groundwater system.	Present Use

Removal of Old Language

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- We have deleted the old 690-512-0020 - Groundwater use in the Greater Harney Valley Groundwater Area of Concern.
- **Reason:** the old rule language addressed how the Department handled pending groundwater right applications after the establishment of the GHVGAC.
- 690-512-0020 is now used to define administrative boundaries.

Rule Language Discussion: Definitions

690-512-0010 – Definition Language

Unless specified in these rules the definitions in OAR 690-300-0010 apply to the below rules.

(1) "Totalizing flow meter" is an instrument used to measure and display both the instantaneous flow rate of groundwater produced from the well and the total volume of groundwater produced from the well.

(2) "Exempt groundwater uses" are those defined in ORS 537.545.

(3) "Public Uses" are those uses defined in OAR 690-077-0010(27).

Rule Language Discussion- Administrative Boundaries

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690-512-020 Administrative Boundaries

(1) The Greater Harney Valley Groundwater Area of Concern (GHVGAC) is defined for administrative purposes and is described and shown in Exhibit 1.

(2) The Malheur Lake Basin Boundary is delineated on the agency Map 12.6, Dated January 1, 1966, shown in Exhibit 2.

(3) The Serious Water Management Problem Area (SWMPA) boundary is defined as the GHVGAC boundary shown in Exhibit 1.

(4) The Groundwater Classification Boundary is defined as the Harney Basin Groundwater Study area within the Malheur Lake Basin and within the Grant and Harney Counties as shown in Exhibit 3

(5) The Critical Groundwater Area Boundary is defined as the GHVGAC boundary shown in Exhibit 1.

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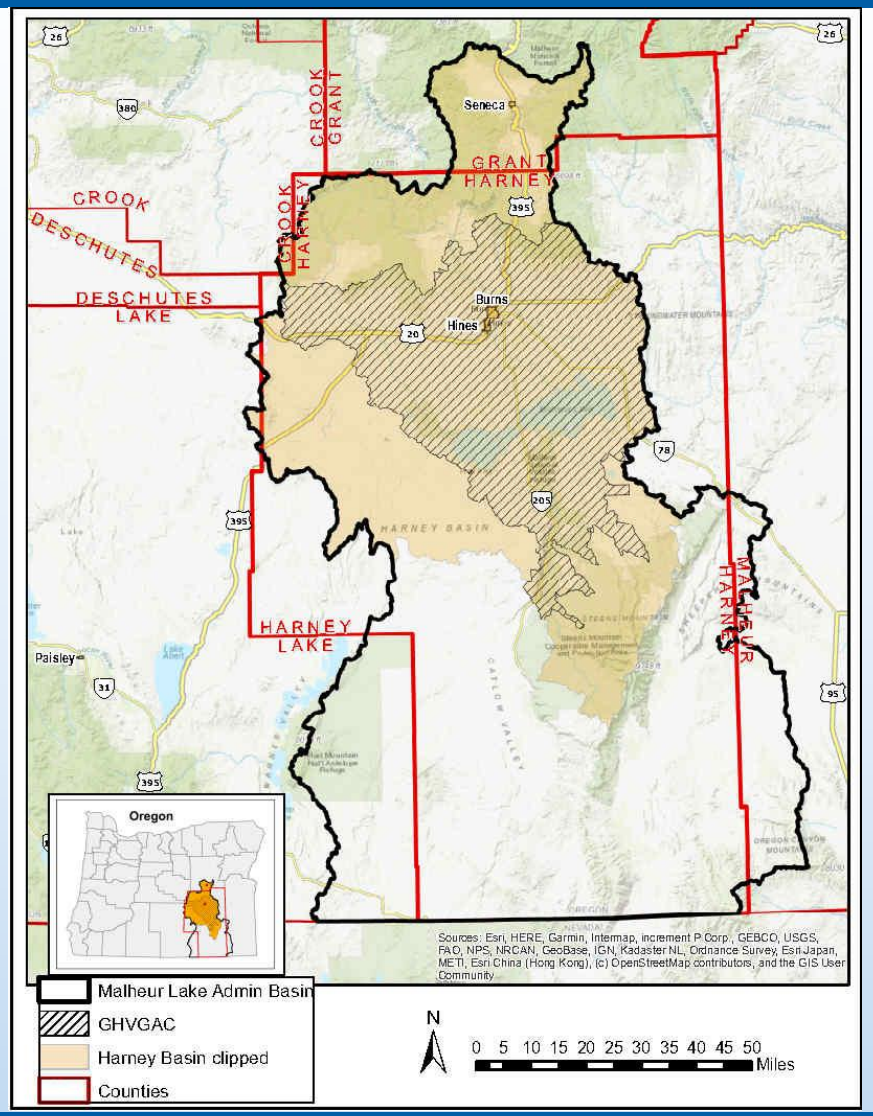
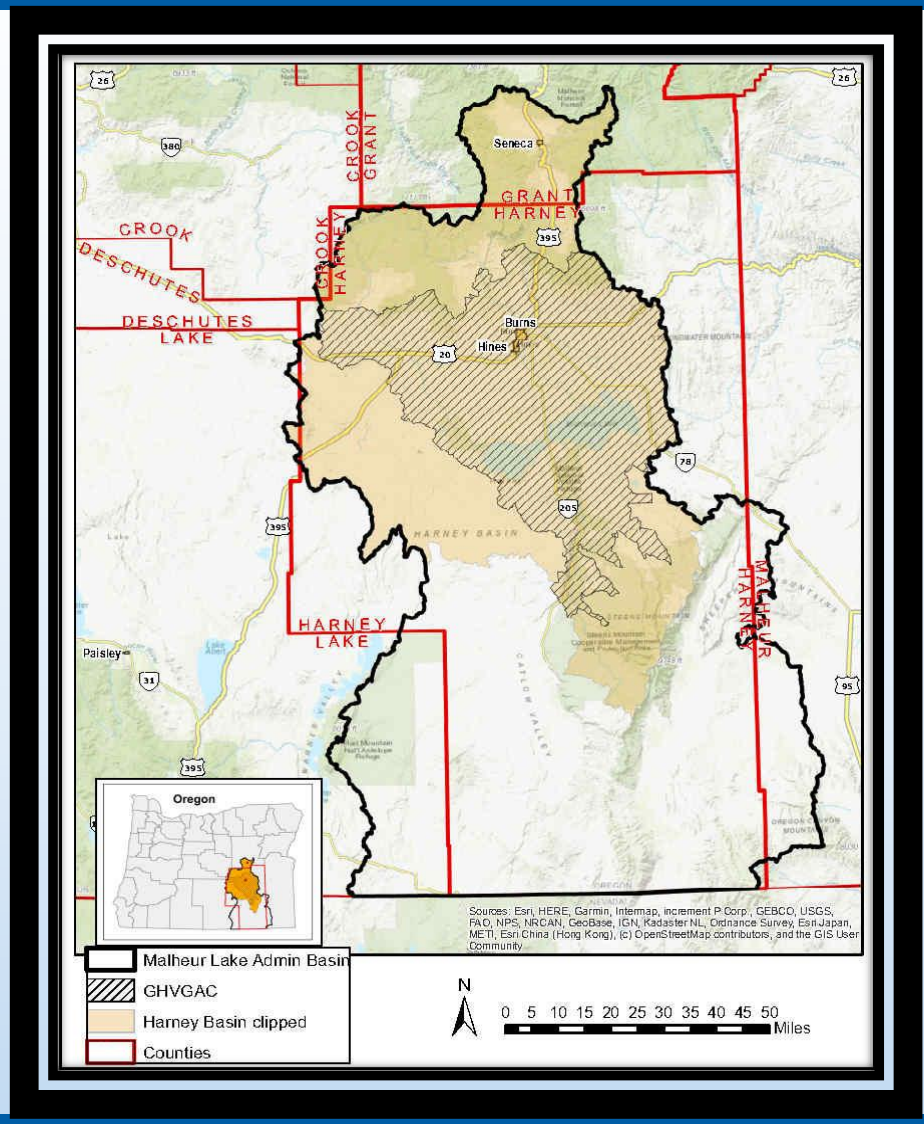
690-512-020 Administrative Boundaries



Classification Boundary 690-512-0030(4)

- The proposed classification boundary is the Harney Basin within the Malheur Lake Administrative Basin and within Harney and Grant Counties
- This includes all of the GHVGAC.



