5 MP Ag Subgroup

September 5, 2019
Agenda

I. Introduction and Meeting Logistics
II. Overview of Agricultural Conservation Programs and Historical Data
III. Discussion of Future Analyses
IV. Future Meetings
V. Closing Remarks
Meeting Logistics

* Meetings are open to anyone who would like to participate.
* We are looking for feedback and to learn from participants’ expertise.
* We are expecting an open and collaborative process, including opportunity to challenge ideas in a transparent manner.
A.R.S. § 45-563 (A)

“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”

Management Plans Work Group

ADWR-led stakeholder forum for the development of the 5th Management Plans

* Goals:
  * Assess existing conservation programs
  * Update existing management strategies
  * Develop new management strategies
Overview of Agricultural Conservation Programs and Historical Data
A.R.S. § 45-563 (A)

“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”
<table>
<thead>
<tr>
<th>Statutory Requirements - Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.R.S. § 45-564 et seq.</strong></td>
</tr>
<tr>
<td>Calculate Water Duty</td>
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<tr>
<td>Municipal GPCD Reduction</td>
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<tr>
<td>Municipal Lost &amp; Unaccounted for Water</td>
</tr>
<tr>
<td>General Industrial Conservation</td>
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<tr>
<td>Conservation for Untreated Providers</td>
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<tr>
<td>Conservation for Small Providers</td>
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<tr>
<td>Municipal Non-Per Capita Conservation</td>
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<tr>
<td>Incentives for Augmentation/Recharge</td>
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<td>Assessment of Water Quality</td>
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<td>Program for Conservation Assistance</td>
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<tr>
<td>Historical Natural Recharge</td>
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<tr>
<td>May Reduce Highest 25% of Water Duties</td>
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<tr>
<td>Agricultural Historic Cropping Program</td>
</tr>
<tr>
<td>Agricultural BMP Program</td>
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<td>Option for Alternative Agricultural Programs</td>
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<tr>
<td>May Establish Cropped Acreage Program</td>
</tr>
<tr>
<td>May Include Program for GFR Purchase &amp; Retirement</td>
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<tr>
<td>Recommendations to AWBA/for well locations</td>
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</table>
Conservation Programs

A.R.S. § 45-563(A): “...The plans shall include a continuing mandatory conservation program for all persons withdrawing, distributing or receiving groundwater designed to achieve reductions in withdrawals of groundwater.”

* Programs for Three Sectors:
  * Agricultural (Chapter 4)
    * Base Program
    * Historic Cropping Program
    * Best Management Practices Program (BMP)
  * Municipal (Chapter 5)
    * GPCD Program
    * Non-Per Capita Program (NPCCP)
  * Industrial (Chapter 6)
    * General Requirements
    * Specific Subsector Programs

* Conservation Programs include:
  * Regulatory requirements related to water use
  * Reporting requirements
  * Conservation targets
  * Flexibility provisions
  * Compliance provisions
As a part of the 4MP, ADWR will periodically (at least every 3 years) publish an analysis of each AMA’s progress toward its goal.

* Expand scope of report required under A.R.S. § 45-563.01 to include analysis of:
  * Effectiveness of Conservation Programs in all 3 sectors
  * Progress toward the goal in each of the 5 AMAs

* Transparency
  * Communicating success or need for improvement
  * Tracking and ensuring progress of each AMA toward its goal
  * Sharing underlying data and methodology
Components of the Base Program:

* **Water Duty** - The amount of water in acre-feet per acre that is reasonable to apply to irrigated land in a farm unit (A.R.S 45-402).

\[
\text{Total Irrigation Requirement} \div \text{Assigned Irrigation Efficiency} = \text{Water Duty}
\]

* **Water duty acres** - The highest number of acres irrigated at any one year between 1975 – 1979 and are used for calculating the allotment for a given IGFR

* Multiply the water duty by the water duty acres to get the maximum annual groundwater allotment for each IGFR in the Base Program

* Each IGFR in the Base Program also has a **flexibility account** in which they can accrue credits or debits based on annual water use.
A.R.S. § 45-568(A)(2)

“The director may adjust the highest twenty-five per cent of the final irrigation water duties established within an area of similar farming conditions pursuant to section 45-567 by reducing each water duty in an amount up to five per cent, except that, in making the adjustment, no water duty may be reduced to an amount less than the greater of the following:

(a) The highest water duty within the lowest seventy-five per cent of the water duties computed within the area of similar farming conditions for the fourth management period

(b) A water duty computed for the farm unit under this paragraph using an irrigation efficiency of eighty per cent.”
### Agricultural Base Program

#### Water Duties

This is an example of the corresponding statute from the proposed 4MP.

