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11 **IN THE SUPERIOR COURT OF THE STATE OF ARIZONA**  
12 **IN AND FOR THE COUNTY OF APACHE**

13 IN RE THE GENERAL ADJUDICATION  
14 OF ALL RIGHTS TO USE WATER IN  
15 THE LITTLE COLORADO RIVER  
16 SYSTEM AND SOURCE

Civil Case No. CV 6417-201

17 **ARIZONA DEPARTMENT OF WATER**  
18 **RESOURCES' NOTICE OF FILING**  
19 **REPORT REQUESTED BY THE**  
20 **SPECIAL MASTER**

(Special Master Susan Ward-Harris)

21 **CONTESTED CASE NAME:** *In re Hopi Tribe Priority*

22 **HSR INVOLVED:** Hopi Reservation

23 **DESCRIPTIVE SUMMARY:** The Arizona Department of Water Resources ("ADWR")  
24 provides notice of filing its report as requested by the Court in the Order dated October  
25 18, 2017.

26 **NUMBER OF PAGES:** Two and Sixteen-page Attachment

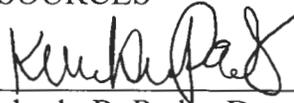
**DATE OF FILING:** December 22, 2017.

Pursuant to the Court's Order in this matter dated October 18, 2017, ADWR hereby provides notice of filing its report assessing the most efficient methods to generate

1 the data necessary to determine *de minimis* standards in the above contested case. A copy  
2 of ADWR's Report is attached hereto (Attachment A) and is being posted to ADWR's  
3 web site.

4 **DATED** this 22<sup>nd</sup> day of December, 2017.

5 ARIZONA DEPARTMENT OF WATER  
6 RESOURCES

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8 \_\_\_\_\_  
Kimberly R. Parks, Deputy Counsel  
9 Janet L. Miller, Deputy Counsel

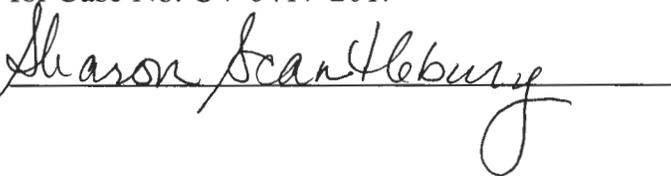
10 **ORIGINAL** of the foregoing notice and  
11 attachment sent by first-class mail on  
12 December 22, 2017, to:

13 Clerk of the Maricopa Superior Court  
14 Attn: Water Case  
15 601 W. Jackson Street  
Phoenix, Arizona 85003

16 **COPIES** of the foregoing notice and  
17 attachment sent by first-class mail on  
18 December 22, 2017, to:

19 Special Master Susan Ward-Harris  
20 Maricopa County Central Court Building  
21 Central Court Building  
22 201 West Jefferson Street, Suite 3A  
Phoenix, AZ 85003-2205

23 **COPIES** of the foregoing notice sent by  
24 first-class mail on December 22, 2017 to  
25 all parties on the court-approved mailing list  
26 for Case No. CV 6417-201.



**ATTACHMENT**

# PROPOSED LITTLE COLORADO RIVER WATERSHED

## *DE MINIMIS* USES PROCEDURES

### I. INTRODUCTION

In the Special Master's November 9, 2017 summary of oral argument during October 18, 2017 proceedings concerning "In re Hopi Priority, Contested Case No. CV6417-201" ("Summary"), the Special Master ordered the Arizona Department of Water Resources (ADWR) to file a report by December 22, 2017 whose purpose "is to identify the most efficient method to generate the data necessary to determine *de minimis* standards." Summary at 10. ADWR was also ordered to: (1) briefly describe its means of generating abstracts with water right characteristics extracted from completed watershed file reports; and (2) to assess the following three issues:

