

SUPERIOR COURT OF ARIZONA  
MARICOPA COUNTY

10/12/2012

CLERK OF THE COURT  
FORM V000

HONORABLE EDDWARD BALLINGER, JR.

L. NEVENHOVEN  
Deputy

W-1, W-2, W-3, W-4 (Consolidated)

Contested Case No. W1-103

FILED: October 12, 2012

In Re the General Adjudication  
of All Rights to Use Water in  
the Gila River System and Source

Findings of Fact and Conclusions of Law  
Regarding the Evidentiary Hearing held  
January 24, 25 and 26, 2012, in re the  
Subflow Zone Delineation Report for the  
San Pedro River Watershed (June 2009)  
Prepared by the Arizona Department of  
Water Resources

Order Entered re Pending Objection, Motion  
to Strike and Request

MINUTE ENTRY

**FINDINGS OF FACT AND CONCLUSIONS OF LAW**

1. Pursuant to this Court's Order of September 28, 2005, on June 30, 2009, the Arizona Department of Water Resources ("ADWR") issued its "Subflow Zone Delineation Report for the San Pedro River Watershed ("2009 Report").
2. The Court permitted the parties to submit objections to the 2009 Report. Those objections were submitted between July 31, 2009, and December 31, 2009.

3. In January 2011, pursuant to this Court's Order, ADWR issued its Response to Comments and Objections filed on ADWR's June 2009 Subflow Zone Delineation Report for the San Pedro River Watershed ("2011 Report"), addressing the comments and objections filed to the 2009 Report.

4. On January 24, 25 and 26, 2012, the Court heard evidence relating to the ADWR reports and the objections.

5. Following the hearing, ADWR submitted its report entitled, "Subflow Delineation Methodology Report for the San Pedro River Watershed" ("April 2012 Report").

6. The Court finds that Arizona Geological Survey ("AGS"), 2008, has appropriately mapped the surficial geology along the San Pedro River.

7. The AGS mapping of surface geologic units is not determinative of the subflow zone because it does not provide important subsurface information for the floodplain Holocene alluvium ("FHA"), specifically, the thickness of each of the units and the subsurface lateral extent of FHA underlying other FHA.

8. The determination of the distribution of geologic units alone, as reflected in the AGS mapping, is not dispositive in delineating the subflow zone.

9. ADWR's analysis understates the extent of the floodplain because it does not appropriately take into account the fact that extensive alluvial fans cover much of the floodplain and adjacent basin fill.

10. ADWR has only delineated a portion of the saturated FHA, which is not a stable geologic feature, but rather one that meanders and changes course over time. This meandering process removed and redistributed alluvial fans and other deposits brought onto the floodplain by tributary streams. Eventually this process resulted in the formation of the current floodplain.

11. ADWR improperly *uniformly* excluded certain geologic units, at least some of which constitute temporary deposits that will eventually be washed away.

12. The conclusions in ADWR's 2009 Report are inaccurate in that they incorrectly exclude portions of the FHA, which lie beneath what is sometimes referred to as "tributary" alluvium.

13. Analysis of the existence of riparian vegetation may be a useful tool in the identification of the subflow in some areas.

14. In its future reports, ADWR should modify its position on the use of borehole and aquifer data to ensure that reliable lithologic data is utilized.

15. Those areas identified in the 2009 Report as “islands of floodplain Holocene alluvium” and the areas covered by a thin veneer of alluvium overlying portions of the FHA are part of the subflow zone.

16. The parameters used by ADWR in the 2009 Report with respect to use of routine applications of setbacks resulted in exclusion of areas within the subflow zone.

17. Without dictating the procedure to be used prospectively, the Court finds that the methods used in the 2009 Report with respect to wells, improperly excluded areas likely to be within the subflow zone.

18. ADWR’s 2009 subflow zone delineation proposal for the San Pedro River is too narrow, as would be any mapping that relies too heavily on surface mapping. ADWR must have at its discretion use of a number of several tools in delineating the lateral extent of the FHA at a given location. Not every tool can or necessarily should be used at each location. ADWR must use its technical expertise to utilize all of the resources available to it in delineating the subflow zone.