<table>
<thead>
<tr>
<th>AMA</th>
<th>Number of rights adjusted (% total in the Base Program)</th>
<th>Maximum change in allotment (% total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phoenix</td>
<td>219 (11%)</td>
<td>-6,216 AF (-1.0%)</td>
</tr>
<tr>
<td>Pinal</td>
<td>123 (11%)</td>
<td>-3,092 AF (-0.5%)</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>1 (26%)</td>
<td>-5 AF (negligible)</td>
</tr>
</tbody>
</table>

Allotment = Water Duty x Water Duty Acres

Water Duty = Irrigation Requirement / Irrigation Efficiency

Irrigation Requirement = Consumptive Use + Other Needs + Leaching Allowance
A.R.S. § 45-568.02(G)

“The director shall include... a best management practices program... in lieu of complying with an irrigation water duty and a maximum annual groundwater allotment. The program shall be designed to achieve conservation that is at least equivalent to that required under [the Base Program].”
Farm operator agrees to implement approved BMPs on their farm relating to water conveyance, Irrigation systems, and efficient water & soil management practices.

Must implement and report on practices annually, in addition to adhering to water use reporting requirements, under BMP farm unit number.

No annual allotment to adhere to, therefore the water duty & flexibility account provisions are irrelevant to IGFRs while enrolled in the BMP Program.

<table>
<thead>
<tr>
<th>AMA</th>
<th>Number of IGRs Enrolled in the BMP Program</th>
<th>Irrigation Acres Enrolled in the BMP Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phoenix</td>
<td>172</td>
<td>26,700</td>
</tr>
<tr>
<td>Pinal</td>
<td>312</td>
<td>83,481</td>
</tr>
<tr>
<td>Total</td>
<td>484</td>
<td>110,181</td>
</tr>
</tbody>
</table>
Agricultural BMP Program

<table>
<thead>
<tr>
<th>Provision</th>
<th>3MP &amp; Adopted 4MPs</th>
<th>Proposed for Remaining 4MPs</th>
</tr>
</thead>
</table>
| Points target and structure   | 10 total points  
✓ At least 1 point/category  
✓ At least 2 points in Category 2  
✓ No more than 3 points/category | 12 total points  
✓ At least 1 point/category  
✓ At least 2 points in Category 2  
✓ No more than 4 points/category |
| Points values                  | No changes                                             | Changes made in Categories 1 & 2  
*(See Appendix 4B)*            |
## Agricultural BMP Program

<table>
<thead>
<tr>
<th>AF/Irrigation Acre</th>
<th>% Total Irrigation Acres</th>
<th>% of Total Ag Water Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base</strong></td>
<td><strong>BMP</strong></td>
<td><strong>% difference</strong></td>
</tr>
<tr>
<td>Phoenix AMA</td>
<td>4.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Pinal AMA</td>
<td>3.1</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Total All AMAs</strong></td>
<td>3.7</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Other Programs

* Historic Cropping Program
  * A.R.S. § 45-568.02(A)
* Requirements for Districts
  * Lining canals or limiting lost water to 10% or less
Overview of Historical Agricultural Data
* Non-exempt wells (>35 gpm) inside AMAs and INAs must meter well pumpage.
* Users subject to reporting requirements must submit Annual Water Withdrawal and Use Reports –
  ➢ Due March 31st each year
* Volume of groundwater pumped by well
* Report movement of water
  * Types and Volumes of Water Delivered/Received
  * Types and Volumes of Water Stored/Recovered
  * Generation/Discharge of Effluent
* Report types of end use
* Additional information related to conservation requirements or any other information the director deems necessary
Water use data reported to ADWR comes from:

* Irrigation rights greater than 10 irrigation acres
* BMP Farm Units
  * Can be made up of multiple Irrigation Rights, but only submit one report
* Irrigation Districts
  * Some districts report on behalf of their right holders
Total Agricultural Water Use by AMA

Million Acre-Feet

1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017

PHOENIX AMA  PINAL AMA  PRESCOTT AMA  SANTA CRUZ AMA  TUCSON AMA
Total Agricultural Water Use by Source

[Graph showing the total agricultural water use by source from 1985 to 2017. The x-axis represents the years, and the y-axis represents million acre-feet. The graph includes lines for Groundwater, CAP, Surface Water, Effluent, Spill, and Other.]
Discussion of Future Analyses
Management Plans Work Group

* Work Group
  * The MPWG is an ADWR-led stakeholder forum for the development of the Fifth Management Plans

* Goals:
  * Assess existing conservation programs
  * Update existing management strategies
  * Develop new management strategies
Additional Analyses and Data

* Do we need additional data?
  * USGS
  * Cropscape
  * Farm Bureau
  * NRCS
  * Any data on Irrigation Method?
  * Other voluntarily supplied information

* Potential Analyses
  * Looking at changes in water use patterns after a farm joins the BMP program
  * Future: AF/acre use on actively irrigated acres
Future Meetings
Future Meetings

* Frequency?
* Next Dates?
* Topics?

* Other Subgroups
  * Industrial: 1pm on September 9, 2019
  * Safe-Yield: 1pm on September 23, 2019

* Next MPWG meeting: 2pm on December 4, 2019
Questions?

managementplans@azwater.gov

Management Plans Work Group:
new.azwater.gov/5MP

Full Text of Management Plans:
new.azwater.gov/ama/management-plans