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IN THE SUPERIOR COURT OF THE STATE OF ARIZONA
IN AND FOR THE COUNTY OF MARICOPA

IN RE THE GENERAL ADJUDICATION OF ALL RIGHTS TO USE WATER IN THE GILA RIVER SYSTEM AND SOURCE	W-1 (Salt) W-2 (Verde) W-3 (Upper Gila) W-4 (San Pedro) (Consolidated) Contested Case No. W1-106 **ARIZONA DEPARTMENT OF WATER RESOURCES' RESPONSE TO QUESTIONS REGARDING ADWR'S *DE MINIMIS* DOMESTIC REPORT** Special Master Susan Ward Harris

CONTESTED CASE NAME: *In re Subflow Technical Report, Verde River Watershed*

HSR INVOLVED: None

DESCRIPTIVE SUMMARY: The Arizona Department of Water Resources provides its Response to questions regarding ADWR's technical report on a potential *de minimis* classification for domestic uses in the Verde River watershed as requested in the Order dated January 26, 2022.

NUMBER OF PAGES: Seven

DATE OF FILING: February 25, 2022

In the Order filed January 26, 2022 ("Order"), the Court requested that the Arizona Department of Water Resources ("ADWR") respond to questions raised by ADWR's December 3, 2021 technical report entitled "*De Minimis* Domestic Water Use in the Verde River Watershed." ADWR hereby responds as follows:

1. Whether ADWR used an appropriate methodology and whether any improvements can be made to the methodology to determine the amount of reliably available streamflow in the Verde Valley watershed?

ADWR's calculations were an appropriate and conservative calculation of the available streamflow in the Verde River watershed.[1] ADWR believes that given the information available at this stage in the proceedings, there is sufficient reliable information in its report for the Court to determine what, if any, *de minimis* classification for domestic uses is appropriate.

A detailed water budget is required to quantify the natural flow of the Verde River before any human uses occur. Estimating a water budget before a Hydrographic Survey Report (HSR) has been completed introduces a significant number of assumptions, each with potential error, including the quantity of water that is currently being used and how much water is reintroduced into the river system as return flow. A water budget is unlikely to show a smaller amount of surface flow than current gage data, as a water budget does not reflect the impact of current uses. In lieu of preparing such a budget, ADWR chose a more conservative method of arriving at available streamflow.

[1] Although the January 26, 2022 Order asked ADWR to address these questions with regard to the "Verde Valley watershed," ADWR believes this was a typographical error and that the Court intended to ask ADWR to address these questions regarding the Verde River watershed based on the context of the Order.

ADWR quantified the amount of reliably available streamflow for the Verde River watershed using United States Geological Survey (USGS) gages. The Paulden gage is located near the headwaters of the Verde River, whereas the Tangle Creek gage is located near the termination of the Verde River watershed. While there are other gages above the Paulden gage, they are located on tributaries rather than on the mainstem of the Verde River. Meanwhile, gages further downstream from the Tangle Creek gage are affected substantially by major imports and streams. These gages would not accurately capture all the streamflow that is available in the upper portion of the watershed nor in the lower portion of the watershed after most beneficial water uses have occurred.

The volume difference between the Paulden and Tangle Creek gages accounts for depletions from domestic water use and depletions from all other existing beneficial water uses occurring in the watershed. In other words, the final streamflow volume recorded at the Tangle Creek gage includes the impact of all beneficial water uses happening in the watershed until streamflow is measured at the gage.

ADWR added up the daily discharge at both gages to determine the yearly discharge at each of the sites. The median annual discharge was determined for both stream gages. ADWR then subtracted the Paulden gage median annual discharge from the median annual discharge of the Tangle Creek gage. The difference between the two gages is a conservative estimate of the available surface water, or the amount of reliably available streamflow, in the Verde River watershed. ADWR believes that this is a conservative way of estimating available streamflow, and one that appropriately utilizes available data and overestimates the impact of domestic water use.

After reviewing Salt River Project's (SRP) comments and suggestion that flow be calculated monthly,[2] ADWR calculated the median monthly discharge for June, since SRP suggested June as a low flow month. The estimated median discharge for the month of June is 4,293.2 acre-feet (AF). The monthly domestic demand ranges from 274.6 to 1,073.3 AF (3,294.7 acre-feet per annum (AFA) from Table 4 divided by 12 months and 12,879 AFA from Table 5 divided by 12 months). This range accounts for about 6.40% to 25%, respectively, of the available water for the month of June, resulting in a wide variation of potential impact. Since water use may change month to month, higher seasonal flows even out the low flow time periods. Using only seasonal data would exclude essential streamflow information from the rest of the year. Therefore, ADWR believes that the median annual discharge is still a reliable method to estimate available water.