1. Whether ADWR can provide a technical report on stock and wildlife watering, stockponds and domestic use before it prepares a preliminary HSR on the Upper Little Colorado River watershed or the Lower Little Colorado River watershed. If so, an estimate of the amount of time necessary to prepare the technical report.
2. The amount of time reasonably necessary for the preparation of an HSR that reports solely on the Hopi Tribe's and the United States' claims for off-reservation use in the Upper and Lower Little Colorado River watershed and the time reasonably necessary to prepare a complete HSR for each of the Upper and Lower Little Colorado River watersheds.
3. Whether ADWR would realize any efficiencies by preparing technical reports simultaneously on stock and wildlife watering, stockponds and domestic uses on all subwatersheds in the Little Colorado River watershed outside of the Silver Creek Subwatershed. (Summary at 9)

ADWR believes it would be beneficial to first briefly discuss each of the types of potentially *de minimis* uses in the Upper and Lower subwatersheds of the Little Colorado



River (LCR) watershed. ADWR will then discuss the three issues listed above and provide its recommendations for the most efficient ways to proceed. ADWR further will provide a description of its means for preparing abstracts of water right characteristics, and additional considerations for developing procedures for *de minimis* uses in the Upper LCR and Lower LCR subwatersheds.

## II. TYPES OF POTENTIAL *DE MINIMIS* USES

### A. Stockwatering and Wildlife Uses

ADWR concluded in 1993 that stock and wildlife watering from streams and springs would have no measurable impact on the surface water outflow from the Silver Creek subwatershed (ADWR, 1993, p. 12). Special Master Thorson concluded in his April 1994 Memorandum Decision, Findings of Fact, And Conclusions of Law for Group 1 Cases Involving Stockponds, Stockwatering, and Wildlife Uses (“1994 Memorandum Decision”) that stock and wildlife watering were *de minimis* uses in the Silver Creek subwatershed and should be quantified as “reasonable use” (1994 Memorandum Decision at 29).

ADWR believes that the findings regarding the *de minimis* nature and quantification of stockwatering and wildlife uses in the Silver Creek subwatershed can reasonably be applied to both the Upper LCR and Lower LCR subwatersheds. It is very unlikely that enough grazing animals could be concentrated in one area for a sufficient length of time to significantly impact downstream flows strictly through the volume of water they consume. In a similar vein, a subwatershed cannot sustain enough grazing animals to measurably impact outflows to downstream watersheds strictly through the volume of water consumed.

### B. Stockponds

ADWR conducted its *de minimis* analysis of stockponds in the Silver Creek subwatershed after surveying 78 of a total of 762 stockponds and publishing the information in the Hydrographic Survey Report for the Silver Creek Watershed (Silver Creek HSR) in both



preliminary and final form (ADWR, 1993, p.6). The surveys of both area and capacity allowed ADWR to derive a regression equation relating area to capacity so that stockpond capacities could be estimated for non-surveyed stockponds based on their area. ADWR then used the calculated total capacity to demonstrate that:

[Under] undepleted flow conditions for the stockponds, less than 15% (380 acre-feet) of the total volume impounded by the stockponds would reach the surface water outflow from the Silver Creek watershed. This potential additional outflow is less than 2.8% of the annual average surface water outflow from the watershed. (*Id.* p.10)

Special Master Thorson utilized the ADWR 1993 report in his evaluation of potentially *de minimis* uses and concluded:

Conclusion of Law No. 5. Stockponds in the Silver Creek watershed with a volume of 4.0 acre-feet or less, taken individually or as a whole, have *de minimis* impact on downstream watersheds and can be adjudicated in a summary fashion.

Conclusion of Law No. 6. Stockponds in the Silver Creek watershed with a volume of more than 4.0 acre-feet will not be adjudicated in a summary fashion, and objections to these stockponds will be resolved in the normal course of the adjudication.