Rule Language Discussion: Classification

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Classification Rule Language 690-512-0030

(1) Except as provided in OAR 690-512-00230(2), the groundwater and surface water of the Malheur Lake Basin are classified for direct appropriation of, or storage and use of, water for domestic, livestock, irrigation, municipal, quasi-municipal, industrial, mining, agricultural water use, commercial, power development, forest management, public uses, road watering, dust abatement and wildlife refuge management.

(2) The Boundary defined in 690-512-0020(4) is classified for Exempt groundwater uses only.

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What We Have Heard from the Community

Limited License

Community Water Systems

Municipal Water Rights

Artificial Recharge

Aquifer Storage and Recovery

Discussion: What We Have Heard from the Community

- Limited License:
  - Limited license duration?
  - Which uses should a limited license authorize?
  - OWRD working on confirming process for LL issuance
- Community Water Systems:
  - Are there future needs for community water systems?
  - Should there be a limitation on the amount?

Discussion: What We Have Heard from the Community

Municipal Water rights:

- Should groundwater be set aside for municipal use?

Artificial Recharge:

- Is there an interest in the community for AR and ASR projects?
- Does the Harney collab want to consider AR and ASR projects?

Discussion: New Classification Ideas

- Since the informational session have you had any **new** ideas on classification?

CREP Limited License

- A Limited License or other temporary authorization for groundwater use may be an option to establish cover crops as part of a groundwater CREP conservation plan.
- The authorization would only be valid for 2-3 years to establish the cover crop.

Boundary Criteria

Harney Basin Critical Groundwater Area Proposed Criteria for Boundary Delineation

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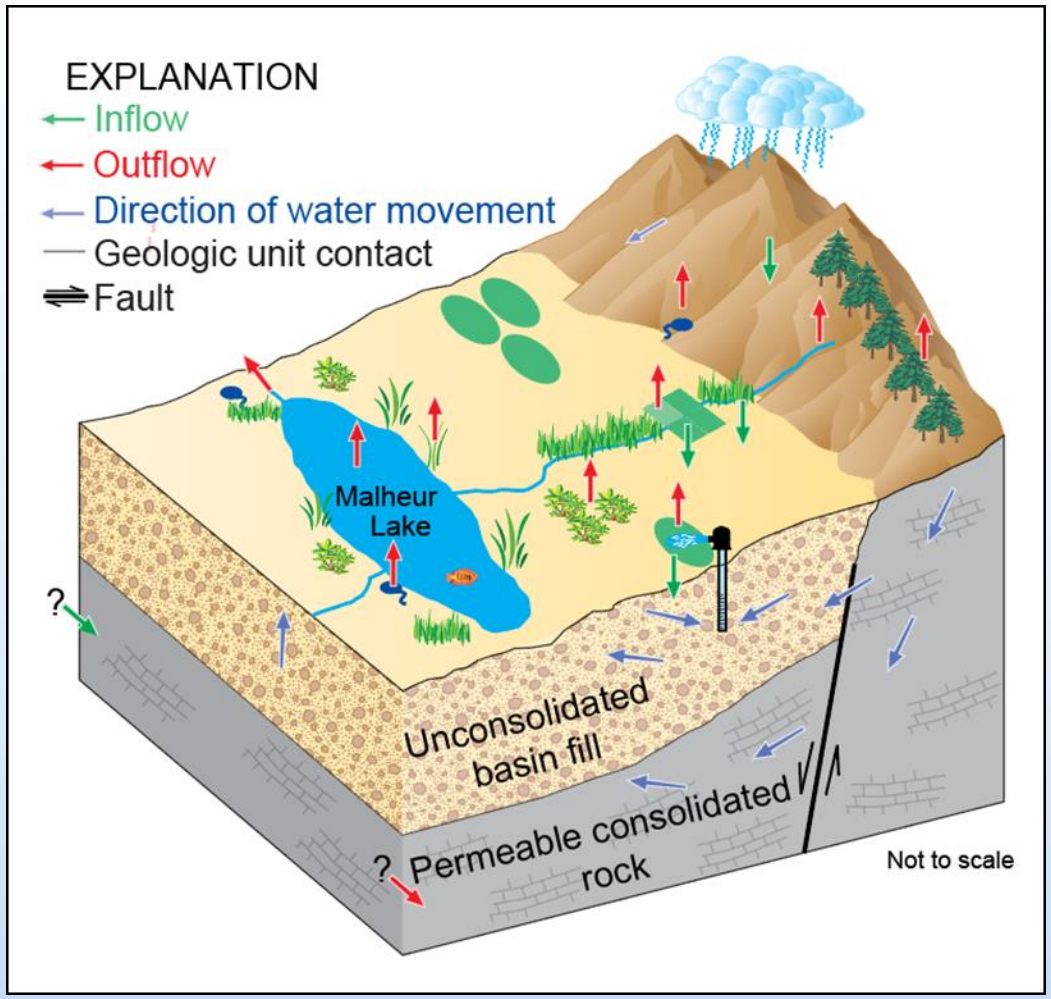
Darrick E. Boschmann, Hydrogeologist

August 29, 2023

Presentation Outline

1. Brief overview of the Harney Basin groundwater system
2. Need for CGWA boundary & subarea boundary delineation
3. Criteria for subarea boundary delineation
4. Example applying criteria for subarea delineation
5. RAC feedback

Harney Basin Groundwater Overview

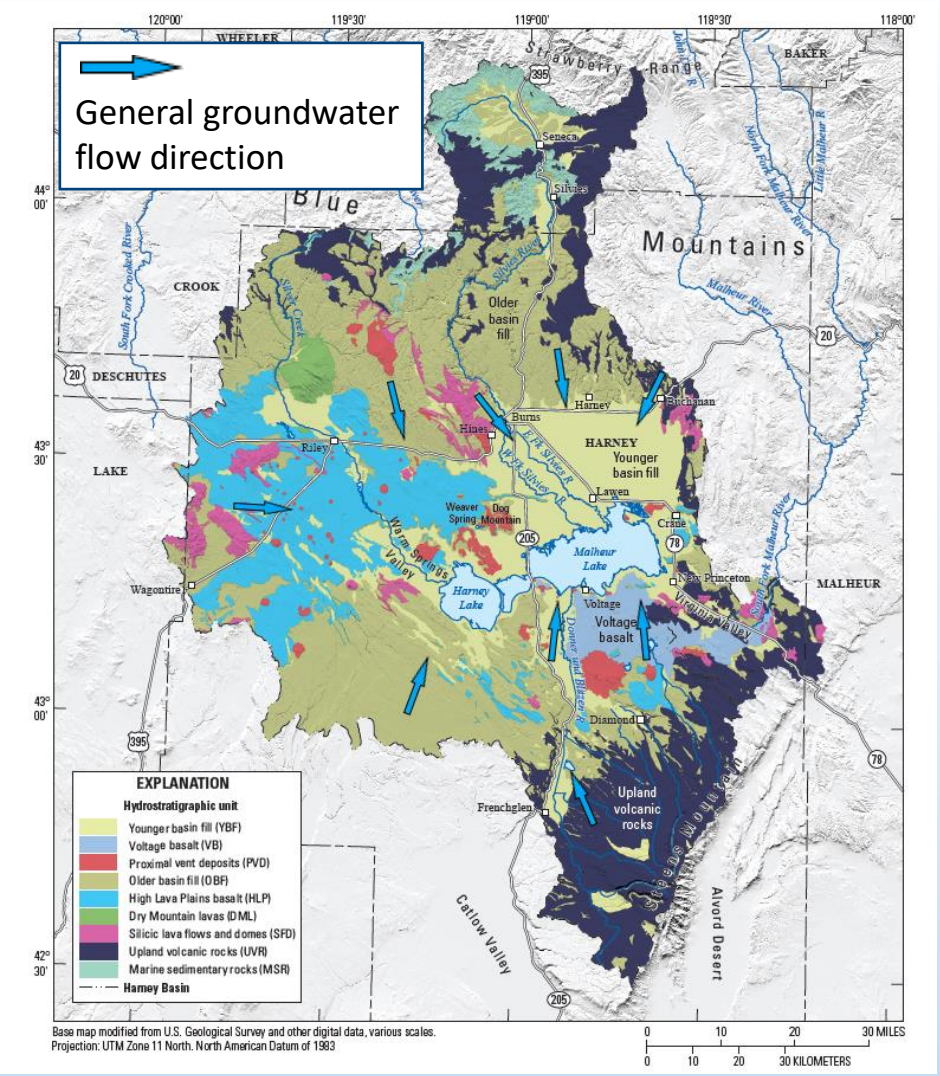


Recharge

- Recharge source – upland precipitation
  - Northern Uplands – Blue Mountains
  - Southern Uplands – Steens Mountain
  - Eastern Uplands – Stinkingwater Mts
  - Western Uplands – uplands area above Silver Creek
- Majority of upland recharge discharges to surface water in the uplands; a portion re-infiltrates into the lowland deposits along stream channels and floodplains