ADWR compared different methods to estimate domestic water usage in the Verde River watershed. Across all methods, annual domestic water demand ranged from 3,294.7 AFA (Table 4, USGS 2015) to 12,879 AFA (Table 5, derived from Surface Water, GWSI, and Wells55 databases). Annual domestic impact for these different methods ranged from 1.27% to 4.95% of the flow of the Verde River. After reviewing all available data from the Department's databases, ADWR determined that there were likely significant gaps, overlaps, and unknowns in that data.[3]

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[2] Salt River Project's Comments on Arizona Department of Water Resources' Technical Report Re *De Minimis* Domestic Water Use in the Verde River Watershed filed January 7, 2022 at 5-6.

[3] ADWR is still analyzing SRP's analysis of the data from the Wells55 database. However, assuming that SRP's analysis is correct, it would result in 21,023 AFA in domestic use (21,023 wells, assuming 1 household per well and 1 AFA per household) or 12.4% of the estimated annual flow of the Verde. ADWR believes that this potential impact is also an overestimation because it includes all wells within the watershed, not just those pumping appropriable subflow, and may include other wells that either have not

ADWR then used Census data to calculate how many individuals live outside a municipal service area boundary. This resulted in an estimated total domestic demand of 9,152 AFA. This number is likely an overestimation because ADWR assumed that every person in the watershed was a self-supplied domestic water user and that all domestic users were utilizing appropriable water or Verde River subflow. Not every individual water use is self-supplied or using appropriable water within the subflow zone. However, ADWR believes that this method is more accurate than calculating the number of domestic users from the Department's databases because of the anticipated issues with the data described above. ADWR believes that any improvements to this process require additional data that is not currently available. Completing the HSR would allow ADWR to create a more accurate water budget. However, ADWR believes that determining a *de minimis* standard before the HSR is completed will lead to substantial improvements in the HSR process.[4]

2. What is the amount of appropriable water in the Verde Valley watershed absent the cumulative impact of domestic use?

As explained above, ADWR calculated the amount of available surface flow in the Verde River watershed in acre-feet per annum (AFA). This amount was calculated by subtracting upstream gage data from downstream gage data. This is very likely a

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been constructed or are not providing water for domestic purposes within the watershed due to an incorrect geographical location.

[4] ADWR prefers to determine *de minimis* uses for the entire watershed rather than on a subwatershed by subwatershed basis because we believe that issuing separate reports and having different standards is unnecessary and will cause additional confusion for the public and expense for the state. *See* Minute Entry Order filed March 4, 2020 in Contested Case No. W1-106, *In re Subflow Technical Report, Verde River Watershed* at 3.

conservative estimate of available water because it reflects the amount of water in the river after all depletion from existing water uses has occurred.

The hydrologic impact of domestic water uses in the Verde River watershed was evaluated by comparing the total estimated self-supplied domestic water demand (estimated by using both the number of domestic water uses reported in ADWR's databases and population data) to the total water available in the watershed. ADWR evaluated different scenarios to estimate the impact that domestic water users have on the Verde River system, discussed in Section 5 of our report. The estimated domestic demand was calculated as a range of 3,294.7 AFA (Table 4, derived from USGS 2015) to 12,879 AFA (Table 5, derived from Surface Water, GWSI, and Wells55 databases). Annual domestic impact for these different methods ranged from 1.27% to 4.95% of the estimated available surface flow of the Verde River. Therefore, the elimination of all domestic uses would increase the flow of water in the river by approximately 3,294.7 to 12,879 AFA.

ADWR is unable to determine the amount of appropriable water, or final water budget, in the Verde River watershed without first completing the HSR since the impact of other beneficial water uses on available surface flow has not been investigated. The impact of these other uses would be investigated during preparation of the HSR.

RESPECTFULLY SUBMITTED this 25th day of February, 2022.

ARIZONA DEPARTMENT OF WATER RESOURCES

Kimberly R. Parks, Deputy Counsel

ORIGINAL of the foregoing sent by first-class mail on February 25, 2022, to:

Clerk of the Maricopa Superior Court
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COPY of the foregoing sent by
first-class mail on February 25, 2022, to:

Special Master Susan Ward Harris
Maricopa County Superior Court
Central Court Building
201 West Jefferson Street, Suite 3A
Phoenix, AZ 85003-2205

COPIES of the foregoing sent by
first-class mail on February 25, 2022 to all
parties on the court-approved mailing list for
Contested Case No. W1-106.

Lizette Fuentes