

Developing Management Scenarios



Purpose

This document guides the development of groundwater management scenarios for the Harney Basin that can be evaluated using the USGS published [Harney Basin Groundwater Model](#). The Oregon Water Resources Department (OWRD) will work with the Rules Advisory Committee (RAC) to develop and evaluate three groundwater management scenarios using the Harney Basin Groundwater Model. These three scenarios are in addition to OWRD's proposed management scenario, which is detailed below.

There are three primary inputs required to evaluate a proposed groundwater management scenario with the Harney Basin Groundwater Model:

Where?

How should the management areas be defined, and where should groundwater pumping be reduced?

How much?

What volume of groundwater pumpage should be allowed within the management areas, and how should it be allocated to groundwater rights?

When?

What should the timeline be for implementing pumping reductions?

This document outlines the steps to follow during the conversations and specifies the criteria for each input, and ends with an example of a fully developed management scenario using OWRD's proposed management scenario.

1

Step 1: Define the objective of the management scenario.

- What is this scenario trying to achieve?
- Will the management scenario result in recovery or stabilization?
- What areas of the basin are being tested and why?
- What timelines are being tested and why?



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Step 2 (Where): Define the management area where pumpage reductions will occur.

Define the exterior boundaries of the management area or areas.

- The boundaries must contain all areas that meet the Critical Groundwater Area (CGWA) Designation criteria as specified in the [Groundwater Report for the Harney Basin CGWA Rulemaking](#).
- The management area could be defined by one exterior boundary, multiple non-contiguous exterior boundaries, or one exterior boundary divided into subareas.
- Boundaries should be drawn using physical boundaries (rivers, roads, recharge areas, discharge areas, or other natural features, etc.) or section lines for clarity

Note: Boundaries will have to be technically defensible.

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Step 3 (How Much): Determine the volume of pumping reduction.

- The amount of pumping reduction must be specified for each management area or subarea delineated.
- 2018 modeled actual pumpage should form the baseline from which pumping is reduced. This restriction is not necessarily a requirement for final rule development but is necessary for making meaningful comparisons against the published model.
- Define how to determine pumping reductions for the management areas delineated:
 - Reduction by percentage within an area (Example: reduce pumping by 30% compared to 2018 pumpage).
 - Reduction to the actual pumpage value for a specific year before 2018 (Example: reduce to the amount pumped in 2004).
 - Reduction to a particular volume specified for each subarea, where the method for determining that volume is specified.
- Define how groundwater should be allocated within each management area or subarea - by full paper water right or by actual use.

Note: Groundwater use will be allocated among water rights within a subarea according to the priority date.

Note: The model does not allow the total reduction amount to be specified using unknown model outputs. For example, the amount may not be specified as the amount required to limit groundwater level declines to 50 feet through the year 2100.

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Step 4 (When): Determine the timeframe for implementation of pumping reductions

- A timeline for pumping reductions must be defined, including the year when reductions begin and the year when they are to be fully implemented. Those years may be the same.
- If more than one management area or subarea is delineated, the timeline should be specified for each.

Examples of timelines:

- Reductions occur at Y percent per year for X years beginning in year Z (Example: reduce pumping by 6% per year for five years beginning in 2028 to achieve a 30% total reduction).
- No action will be taken until the year 2027. Then, full reduction is implemented immediately in 2027.

Note: The model does not allow for the timeline for reduction to be specified using unknown model outputs. For example, the year when reductions begin may not be specified as the year when groundwater levels decline 30 feet below 2018 levels. Similarly, enforcement of groundwater decline permit conditions that are not currently known to be tripped will not be modeled.

Example Management Scenario

1

Step 1: Define the objective of the management scenario.

OWRD's Proposed Management Scenario

- The proposed management scenario will result in stabilization.
- The proposed management scenario will divide the CGWA into 15 subareas.
- The proposed timeline varies for the 15 subareas. For the six high-priority subareas, the timeline for reduction is within three years. The timeline will be established after the 10-year review for the nine lower-priority subareas.

2

Step 2 (Where): Define the management area where pumpage reductions will occur.

OWRD's Proposed Management Scenario

- The proposed management scenario is divided into 15 subareas, including all areas that meet the criteria specified in the Groundwater Report for the Harney Basin CGWA Rulemaking.
- The proposed management scenario set the Greater Harney Valley Groundwater Area of Concern as the Harney Basin Critical Groundwater Area.
- The subareas of the management scenarios were delineated by the hydraulic gradient, groundwater level trends, and the subsurface geology.

3

Step 3 (How Much): Determine the volume of pumping reduction.

OWRD's Proposed Management Scenario

- For the six high priority subareas, the Permissible Total Withdrawal (PTW) was determined using the hydrograph approach, described in RAC number 5. The PTW was set at the 2018 pumping levels for the other nine lower priority subareas. The groundwater will be allocated by actual use.



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Step 4 (When): Determine the timeframe for implementation of pumping reductions

OWRD's Proposed Management Scenario

- For the Weaver Springs Subarea, the PTW will be fully implemented beginning in 2030.
- For the other five high priority subareas, the PTW will be implemented Completely beginning in 2033.
- For the nine lower priority subareas, the PTW of 2018 pumpage will begin in 2026.
- Wells with permit decline conditions known to be exceeded will be modeled as regulated off beginning in 2026. Modeling enforcement of permit decline conditions is complex, and implementation will be limited to a reasonable amount of time and effort.

Note: The PTW for the six High Priority Subareas will be implemented after the contested case is completed. For the nine lower priority subareas, the PTW will be set to the 2018 pumpage and will be implemented after the contested case is completed.