Figure from Gingerich and others (2022)

Harney Basin Groundwater Overview



Groundwater Flow

- Groundwater generally flows radially inward from upland areas toward the central part of the basin
- Groundwater occurs in a wide variety of subsurface materials, each with unique and varying hydraulic properties
- No impermeable barriers to groundwater flow are known to exist
- Basin is considered a single, hydraulically connected groundwater flow system (with many significant variations)

Figure modified from Gingerich and others (2022)

Harney Basin Critical Groundwater Area Boundary Delineation

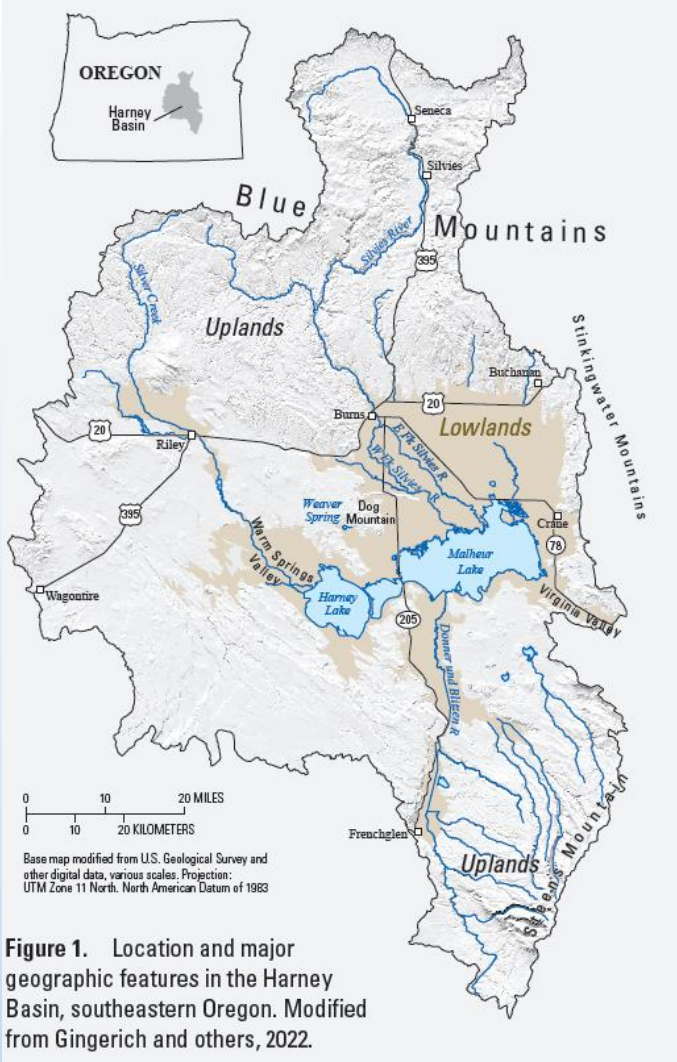


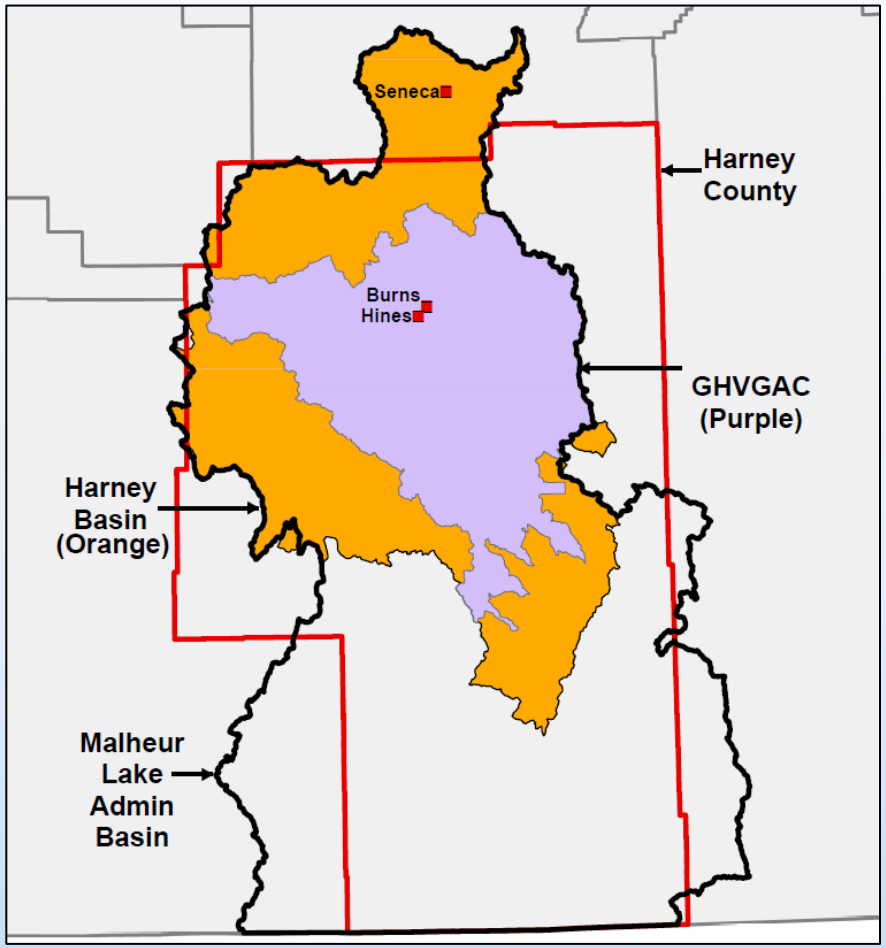
Figure 1. Location and major geographic features in the Harney Basin, southeastern Oregon. Modified from Gingerich and others, 2022.

Administrative Requirements

- OAR 690-10-130 (2023 *proposed*):
  - Requires the boundaries of the Critical Groundwater Area (CGWA) be defined
  - Allows the "groundwater reservoir" to be included " in whole or in part"
  - Allows boundaries to be determined either by physical natural boundaries or administratively
  - Allows for definition of sub-areas within the CGWA

Figure from Gingerich and others (2022; Fact Sheet)

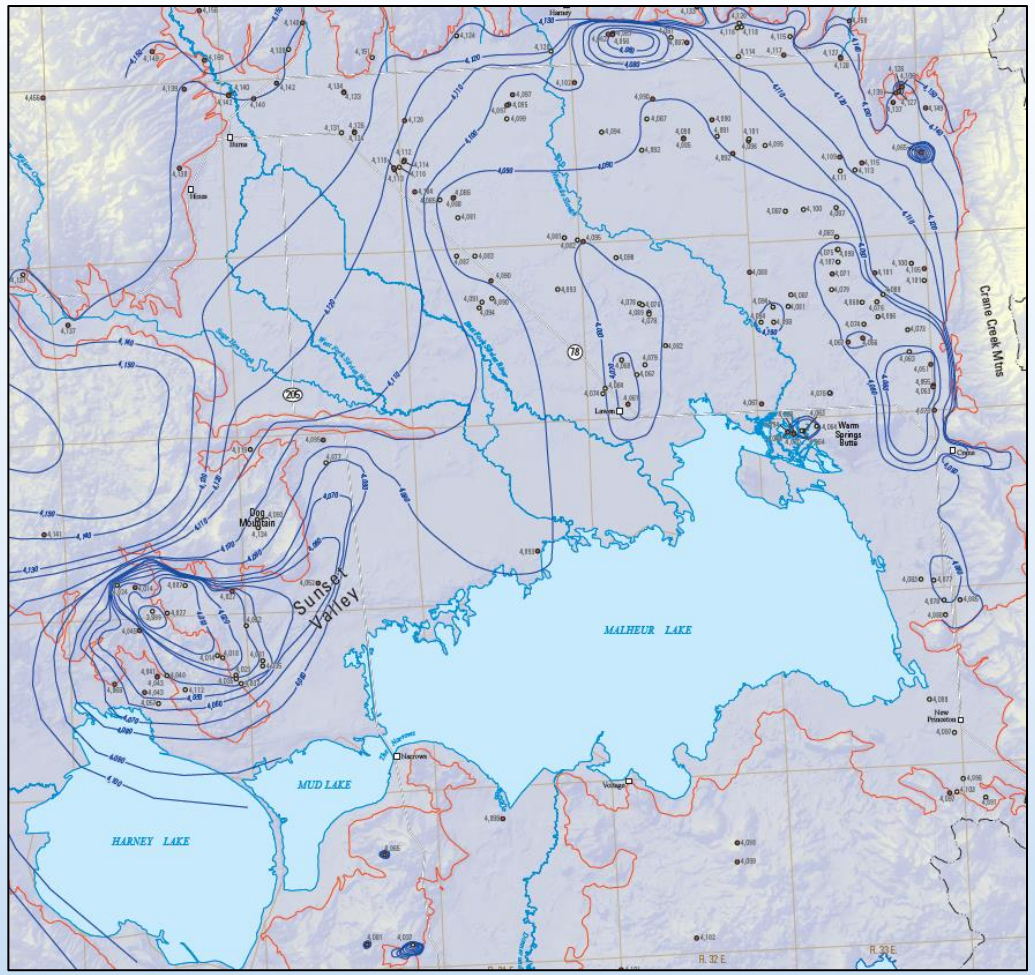
Harney Basin Critical Groundwater Area Boundary Delineation



