The Citizens Water Advocacy Group (CWAG) has carefully evaluated the Draft Fifth Management Plan (5MP) for the Prescott Active Management Area (PrAMA). We have substantial criticisms of this weak planning effort.

CWAG filed comments responding to the file named “PrAMA5MPDraft_Jan2022_0.pdf” on February 28, 2022. This letter is in response to the file named “DraftPrAMA5MP.pdf” which is slightly larger and is apparently only slightly different in ways that are not obvious. It would have been helpful for ADWR to publish a list of changes.

We have had no response from ADWR re our February comments, and we are dismayed that our previous comments have not been reflected in the current draft and obvious typographical errors have not been corrected. It is disappointing that ADWR, despite its commitment to transparency, has not provided the staff time to provide feedback on CWAG’s extensive comments.

Please carefully consider and provide a written response to the following comments.
About CWAG:
CWAG is a local citizens group vigorously advocating for a sustainable water future for the Prescott Active Management Area and for protection of the upper Verde River since 2002. CWAG uses the best available science to educate citizens and to influence governmental decision-making by identifying sensible courses of action.

We see two main problems facing sustainable water management:
- We continue to pump too much groundwater while failing to develop a regional plan to reduce the stress on our aquifer.
- Current trends, amplified by population growth, threaten the flow of the upper Verde River and a long-term sustainable water supply for the Prescott Active Management Area.

CWAG Perspective on Prescott Valley’s Letter re the January Draft 5MP:
Prescott Valley claims that they have worked “to develop an environmentally safe importation plan...” for importing water from the Big Chino. In fact no plan exists. PV has partnered with SRP and the City of Prescott to gather geophysical and precipitation data in the Big Chino Valley intended to inform a groundwater model. The model is designed to predict any impacts to Verde River base flow from pumping at the Big Chino Water Ranch. The model has not been released. No mitigation plan exists. PV’s statement is not correct. PV continues to anticipate imported water for future growth, yet they have the weakest water conservation program in the PrAMA, where Agua Fria sub-basin water levels are steadily declining.

Prescott Valley claims “groundwater levels have increased by 180 feet in Prescott Valley’s main well field...”. This statement may be technically correct but it is irrelevant to groundwater conditions in the PrAMA. We expect that water levels in a well will rise when it is not actively pumped, and that is the situation PV refers to. When the well is rested the water level will slowly return to match the regional water level. The large 180’ recovery indicates that the aquifer is tight and does not easily deliver water to the well bore. Prescott Valley further claims that groundwater levels have increased “by 110 feet at its recharge facility...” This is exactly as expected at a recharge pond and indicates nothing about the overall aquifer condition. ADWR data shows that regional water levels in the Agua Fria sub-basin are steadily declining. PV’s claims are purely spin and only indicate their intent to distort water management conversations. We assume that ADWR will ignore these distortions and irrelevancies.
General Comments on Draft 5MP:
The Draft 5MP demonstrates the fruits of ADWR's efforts to improve public communication. The document is well written and organized, yet our previous comments have not been recognized and obvious typographical errors have not been corrected. We appreciate the clear explanation of regulations. We value the major improvements in timely release of online data - this is a significant advance in public access and transparency. Communication about safe yield is greatly improved. The recognition that the PrAMA is unlikely to achieve safe yield, and that it suffers the greatest percentage of overdraft compared to total demand in the state is a welcome acknowledgement of reality. However, safe yield remains the management goal so the 5MP is required work towards that end.

The Draft 5 MP fails to plan for safe-yield. The plan focuses on regulation, not how to achieve safe-yield. The proposed management elements tend to protect and maintain existing water usage instead of establishing specific and effective reductions and methods necessary to achieve safe-yield, which is a statutory requirement.