The Special Master also concluded:

Conclusion of Law No. 8. Because stockponds of all sizes and stockwatering uses in The Sinks, Long Lake, and White Lakes (which are closed basins) have no direct effect on other water uses in the Silver Creek watershed or in lower watersheds, these uses, regardless of their size, are *de minimis*, will be adjudicated in a summary fashion, and will not be subject to a priority call by water users outside the closed basin. (1994 Memorandum Decision at 17)



To calculate the total capacity of stockponds within the Upper LCR and Lower LCR subwatersheds to determine if they have a cumulative impact on their respective subwatershed outflows, ADWR would need to survey enough stockponds within each subwatershed to derive a reliable regression equation relating stockpond area to capacity. ADWR could then use that equation and its GIS platform to estimate the capacities of the remaining unsurveyed stockponds. The calculated capacities could also be used to categorize stockponds as potentially *de minimis* based on their capacity. ADWR does not believe the regression equation derived for the Silver Creek subwatershed can be reliably applied to the Upper LCR or Lower LCR subwatersheds.

ADWR agrees with Special Master Thorson that stockponds found within closed basins will not impact uses outside the closed basins. ADWR has identified six closed basins in the Upper LCR subwatershed and four closed basins within the Lower LCR subwatershed, comprising seven percent and two percent of the subwatershed's area, respectively.

### C. Domestic Uses

ADWR prepared a report in April 1994 entitled "Technical Report on *De Minimis* Adjudication of Uses Supplied from Wells in the Little Colorado River System" (*De minimis* Well Users Report). Rather than focusing on the *de minimis* nature of specific uses, this report examined several types of groundwater users (including domestic) having withdrawal thresholds of 10-acre feet per year and 56 acre-feet per year. ADWR calculated the total volume of all the withdrawals below these threshold values and then compared that value to the estimated average annual surface water outflow to the Navajo Reservation downstream from Winslow. ADWR concluded:

This analysis shows that while the magnitude of the threshold may change, the impact of the domestic, OT<sup>1</sup> and small municipal use class of uses supplied by groundwater on the

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<sup>1</sup> OT is "other irrigation" defined as "water used to produce plants used primarily for landscaping, aesthetic value, erosion control, and similar purposes" (Silver Creek HSR, Vol.1, p.312).



surface water resources of the Little Colorado River system is slight. Further, the water budget assumption that all well uses are a 100% depletion from the surface water system serves to calculate the maximum possible hydrologic impacts of these uses. Therefore, given that the impacts calculated here represent the maximum possible impact on the Little Colorado River, the uses captured by either *de minimis* threshold have, in DWR's opinion, an insignificant impact on the Little Colorado River system. (*De minimis* Well Users Report p. 29)

A domestic use is currently defined in statute as:

"Domestic use" means a single appropriative water right serving a residence, or multiple residences up to a maximum of three residential connections, for household purposes with associated irrigation of lawns, gardens or landscape in an amount of not more than one-half acre per residence. Domestic use does not include the use of water delivered to a residence or multiple residences by a city, town, private water company, irrigation provider or special taxing district established pursuant to title 48.

See A.R.S. § 45-251(1). This definition was added after the preparation of the Silver Creek HSR.

ADWR has been evaluating domestic uses using this new definition in its preparation of the San Pedro II HSR for the Sierra Vista Subwatershed. ADWR has found that claimants often indicate that they are sharing wells with other residences, but may not indicate how many residences are sharing the well, and seldom indicate with which residences they are sharing wells. This makes it difficult to determine whether the residential use meets the statutory definition without additional investigations. In addition, the data provided in the statements of claimant filed in the adjudication (SOCs) may be outdated if a significant length of time has passed and additional residences have been constructed near the claimant. These factors make the investigation of claims for domestic uses more labor intensive than investigations conducted for previous HSRs.



The sheer number of domestic claims is also something to be considered. There are currently nearly 2,000 SOCs claiming domestic use in the Upper LCR subwatershed and over 1,300 in the Lower LCR subwatershed. Investigating these claims would take a considerable length of time.