Proposed exterior boundary of the CGWA

- Greater Harney Valley Groundwater Area of Concern
  - GHVGAC
  - Current Div. 512 classified area
  - Established administrative boundary
  - Includes the vast majority of groundwater use within the basin
  - Includes all areas with significant declines
  - Excludes areas without significant declines

Harney Basin Critical Groundwater Area Boundary Delineation

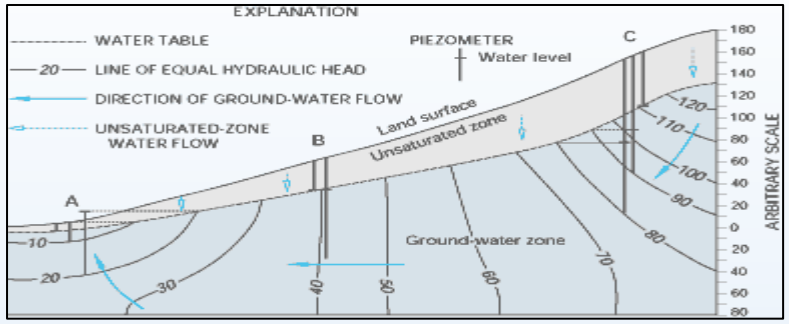


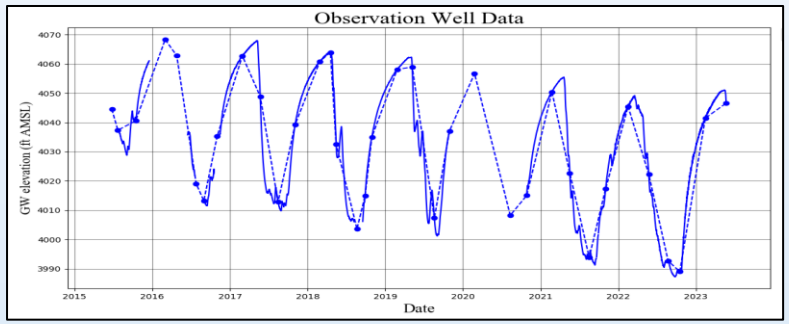
Need for sub-areas within the CGWA

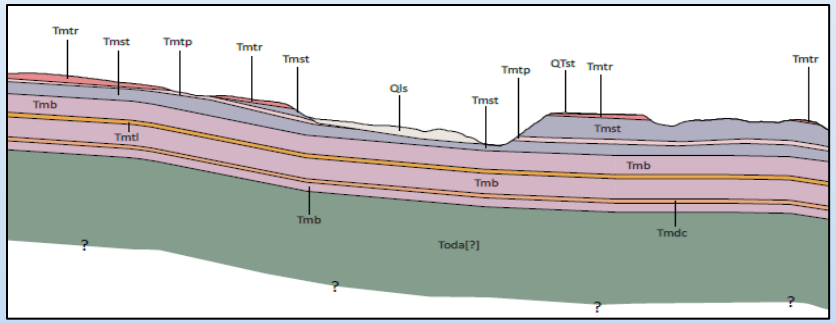
- Sub-areas are needed for effective implementation of corrective control provisions
- Groundwater level declines are variable across the basin
- Pumping impacts are often limited spatially due to the nature of subsurface materials
- Any reduction in pumping should provide relief in those areas where declines are most severe
- Facilitation of voluntary actions

Figure modified from Gingerich and others (2022)

Harney Basin Critical Groundwater Area Boundary Delineation Criteria





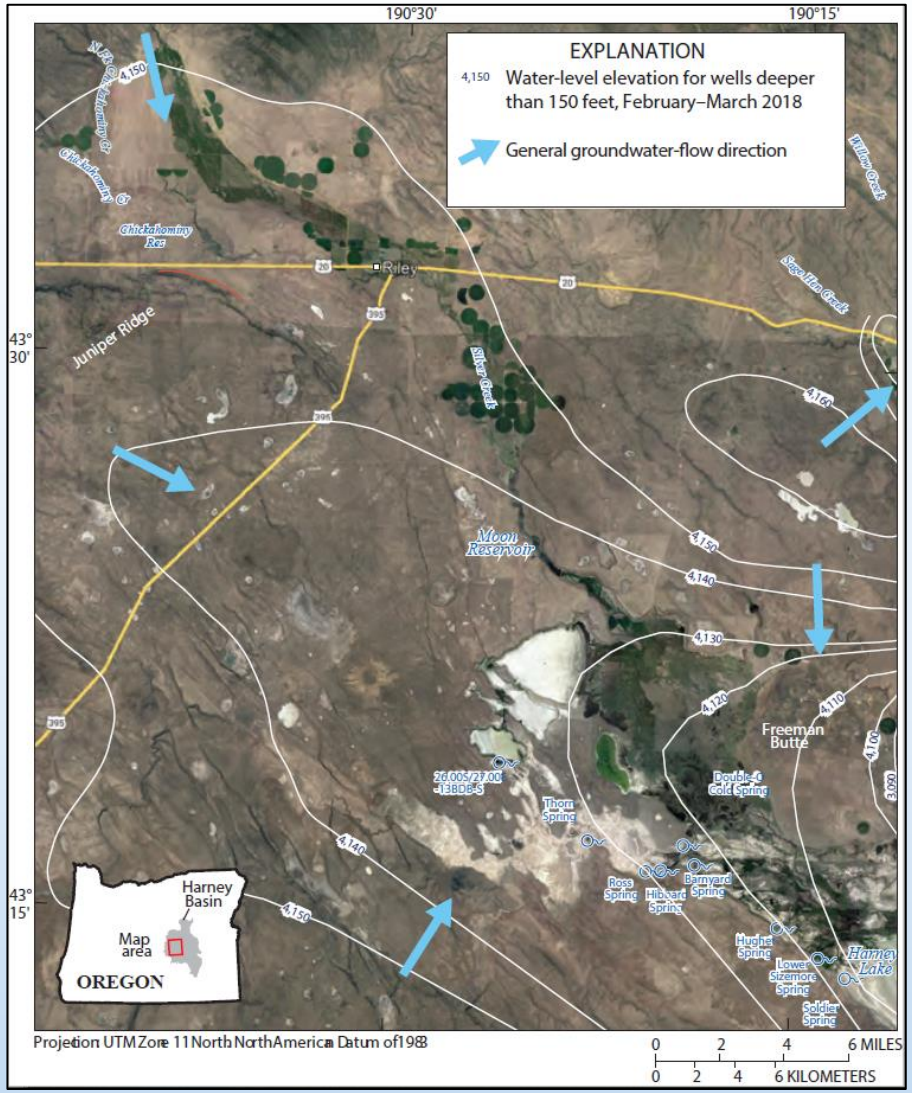


Proposed criteria for sub-area delineation

- Hydraulic Gradient
  - The driving force of groundwater flow
- Groundwater Level Trends
  - Provide information on seasonal and long-term response to stresses
- Subsurface Materials
  - Control the storage and flow of groundwater

Figures modified from UGSS; OWRD; DOGAMI

Harney Basin Critical Groundwater Area Boundary Delineation Criteria



Criterion: Hydraulic gradient

- The driving force of groundwater flow
- Indicates groundwater flow direction (flow paths)
- Indicates location of recharge sources
- Highlights areas of decline

