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ARIZONA DEPARTMENT OF WATER RESOURCES

SUBSTANTIVE POLICY STATEMENT

Recovery Well Area of Impact

This substantive policy statement is advisory only. A substantive policy statement does not include internal procedural documents that only affect the internal procedures of the agency and does not impose additional requirements or penalties on regulated parties or include confidential information or rules made in accordance with the Arizona Administrative Procedure Act. If you believe that this substantive policy statement does impose additional requirements or penalties on regulated parties you may petition the agency under the Arizona Revised Statutes § 41-1033 for a review of the statement.

I. INTRODUCTION

One of the primary considerations for issuance of a recovery well permit for a well within an active management area is whether the well is located outside or inside the area of impact of the stored water to be recovered. If the well is located outside the area of impact, more requirements must be satisfied than if the well were located inside the area of impact. For a well located outside the area of impact, the Director must determine that recovery at the proposed location is consistent with the management plan and achievement of the management goal for the active management area. In addition, consent from a city, town, private water company or irrigation district may be required. A.R.S. § 45-834.01(A)(2)(b).

This substantive policy defines the area of impact of water stored at a groundwater savings facility (GSF) and an underground storage facility (USF) and describes how the area of impact is to be determined for each type of storage facility.

II. GSF Area of Impact

The area of impact of water stored at a GSF is defined by the aerial extent of lands associated with the recipient of the in lieu water, usually the lands within the exterior boundaries of an irrigation

district. If the recipient is not an irrigation district, the AOI is the area of irrigable lands associated with an irrigation grandfathered right where groundwater would have been pumped and delivered without the receipt of the in lieu water.

III. USF Area of Impact

For the purposes of recovery, the area of impact of water stored at a USF is either: (1) a 1-mile safe harbor area around the USF site; or (2) the area of hydrologic impact (AOHI) of storage calculated using a groundwater model. An applicant for a recovery well permit may choose which of these two areas of impact to use for the application. However, the AOHI is not available to an applicant that does not hold long-term storage credits at the USF.

- The 1-mile safe harbor is defined as the area that extends outward in a 1-mile radius around the USF site. The 1-mile radius is measured from the edge of the individual basin, well, trench, or stream channel. If a USF contains multiple recharge components, individual radii are drawn around each component and the outermost extent of all those radii is considered the 1-mile safe harbor. The 1-mile safe harbor is the default area of impact for the purposes of recovery wells.

- The AOHI represents the area around the USF site that is impacted by water storage activities at the USF. It is calculated at the time of application for a recovery well permit using a groundwater model and may include only the applicant's long-term storage credits in storage at the USF. The requirements for calculating the AOHI are set forth below.

Area of Hydrologic Impact

If an applicant intends to utilize the AOHI, it must apply for approval of the AOHI as part of the recovery well permitting process, either in permitting a new recovery well or in modifying an existing recovery well permit. An AOHI approved for an applicant is specific to that applicant and to the USF at which the credits to be recovered are stored. In addition, an entity may have AOHIs approved by the Department at multiple USFs in an AMA and a USF may have multiple AOHIs approved by the Department.

To calculate the AOHI for water stored at a USF, the applicant must use a groundwater model to simulate the impact of storage at the USF. The applicant may include only the long-term storage credits that it holds at that USF when calculating the AOHI. The applicant must simulate at least the minimum amount of credits held by the applicant that is necessary for the model to produce a 1-foot water level rise contour that encompasses the location of the recovery well. The area represented by the 1-foot water level rise contour is the AOHI. If the applicant does not hold sufficient credits to produce a 1-foot contour encompassing the recovery well location, the applicant may not use the AOHI.

To ensure that the recovery well remains within the approved calculated AOHI for the duration of the permit, the recovery well permit will be conditioned to require the permittee to hold long-term storage credits in storage at the USF in an amount equal to the amount of credits used to calculate

the AOHI for the duration of the recovery well permit. If the permittee's credit balance at the USF drops below the amount used to calculate the AOHI, the permittee will be out of compliance with the recovery well permit and the permittee may no longer use the well as a recovery well.

AOHI Modeling

The requirements for the AOHI model are as follows:

- The applicant must use the most recently published version of the Department's AMA numeric models for the AOHI analysis. The only exception is if the proposed recovery well (or associated USF) is located outside the Department's model domain. The Department will evaluate these situations on a case-by-case basis.
- No changes to the Department's AMA models will be allowed. This includes model grid refinement, changes to aquifer parameters, historic well pumping, etc.
- The applicant must simulate all historical recharge (not credits) at other USFs and pumpage over the model domain for the time period of the model simulation. All stresses, including recharge at other USFs and pumping throughout the model domain must be updated to the most current year of available data.
- Except for the RCH and WEL packages, stresses that have not been updated since the last ADWR model publication may be held steady through future years from the last published model year.
- The applicant must simulate credits (not recharge) that it currently holds at the USF for which the AOHI is being determined in the model. The applicants must use at least the minimum amount of credits that result in the AOHI 1-foot contour encompassing the recovery well location.
- If a constructed USF exists in more than one cell in the model domain, the credits must be split evenly amongst those cells in the RCH package. If a managed USF exists in more than one cell in the model domain, the credits must be distributed by decay curve in the RCH package or placed in the cell(s) receiving the water in the STR package. Applying the recharge in the RCH package via decay curve is the preferable method at a managed USF.

AOHI Procedure

The AOHI must be calculated using the facility-on/facility-off approach as detailed in the steps below:

1) The applicant must run the model, including all inputs in the model domain, *with* the applicant's credits at the USF. As stated above, the applicant must use at least the minimum amount of credits that result in the AOHI 1-foot contour encompassing the recovery well location. The heads at the end of the final simulated year must be used in the calculation at Step 3.
2) The applicant must run the model, including all inputs in the model domain, *without* the applicant's credits at the USF. The heads at the end of the final simulated year must be used in the calculation at Step 3.

3) The ending heads from the model run from Step 2 must be subtracted from the ending heads of the model run from Step 1.
4) The head difference values from Step 3 represent water level rise due to storage of the applicant's credits at the USF. The applicant must create a 1-foot water level rise contour using the head difference values. This 1-foot water level rise contour represents the external boundary of the AOHI. Any water level rise less than 1 foot is considered negligible and may not be included in the AOHI.
5) The recovery well must be assessed for whether it is located within the AOHI.

As part of the recovery well AOHI application submittal, the applicant must provide the following:

- A map of appropriate scale which includes the labeled AOHI with the associated USF boundary and the location of the recovery well labeled with the ADWR well registration number (55-). The map must also include the model cell boundaries and AMA/sub-basin boundaries where applicable.
- A narrative describing the AOHI methodology and the total amount of the applicant's credits at the facility used in the AOHI model simulation.
- A GIS shapefile (feature type = polygon) of the AOHI with spatial reference (projection/datum) set to NAD-1983_UTM_Zone_12N (non-HARN) including the accompanying ".prj" files in which the coordinate system of the data is defined.
- GPS coordinates for the recovery well with spatial reference (projection/datum) set to NAD-1983_UTM_Zone_12N (non-HARN).
- A table of the applicant's credits at the USF for which the AOHI is being determined for each year simulated in the model.
- A table of recharge volumes at all other USFs for each year simulated in the model.
- A digital copy of all model inputs and outputs and the results of any calculations.

III. EFFECTIVE DATE

This Substantive Policy Statement shall become effective immediately. The Director may modify or revoke this Substantive Policy Statement at any time.

Dated this 11 day of August, 2021.

Director
Arizona Department of Water Resources