While creating a *de minimis* class of domestic uses may be intended to reduce the resources necessary to resolve objections to claims, instead it may add to the investigative requirements to produce an HSR. In order to reduce both the resources necessary to resolve objections and the investigative workload for HSRs, ADWR believes that a means of *excluding* small groundwater users from the LCR adjudication should be considered.

Based on data from prior technical reports concerning groundwater uses within the LCR watershed together with additional data that is now available to ADWR, ADWR proposes to evaluate the connection between the groundwater system and surface water flows and determine the relationship between the location and volume of groundwater withdrawals and their potential to impact surface water flows. This Groundwater Withdrawal Impact Analysis (GWIA) could be used to identify areas within the LCR watershed where groundwater withdrawals of relatively small volumes, such as domestic uses, could reasonably be excluded from the adjudication. The vast majority of groundwater users in the LCR watershed pump relatively small volumes so a means of excluding them from the adjudication would greatly speed up the proceedings.

### III. ISSUES

Issue 1: Whether ADWR can provide a technical report on stock and wildlife watering, stockponds and domestic use before it prepares a preliminary HSR on the Upper Little Colorado River watershed or the Lower Little Colorado River watershed. If so, an estimate of the amount of time necessary to prepare the technical report.



ADWR can prepare a technical report on stock and wildlife watering, stockponds and domestic uses before it prepares a preliminary HSR on either the Upper LCR or the Lower LCR subwatershed. As noted above, ADWR does not believe that additional work is required for defining and quantifying stockwatering and wildlife uses. For the stockpond assessment, ADWR could survey enough stockponds to derive a regression equation relating stockpond surface area and capacity and then use the equation to determine the total capacities of the stockponds in each subwatershed. The total capacity information would then be used to evaluate the impact of stockponds on the subwatershed outflow.

During the 1990's, ADWR conducted a significant amount of investigative work within the Upper LCR subwatershed, and very little work within the Lower LCR subwatershed. ADWR's Adjudication Investigation System (AIS) contains 1,278 stockpond potential water rights (PWRs<sup>2</sup>) in the Upper LCR subwatershed (including 29 surveys of stockponds) and two stockpond PWRs in the Lower LCR subwatershed. Based on a review of SOCs and Stockpond Registration Act filings,<sup>3</sup> ADWR estimates there are approximately 1,500 stockponds in the Upper LCR subwatershed and perhaps as many as 2,000 stockponds in the Lower LCR subwatershed.

ADWR estimates the amount of time to prepare a technical report on stockponds and domestic use for each subwatershed as follows:

Task	Time (months with two-person* team)	
	Upper LCR (1,500 stockponds)	Lower LCR (2,000 stockponds)
Planning, staff acquisition, training	3	3
Identify stockpond locations and classify by apparent surface area	2.5	4

<sup>2</sup> PWRs are developed for cultural water uses identified during HSR investigations. See Section IV *infra* for a further discussion of PWRs.

<sup>3</sup> See A.R.S. §§ 45-271 *et seq.*



Survey 10% of stockponds	3.75	6.25
Determine capacities of stockponds	0.25	0.25
Evaluate stockpond impact on outflow	0.5	0.5
Prepare report	1.5	1.5
Total	11.5	15.7
*Total with four-person team	8.4	10.5
The GWIA would occur concurrently with the stockpond assessment and would require approximately six months to complete by another two-person team.		

Issue 2: The amount of time reasonably necessary for the preparation of an HSR that reports solely on the Hopi Tribe’s and the United States’ claims for off-reservation use in the Upper and Lower Little Colorado River watershed and the time reasonably necessary to prepare a complete HSR for each of the Upper and Lower Little Colorado River watersheds.

The table below provides ADWR’s estimates of the time, in months, to prepare the referenced HSRs. ADWR is providing estimates for preparing an HSR on either Hopi off-reservation lands, or Hopi off-reservation lands plus lands that they lease for grazing purposes.