Data sources

- Groundwater level elevation contours (Gingerich and others, 2022)
- Groundwater level measurements
- Surface topography
- USGS Watershed Boundary Dataset

Figure modified from Gingerich and others (2022; Fact Sheet)

Harney Basin Critical Groundwater Area Boundary Delineation Criteria

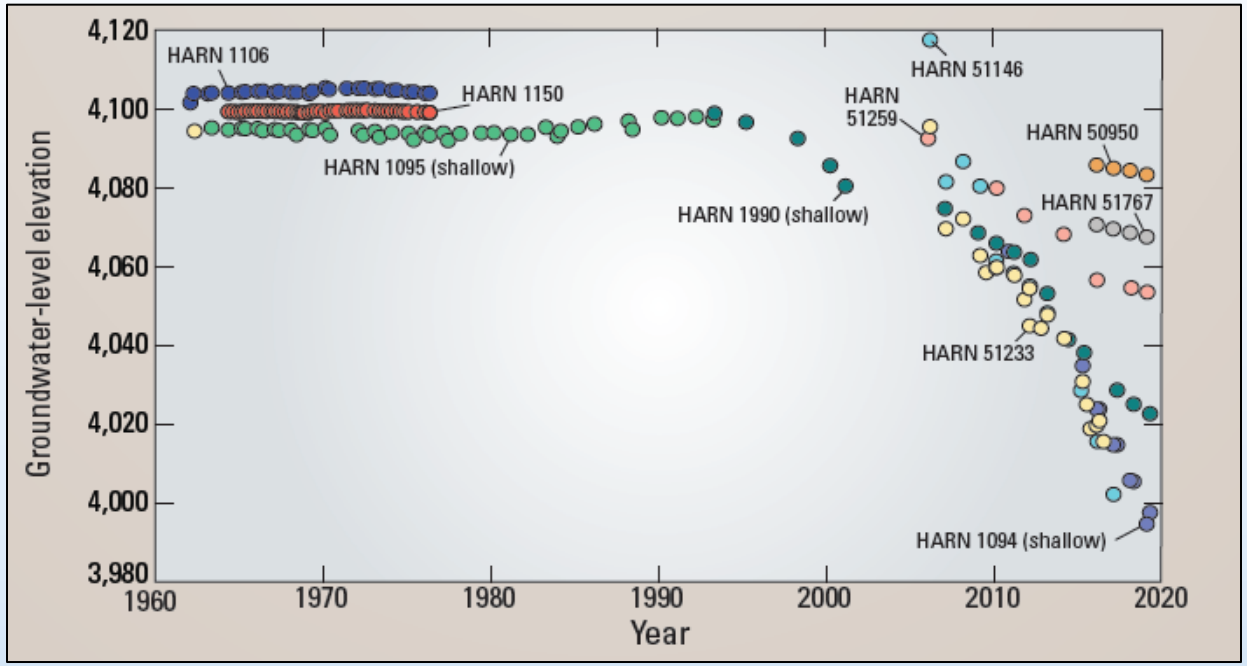


Figure from Gingerich and others (2022)

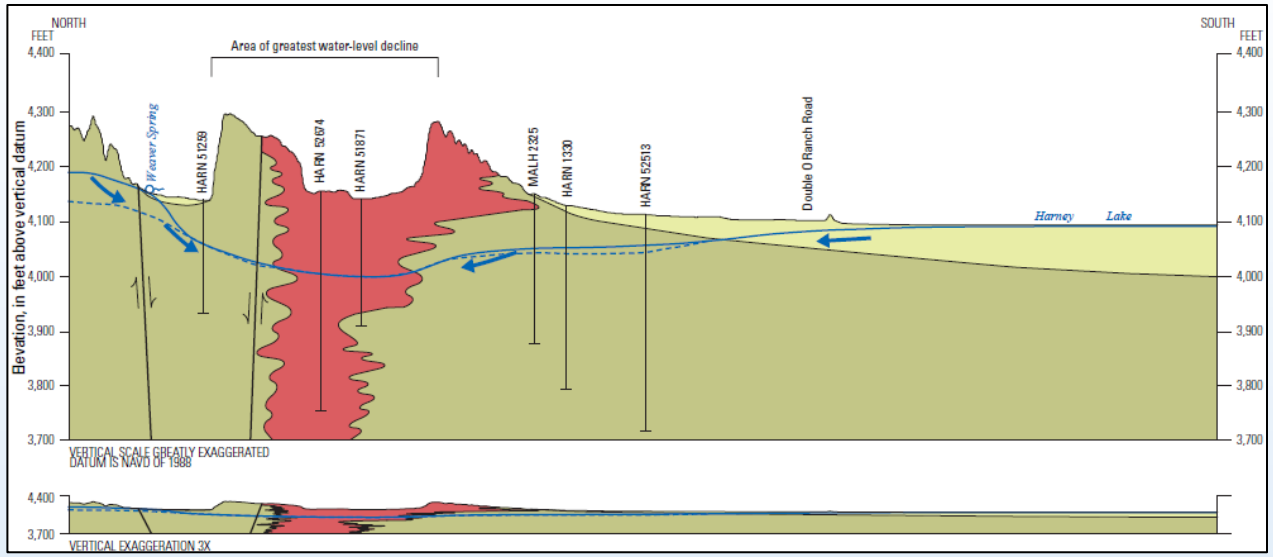
Criterion: Water level trends

- Provide information on seasonal and long-term response to stresses
- Distinct trends among groups of wells
- Highlight areas of decline
- Rate and magnitude of decline

Data sources

- Groundwater level hydrographs comprising annual, quarterly, and hourly static water level measurements
- OWRD static water level measurements
- Reported static water level measurements

Harney Basin Critical Groundwater Area Boundary Delineation Criteria



Criterion: Subsurface materials

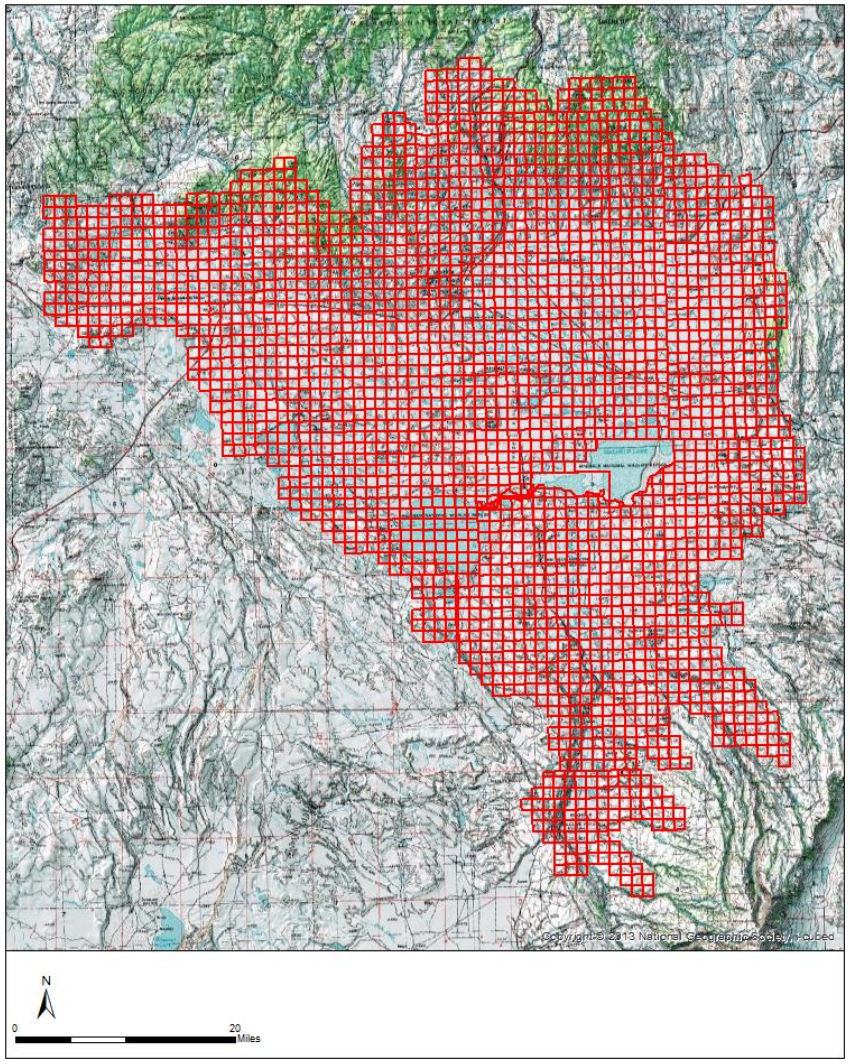
- Subsurface materials control the storage and flow of groundwater to a considerable extent
- Variations in the hydraulic properties of subsurface materials occur widely across the Harney Basin

Data sources

- Published geologic mapping
- Hydrostratigraphic unit designations (Gingerich and others, 2022)
- Drillers' formation descriptions
- Pump tests

Figure from Gingerich and others (2022); photo credit D. Boschmann

Harney Basin Critical Groundwater Area Boundary Delineation Criteria



Other considerations

- Drawing the boundary lines – no natural lines exist. Option: follow PLSS section lines:
  - Scaled appropriately to the limits of the data
  - Facilitates administration of subarea rules
  - Facilitates stakeholder understanding
- Locations of GW POD

Harney Basin Critical Groundwater Area Boundary Delineation – Questions

Questions on the criteria?