The Draft 5MP lacks a rigorous evaluation of previous MPs and proposed 5MP program effectiveness. The Executive Summary establishes a 5MP focus on conservation by stating, “The 5MP was designed to serve as a concise, descriptive, regulatory document with straightforward and transparent conservation programs that will result in reductions in withdrawals of groundwater.” The importance of conservation was recognized in the 1980 Groundwater Management Act: “The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.” Note the 5MP asserts without proof that the programs that are described “will result in reductions . . .” rather than “are designed to result in reductions . . .” ADWR should provide evidence that the conservation programs are designed to reduce withdrawals of groundwater.

ADWR management of the PrAMA began in 1999 when the PrAMA was declared out of safe yield, activating the Assured Water Supply rules. Under the 3MP and 4MP, the long-term overdraft has increased and not declined, representing an enormous failure of those management plans. The 3MP and 4MP plans have not only failed to achieve the management goal of safe yield, but have failed to reverse the trajectory of rapidly growing overdraft and create a trend of decreasing overdraft. The draft plan does not evaluate the provisions within the 3MP and 4MP to determine what works and what has proven ineffective.

Where are the failure points? How can a management plan be incrementally improved without considering the elements that were not effective? The draft plan contains no calculations or proof that
any of the previous management programs have worked or how well the newly proposed programs will work. This is a fundamental problem.

The Draft 5MP fails to plan for the future. The conservation requirements in the 5MP are to be in place by January 1, 2025 and remain in place thereafter until the legislature decides otherwise. In other words no significant changes in required actions will take place for the next three years and possibly for an indefinite time. Thus it becomes extremely important that the 5MP is carefully evaluated to assure effectiveness throughout an indefinite future period. The Draft 5MP is static, a rehash with tweaks of past plans that have been unsuccessful and inadequate. We need a 5MP that will continuously improve, adapting to a changing and uncertain future.

ADWR is to be commended for identifying the importance of water conservation for reducing the current overdraft in the PrAMA. Unfortunately, the 5MP has not provided guidance to water providers as to the principles of water conservation management. The 5MP lays out required BMP’s but not the management basics of conservation planning, implementation, and evaluation that water providers need to understand.

The conservation requirements for all sectors should be fundamentally reworked to require all classes of water providers to plan a forward-looking conservation program compatible with their local needs. The conservation program would be expressed through a planning process using adaptive management principles: a) strong community participation; b) a 10-year plan that identifies future demand and resources; c) annual milestones with periodic monitoring to verify attainment; d) program adjustments as needed to attain milestones; e) periodic plan updates. ADWR would no longer need to prescribe specific conservation measures but would instead establish objectives and long-range goals, then monitor progress. See further discussion in specific comments below. We suggest two general goals that community conservation plans should incorporate:

- **Reduce groundwater pumping.** ADWR should specify a 10-year goal.
- **Increase the volume of wastewater for recharge.** ADWR should specify a 10-year goal.

The Draft 5MP fails to identify new authorities needed to achieve safe yield.

ADWR's failure to obtain the authorities needed is the major reason that the PrAMA is unlikely to achieve safe-yield, accounting for substantial overcommitment of groundwater resources:

- **Example 1:** When ADWR issued a draft decision that the AMA was in overdraft in 1998, landowners in Prescott Valley area objected, which delayed the final decision until January 1999. In that one year delay, over 32,000 preliminary lots were created as preliminary plats, thus grandfathering them to be exempt from the Assured Water Supply rules. ADWR claimed they did not have the authority to prevent this water grab that committed one million acre-feet
over the next 100 years. That is one-third of the storage capacity of the PrAMA. ADWR has yet to acquire that authority.

• **Example 2:** In 2019, Prescott decided to change their previous water policy and to use the groundwater allowance portion of their Designated Assured Water Supply water portfolio to support new subdivisions. The groundwater allowance was intended to support the committed demand as of the date the PrAMA was declared out of safe-yield. The diversion increased their allocable water supply by nearly 10,000 afy and committed an additional million acre-feet to new development, despite a substantial overdraft. CWAG objected to this diversion, but the ADWR Director replied that there were no restrictions on how the groundwater allowance could be used. Additionally, two respected Arizona water attorneys suggested that this was a loophole inconsistent with the intent of the framers. ADWR has not attempted to fix this regulatory loophole.