Task	Upper LCR	Lower LCR	Hopi off-reservation lands	Hopi off-reservation lands plus leased lands
Field Work	11.5	15	3	5
Office/GIS	16	17	2	3
Reporting	6	8	4	5
Total	33.5	40	9	13

Issue 3: Whether ADWR would realize any efficiencies by preparing technical reports simultaneously on stock and wildlife watering, stockponds and domestic uses on all subwatersheds in the Little Colorado River watershed outside of the Silver Creek Subwatershed.



Assuming a constant number of staff, it is not clear whether ADWR would realize any efficiencies if it prepared technical reports simultaneously for stockpond uses in the Upper LCR and Lower LCR subwatersheds. Data will need to be collected in order to develop a regression equation for each subwatershed based on surveys of a certain number of stockponds within those subwatersheds. The time required for separate technical reports for the Upper LCR and Lower LCR subwatersheds prepared for stockponds is estimated above. See Section III, Issue 1 (table). Preparing a single combined report would result in minimal time savings.

For domestic uses, ADWR believes that the GWIA should be conducted throughout the entire LCR watershed, including the Silver Creek subwatershed to determine whether certain relatively small groundwater uses could be excluded from the LCR adjudication. That analysis could be conducted in parallel with the stockpond assessments and perhaps included in a separate technical report for the entire LCR watershed.

#### **IV. ABSTRACTS OF WATER RIGHT CHARACTERISTICS**

Abstracts of water right characteristics will be developed from information in watershed file reports (WFRs), which contain information obtained during ADWR's investigations of water uses and SOC's filed in adjudications. While the following discussion pertains to the San Pedro River Watershed HSR, abstracts can similarly be created from WFRs in any HSR.

The Adjudication Information System (AIS) is a relational database management system (RDMS) that is Oracle® based. It was initially migrated into Oracle® from a mainframe program in the early 1990s. The information migrated into the RDMS includes, but is not limited to owner information, SOC data, ADWR findings from investigations, quantities of use from on-site surveys, claimed and actual location information, and relationships



between places of use (POUs) and points of diversion (PODs). The original AIS data has been archived and is available for READ ONLY purposes.

During the migrations of the original AIS data into the RDMS some of the links were broken between POU and PODs. An application was created by ADWR that provides a user-friendly interface to update AIS information and to ensure it corresponds to the printed HSR.

*De minimis* uses in the San Pedro River watershed are investigated using an extract from AIS which includes, but is not limited to, owner information, use type, use location, facility name, priority date and source, and quantities of use. Digital locations of the POU points can be computed one of two ways: 1) If a POU was mapped in Volume 9 of the San Pedro HSR, then that point is used. 2) For POU locations that were not mapped in Volume 9 of the San Pedro HSR, the digital locations are derived using the legal locations that were investigated by ADWR.

Once the POU locations have been imported to a digital map (ESRI ArcMap 10.4), the investigators will use the AIS export and begin verifying that the information in the HSR is accurate. By using modern satellite and aerial imagery and USGS topographic maps, the investigators can locate stockpond berms, springs, and instream water uses (the instream use can either be where the drainage enters the WFR boundary, or the headwaters of the drainage).

The data from investigations, including updated location information, priority dates and sources, and investigator and reviewer names and dates are stored in an ArcMap geodatabase on the ADWR network. These data are also imported into newly created AIS tables so that values of existing tables are not changed. Having the updated investigation information, as well as the initial HSR data in AIS will allow for efficient and reliable querying and reporting of the data, and allow comparisons between the two.



The updated GIS location data for the Potential Water Rights (PWRs) are stored using a coordinate system as well as the legal cadastral system. By storing the PWR locations as point data, they can be used to reference other GIS covers, such as county assessor parcel details and owner information. This will ensure that at the time of abstract creation, the most current and reliable information will be used.

Using reporting software (ReportBuilder by Digital Metaphors), customized, individual reports can be created to extract information from the AIS and display them in formats such as Proposed Potential Water Rights abstracts (PpWRs) and WFRs. An example of a Water Right Abstract generated using this system is provided as **Attachment 1**.