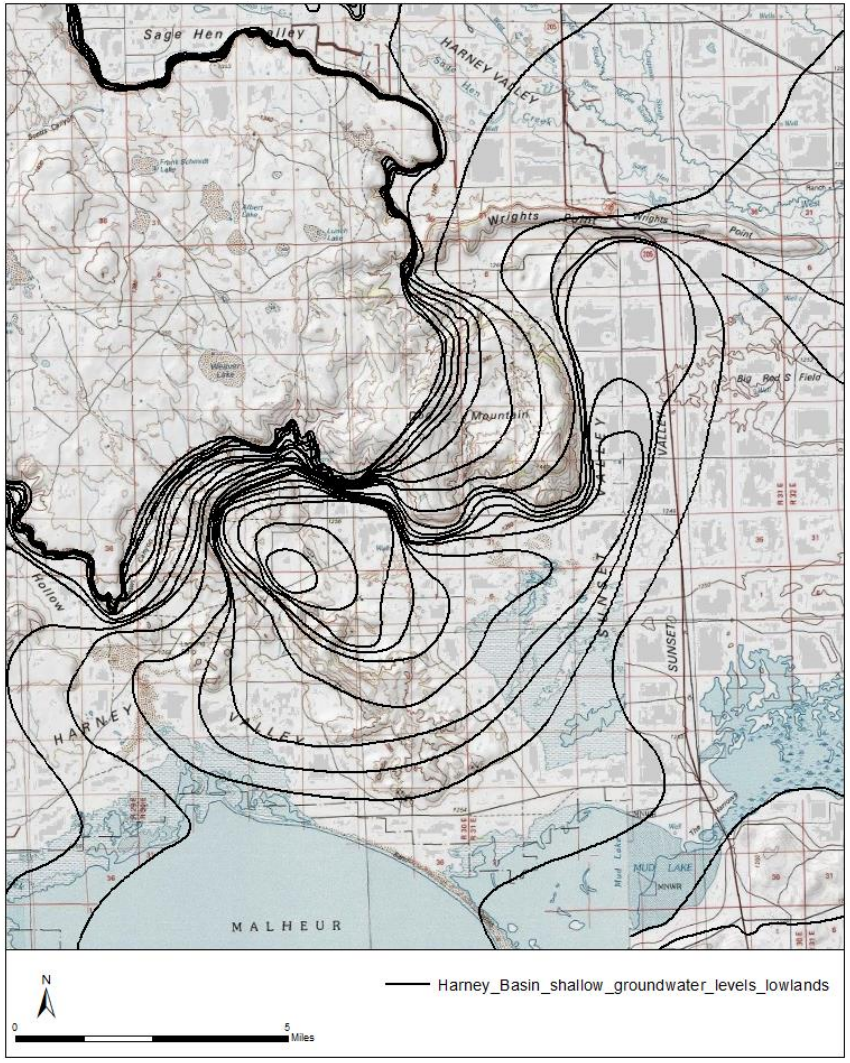
We'll step through an example next

Harney Basin Critical Groundwater Area Boundary Delineation Example

Weaver Springs Area

- Well developed “cone of depression”
- Large persistent decline (>100 feet total)
- High rate of decline (>10 ft/yr in some areas)
- Located far from recharge sources
- Unique geologic setting

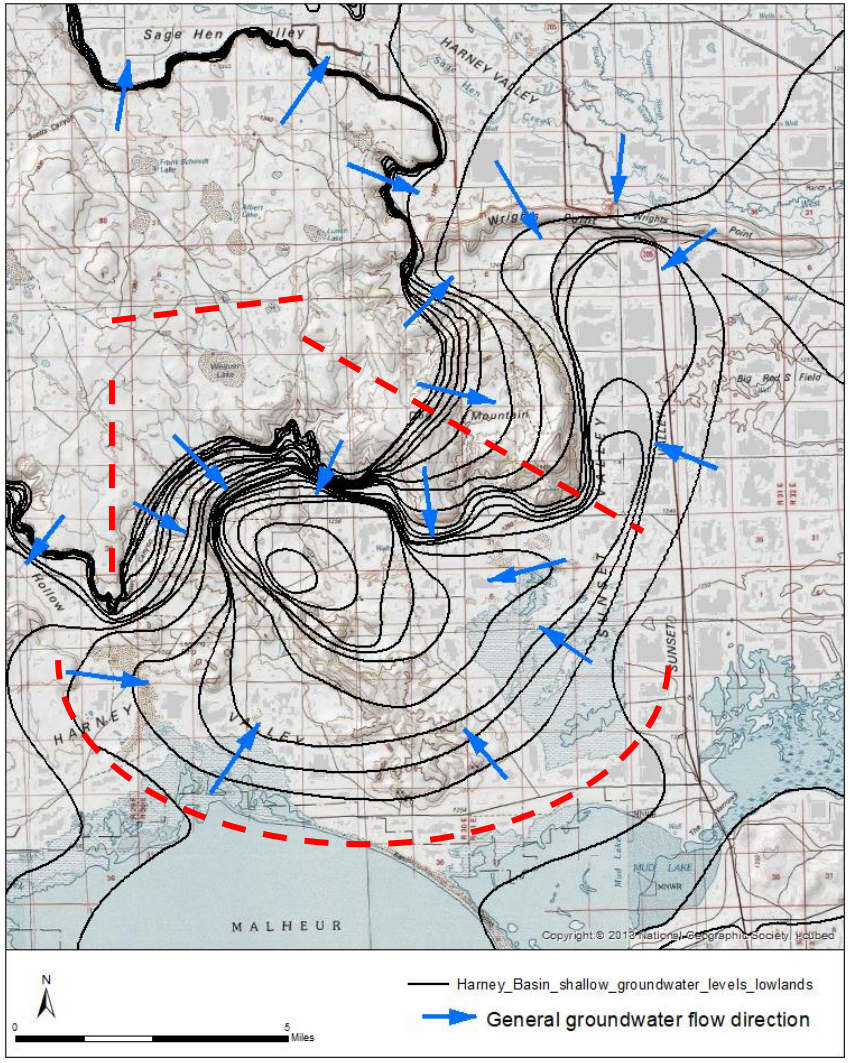
Harney Basin Critical Groundwater Area Boundary Delineation Example