19. The Court agrees with and adopts the following portions of the 2009 Report:

- a. The estimate of phreatophyte evapotranspiration.
- b. The summary of cultural depletions in Section 3.1.4.
- c. The analysis of predevelopment flows and water levels described in Sections 3.2 through 3.4.
- d. The method for using existing maps, consideration of mapping methods for previous work, using the largest scale maps possible, and taking special care in transfers and projections of maps summarized in Section 2.2 of the report so long as consistent with the Court’s findings of fact.

- e. The assumption, for subflow mapping purposes, that the entire lateral extent of FHA is saturated.
- f. The hydrologic criteria and procedures described in Section 2.1, including the definitions of perennial, intermittent and ephemeral streams, and the use of predevelopment flow conditions.

20. In determining the lateral extent of the FHA areas in which tributaries have recently deposited alluvium on top of the floodplain, which may be subject to being washed away during future flooding, are to be considered part of the FHA.

21. Two-hundred (200) foot setback assumptions may not be used in locations where thin veneers of tributary alluvium overlie the FHA. Except at the mouths of larger ephemeral streams or washes (those which have relatively frequent surface and underground flow), the setbacks shall be one hundred (100) feet from the edge of the FHA. Setback assumptions shall not be used in bedrock canyons.

22. When a hydraulic connection exists between the underground flow associated with tributary and surface flow of the primary watercourse, the following adjustments are permitted:

- a. Apply 100-foot setbacks everywhere except for large ephemeral streams that have relatively frequent surface and underground flow.
- b. Modify the setbacks to include the active river channel.
- c. When setbacks cross or where basin fill is adjacent to the active channel, continue the subflow zone using the active channel.
- d. Evaluate disturbed ground based upon the likely underlying geologic unit.

23. ADWR may not universally exclude mountain front streams when delineating the subflow zone because these sources are of short length, are isolated from major streams, and/or are difficult to access. Streams may be excluded from the subflow analysis if they were ephemeral under predevelopment conditions and there is not a connection of FHA between the ephemeral stream and a perennial or intermittent stream.

Based upon the foregoing findings of fact and conclusions of law,

IT IS ORDERED:

1. The parties' objections to the 2009 ADWR Report and the resulting subflow zone determination are sustained in part and overruled in part, consistent with the findings of fact and conclusions of law set forth herein.
2. The revised subflow zone delineation must:
  - a. result in a continuous subflow zone;
  - b. result in a stable geologic feature;
  - c. include the entire current active channel of each watercourse;
  - d. include the Historical Composite Active Floodplain (1935-2007) for each watercourse;
  - e. accurately reflect the full extent of the FHA; and,
  - f. to the extent possible, interpret judicial pronouncements in a manner consistent with scientific fact.
3. In determining what areas to include within the subflow zone, ADWR should use its professional judgment and should consider, as and to the extent appropriate, a combination of the following: (a) Arizona Geological Survey mapping to identify the surface exposure of the boundary between either bedrock or Pleistocene and Tertiary basin fill and Holocene alluvium; (b) topographic slope breaks (which may be considered, when appropriate, the edge of the subflow zone); (c) vegetation patterns; and, (d) aerial photographs to determine the boundary between basin fill or bedrock and Holocene alluvium where alluvial fans and channel deposits are deposited on the floodplain. ADWR should not rely solely upon surface data.
4. ADWR shall apply setbacks only in those instances where a hydraulic connection exists between the subflow zone and the surrounding material. ADWR need not apply setbacks in instances in which it reasonably finds that no such hydraulic connection exists.

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5. ADWR shall prepare a revised Subflow Zone Delineation Report for the San Pedro River Watershed on or before a date to be set at the conclusion of the hearing to be held on November 8, 2012.

The Court has reviewed the pending objection to the request that the Court adopt the proposed subflow delineation, motion to strike the Surface Water Users' New Subflow Zone Delineation and request that the Court provide special instructions to the ADWR in connection with preparation of future subflow reports. As a result of this Court's October 12, 2012, Order regarding ADWR's 2009 Report,

IT IS ORDERED deeming the pending objection, motion and request moot.

/s/ Eddward P. Ballinger, Jr.  
JUDICIAL OFFICER OF THE SUPERIOR COURT

A copy of this order is mailed to all parties on the court-approved mailing list (Court) for Contested Case No. W1-103 dated July 17, 2012.