## V. ADDITIONAL CONSIDERATIONS

### A. Pretrial Order No. 6.

In Section III, Issue 2, ADWR estimated the time reasonably necessary for the preparation of preliminary HSRs for the claims filed by the Hopi and the United States for off-reservation uses, and for each of the Upper LCR and Lower LCR subwatersheds. These estimates do not include the time required for ADWR to comply with the requirements of Pretrial Order No. 6 (July 26, 2000) for the Little Colorado River adjudication.

Under Pretrial Order No. 6, ADWR must provide notice of the filing of preliminary and final HSRs and the opportunity to file comments and objections to all persons on the court-approved mailing list and each claimant and non-claimant water user in the geographic area covered by the HSR. ADWR also must provide notice 120-days before the final HSR is filed to those users listed above. When the final HSR is filed, ADWR must provide notice of the commencement of the objection period to those users listed above and to every other claimant in the LCR adjudication. For a watershed HSR, each claimant and non-claimant water user must be provided with a copy of the portion of the preliminary or final



HSR describing each specific water use or claim by that person, and the report must be available for inspection at certain locations. By statute, any claimant in the LCR may file objections within 180 days of the date that the final HSR was filed. A.R.S. § 45-256. If ADWR were required to prepare separate preliminary and final HSRs solely for the Hopi and United States off-reservation claims, ADWR believes that compliance with Pretrial Order #6 may be required not only for those HSRs, but also for the HSRs for the Upper and Lower LCR subwatersheds when they are completed.

#### B. Stockwatering Uses

As stated above, ADWR believes that the *de minimis* findings for stockwatering in the Silver Creek subwatershed can reasonably be applied to both the Upper LCR and Lower LCR subwatersheds. See Section II(A). In addition, ADWR recommends that water right abstracts only be proposed for stockwatering on intermittent and perennial streams, and not ephemeral streams.

Within the Silver Creek HSR, ADWR created stockwatering PWRs on *ephemeral* streams upstream from stockponds. It is ADWR's experience working with similar stockwatering PWRs in the San Pedro River watershed that describing the place of use is very problematic. Both the parties and ADWR spent considerable effort attempting to locate and describe stockwatering PWRs on ephemeral streams that probably flow less than 5% of the time and therefore cannot be administered. ADWR recommends that PWRs should only be created for stockwatering on perennial and intermittent streams in the Upper LCR and Lower LCR subwatersheds.

## VI. SUMMARY

ADWR suggests that the most efficient path forward would be for it to complete the Upper LCR investigations and issue that HSR before the work completed on that subwatershed becomes possibly even more outdated. Unless instructed otherwise by the Special Master,



this HSR would include the one Hopi Ranch present in the Upper LCR subwatershed and would include a proposal for *de minimis* stockponds. ADWR could simultaneously work on the GWIA in an effort to potentially greatly reduce future investigative requirements, such as those for domestic uses, throughout the LCR watershed.



# **ATTACHMENT 1**

## Example for Discussion Purposes Only

### ABSTRACT OF WATER RIGHT SAN PEDRO RIVER WATERSHED

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1. Proposed Water Right No:	111-19-028-SP002
2. Owner of Water Right:	ARIZONA STATE LAND DEPARTMENT *
3. Landowner:	ARIZONA
4. Statement of Claimant No.(s):	39-0007840
5. Statement of Claimant Name(s):	AZ STATE LAND DEPT
6. Lessee or Permittee:	MEIGS, WILLIAM, ET AL.
7. Basis of Right:	38-0088755
8. Beneficial Use:	STOCKPOND
9. Priority Date:	12/31/1944
10. Quantity:	NOT TO EXCEED 4AF W/CONTINUOUS FILL
11. Place of Use:	SESESW09 21S 19E
12. Point of Diversion:	SESESW09 21S 19E
13. Source of Water:	SURFACE WATER
14. Name of Facility:	T44 TANK

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#### Additional Information

\*Subject to Lessee's right to reimbursement (if any) for improvements.