Hydraulic gradient

- The driving force of groundwater flow
- Groundwater level contours

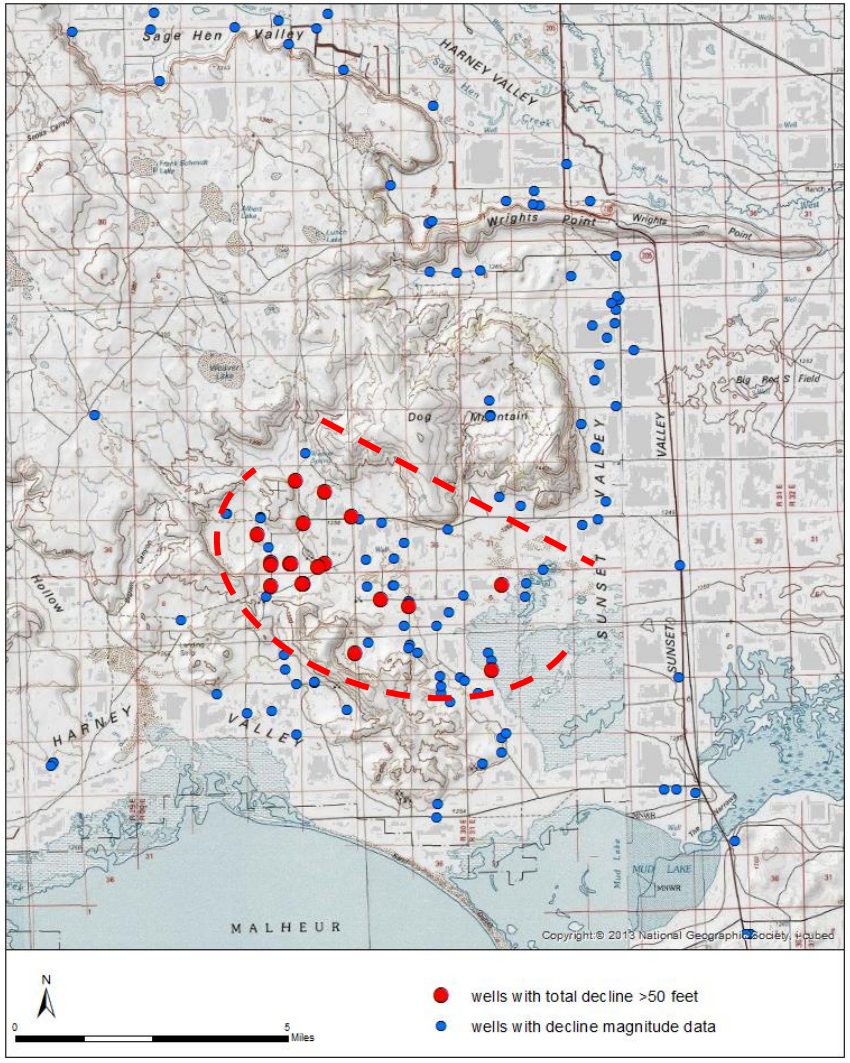
Harney Basin Critical Groundwater Area Boundary Delineation Example



Hydraulic gradient

- The driving force of groundwater flow
- Groundwater level contours
  - Groundwater flow direction
  - Divergent groundwater flow
  - “cones of depression” (areas of decline)

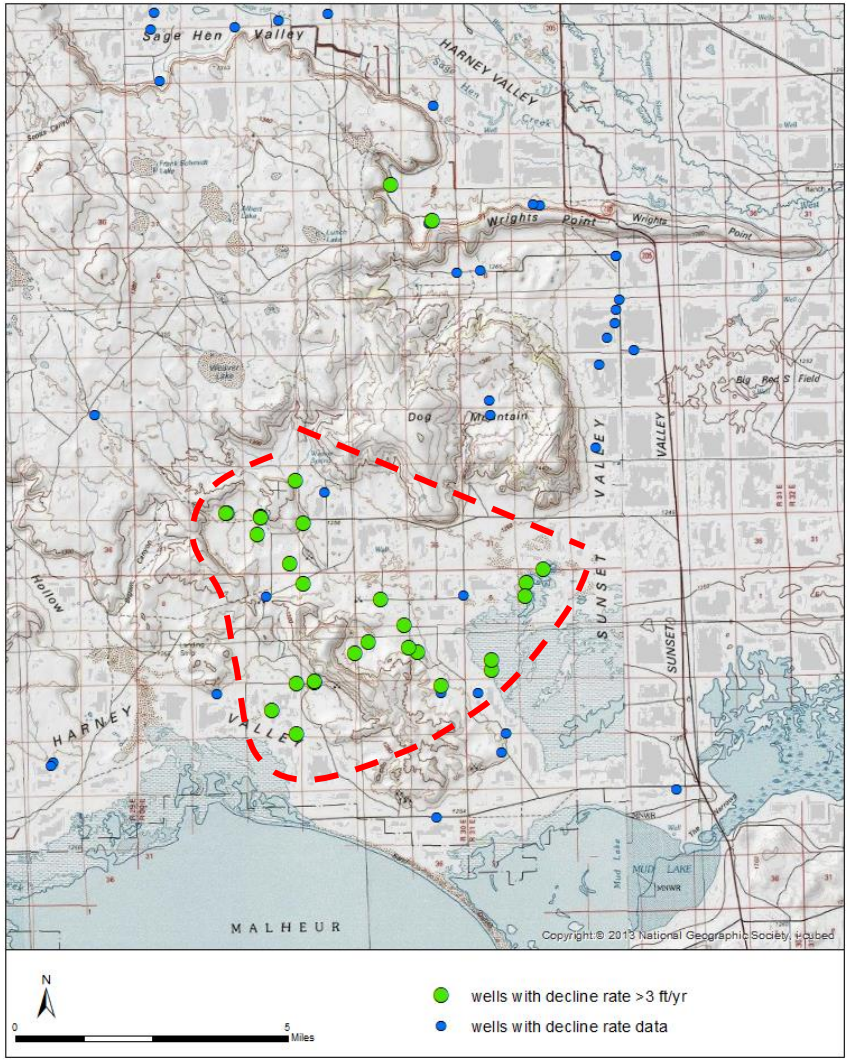
Harney Basin Critical Groundwater Area Boundary Delineation Example



Water level trends

- Total magnitude of decline over the period of record
  - Requires recent data to be relevant
  - Variable periods of record
  - Review of well history
- Example – wells >50 feet total decline

Harney Basin Critical Groundwater Area Boundary Delineation Example



Water level trends

- Rate of decline (feet per year)
  - Requires recent data to be relevant
  - Review of well history
- Example – wells >3 feet per year decline rate

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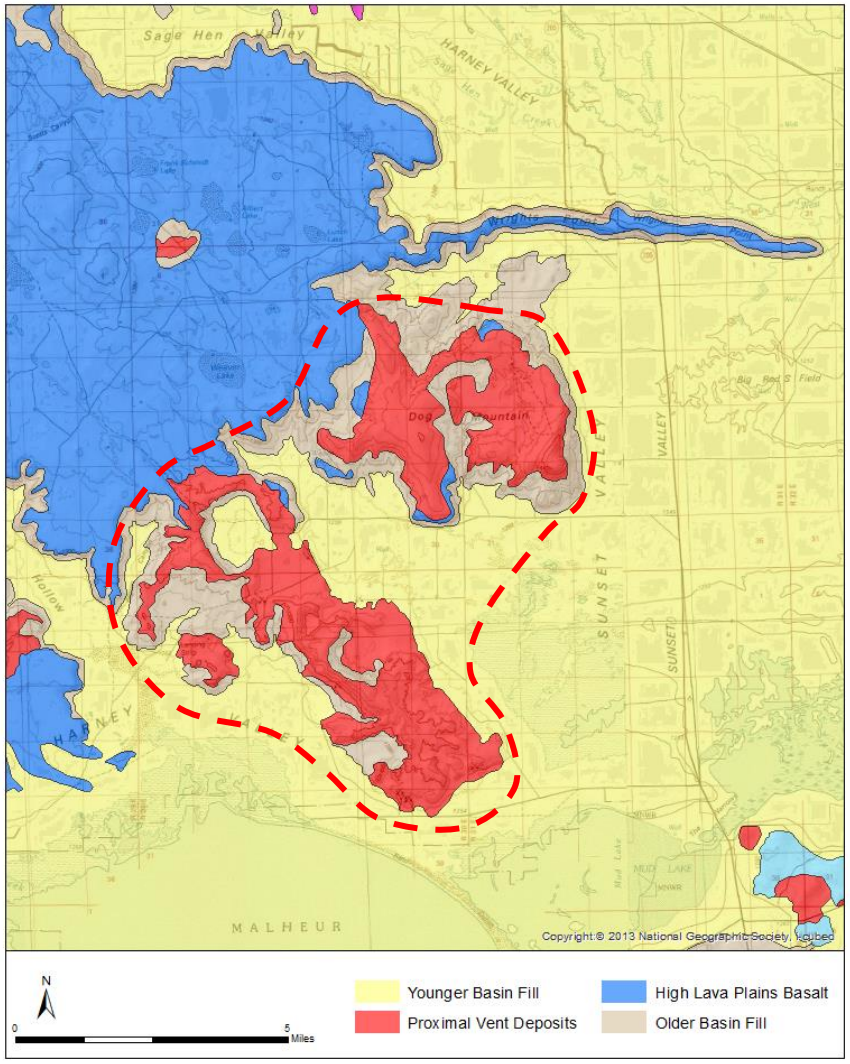
Harney Basin Critical Groundwater Area Boundary Delineation Example



Subsurface materials

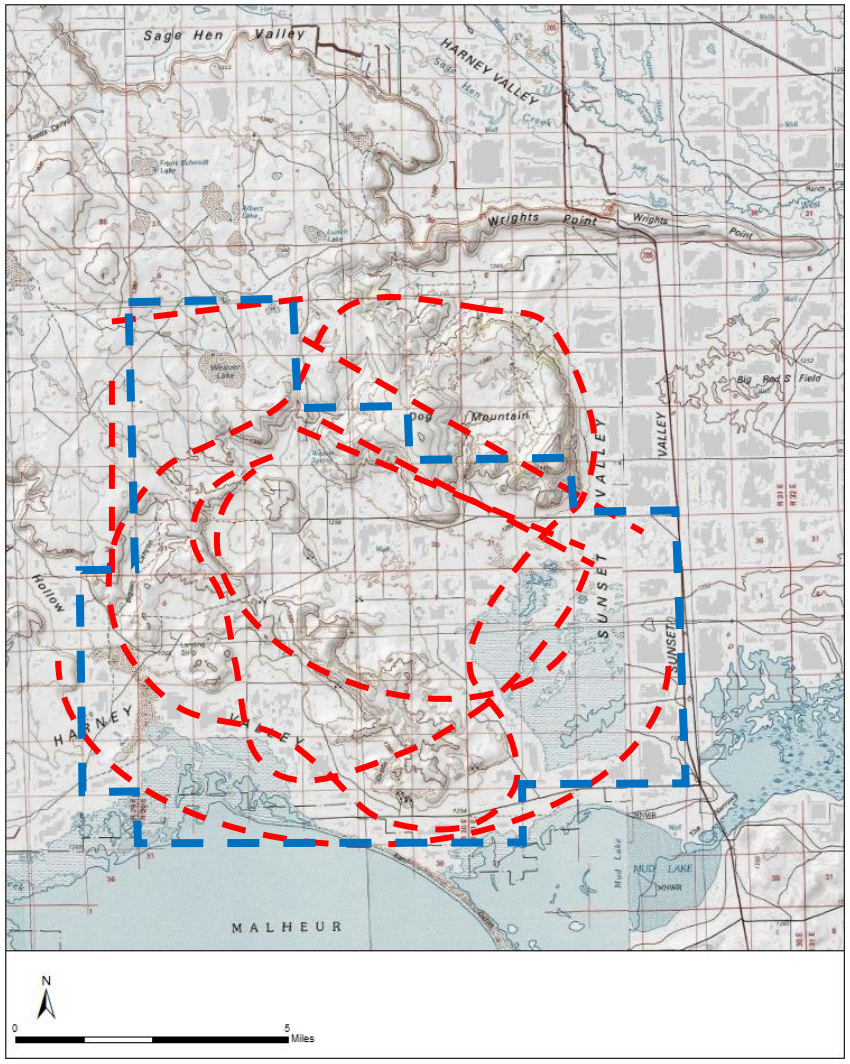
- Highly heterogeneous (variable)
- Hydrostratigraphic units
  - Groundwater flows at different rates in different materials
  - Groundwater flows between units both horizontally and vertically

Harney Basin Critical Groundwater Area Boundary Delineation Example

Combined consideration of all criteria

- Overlay criteria constraints
  - Hydraulic gradient
  - Groundwater level trends (rate/magnitude)
  - Subsurface materials

Harney Basin Critical Groundwater Area Boundary Delineation Example



Delineation of the subarea boundary

- Delineated following PLSS section lines
- Based on combined consideration of all criteria
- Criteria weighted based on significance relative to other criteria within the hydrogeologic context

- Note: this is not a finalized subarea boundary
- Example used for demonstration purposes only

Harney Basin Critical Groundwater Area Boundary Delineation – RAC Feedback

- Other questions or discussion items?
- RAC suggestions for additional or modified boundary criteria?

Rule Language Discussion: Serious Water Management Problem Area (SWMPA)

690-512-00400: Serious Water Management Problem Area (SWMPA)

(1) Groundwater conditions within the SWMPA boundary defined in 690-512-0040 meet the criteria defined in 690-085-0020(1)(a) and 690-085-0020(1)(f).

(2) By no later than March 1, 2025, each groundwater right holder, well owner, or well operator, shall properly install and thereafter properly maintain a totalizing flow meter on each well within the Harney SWMPA boundary as defined in 690-512-0030 listed as a point of appropriation on a valid water right. Totalizing flow meters shall be properly installed according to manufacturer's specifications and must meet the specifications in subsections

(3) Totalizing flow meters and the method of flow meter installation are subject to approval by Department Staff. Once installed, totalizing flow meters must be maintained in good working order. Department staff shall have access to the totalizing flow meters upon request.

Discussion SWMPA Implementation

- Is the implementation date reasonable?
  - What is a reasonable time frame for implementation, assuming Div 512 rule adoption in xxxxx, 2024?
- Should all permitted groundwater users measure and report from day one? Is a phased implementation approach a good idea?

690-512-00400: Serious Water Management Problem Area (SWMPA)

(4) The groundwater right holder, well owner, or well operator shall keep a complete record of the volume of water appropriated each month and shall submit a report which includes water use measurements to the Department on an annual basis by January 31 of each calendar year. The Director may request submission of reports more frequently as necessary to monitor and administer the SWMPA. Reports of water use measurements shall be submitted to the Department during the month of January for the preceding year, or more frequently as required by the Director. Reports shall be submitted on a form developed by the Department.

690-512-00400: Serious Water Management Problem Area (SWMPA)

(5) A totalizing flow meter shall meet the following specifications:

a) A totalizing flow meter shall have a rated accuracy of plus or minus 2 percent of actual flow for all flow rates for which the meter is expected to measure.

b) A totalizing flow meter shall measure the entire discharge from the well.

c) A totalizing flow meter shall have a visual and recording, mechanical or digital totalizer located on or adjacent to the flow meter and shall be equipped with a sweep hand or digital readout so that instantaneous flow rate can be read.

690-512-00400: Serious Water Management Problem Area (SWMPA)

d) The totalizing part of the flow meter shall have sufficient capacity to record the quantity of water authorized to be pumped over a period of 2 years. Units of water measurement shall be in acre-feet, cubic feet, or gallons and the totalizer shall read directly in one of these units. Flow meters recording in acre-feet shall, at a minimum, read to the nearest 1/10th acre foot, and the decimal multiplier shall be clearly indicated on the face of the register head.

e) Totalizers on each meter shall not be field reset without notice to and written permission from the Watermaster. Prior to resetting the totalizers, the final reading must be recorded and reported.

690-512-00400: Serious Water Management Problem Area (SWMPA)

F) The totalizing flow meter shall be installed in accordance with all manufacturer specifications. There shall be no turnouts or diversions between the well and the flow meter. The flow meter shall be installed not less than five pipe diameters downstream from any valve, elbow, or other obstruction which might create turbulent flow, or other provisions shall be made that meet the manufacturer's specifications to control or eliminate turbulent flow.

G) The totalizing flow meter shall be installed no more than 100 feet away from the well head.

Totalizing Flow Meter Specifications Discussion

- Are the proposed specifications workable within the Harney basin?
- Are there other suggestions for measuring groundwater use?

690-512-00400: Serious Water Management Problem Area (SWMPA)

(6) A water user shall report broken flow meters to the local watermasters office within 48 hours after determining that the flow meter is broken. A water user shall not appropriate groundwater for more than 60 days without an operating flow meter. While the flow meter is broken, the water user shall record daily the hours the pump operates, the power meter reading and the time the power meter was read. The water user shall mail the data to the Department in Salem within one week of the installation of the repaired or replacement flow meter. The data shall include a statement of the initial reading on the newly installed flow meter and the current power meter reading. The water user shall notify the watermaster within 48 hours of installing the repaired or replacement flow meter.

690-512-00400: Serious Water Management Problem Area (SWMPA)

(7) Failure to have and maintain a properly installed, functioning totalizing flow meter by March 1, ~~2025~~2025, will result in the Watermaster regulating and controlling an unmetered well such that no groundwater may be pumped or appropriated until a flow meter is obtained and installed consistent with these rules.

(8) Consistent with ORS 536.900, Chapter 183, and OAR Chapter 690 division 260, the Department may assess civil penalties for violation of these rules.

Questions or Comments?

Public Comment

Next Steps/ Wrap up

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Summary and Next Steps

- Next RAC: RAC #3, October 25, 2023
- Location: Harney County Community Center
- Time: 1 pm to 5 pm