• **Example 3:** In the last section of the Executive Summary dealing with the Future and Challenges facing the PrAMA, the consequences of climate change are recognized as a significant challenge. On page 0-7:
  
  • “Arizona is experiencing hotter temperatures, reduced and increasing erratic precipitation, and more extreme weather events, and these changes are expected to continue.
  
  • As the impacts of climate change are becoming more evident, all supplies are experiencing increased constraints and additional and more robust management tools and strategies will be required to ensure resilient, long-term water supplies in the AMAs.”

The last part is extraordinary. By saying “additional and more robust management tools and strategies will be required to ensure resilient, long-term water supplies” ADWR admits they do not currently have the ability to guide the PrAMA to an assured, sustainable water future.

At a minimum, new approaches and new legislation will be required to protect the limited water supply in the PrAMA. An effective plan should identify the additional authorities needed to achieve the management goal.

**Specific Comments:**

**§1.1 Quantity:** Table 1-1 “Prescott AMA Rates of Annual Net Natural Recharge” provides eight columns of data for the years 1985 - 2019. Why is there is no discussion of this information? It’s just a page plus of numbers relevant to groundwater modeling, but not to the plan.

**REPEAT - CORRECTION NEEDED:**

**§1.2.1:** There is one WQARF site in the AMA: Miller Valley Road & Hillside Ave WQARF Site.  Contact: Hazel Cox, Project Manager ADEQ Waste Programs Division 400 W. Congress, Suite 433 Tucson, AZ 85701. See https://adeq.maps.arcgis.com/apps/webappviewer/index.html?
§1.2.5 Water Quality Assessment: Surface water quality deserves a quantitative description, not the qualitative approach in the SMP. Detailed surface water quality data is readily available from ADEQ.

REPEAT - CORRECTION NEEDED:

§1.2.5.2 Renewable Water Supplies, Surface Water: ADEQ has determined that both Watson and Willow Lakes and the tributary creeks are impaired! The Draft characterizes it as “generally good” despite the fact that the lake water does not meet Clean Water Act standards for body contact and no swimming is permitted in the lakes!

REPEAT - CORRECTION NEEDED:

§1.2.5.2 Renewable Water Supplies, Reclaimed Water: Also, Prescott uses treated wastewater from the Hassayampa WWTP, primarily for golf course irrigation.

§1.2.5.3 Groundwater Water Supplies: Explain what groundwater areas are degraded. The SMP should include a map showing the areas where domestic wells are potentially exposed to radon gas contamination of groundwater. Do the same for high arsenic levels. These are both important public health issues that are poorly recognized and understood.

REPEAT - CORRECTION NEEDED:

§1.2.8 Summary: Fix an apparent typo “TAMA” apparently referring to the Tucson AMA which should be the PrAMA.

§2.2 Prescott AMA Supply and Demand
Please add a statement to clarify that exempt well users account for XX% of the population (we previously estimated 19% based on ADWR data) while using an estimated 12.1% of total groundwater pumped.

§2.6.1-3 Safe Yield
Good discussion and explanation of safe yield.

REPEAT - CORRECTION NEEDED:

§2.6.4 Communication And Assessment of Safe-Yield in the Prescott AMA: The statement “The results of the PrAMA overdraft analysis show that natural outflows often create overdraft in the PrAMA, even
absent additional groundwater pumping” needs further explanation. As is this statement makes no sense. How can a natural outflow create an overdraft?

The statement from past (4MP) management plans that “One such scenario saw potential for safe-yield if the PrAMA used its authority to import water supplies from the Big Chino sub-basin of the Verde River groundwater basin” is fundamentally incorrect and should not be repeated. The long-term overdraft in 2019 was almost 17,000 afy. The legally allowable groundwater import from the Big Chino is 8,068 afy, plus about 3,600 afy of Historically Irrigated Agriculture rights, totaling almost 12,000 afy. The pipeline is designed for a maximum volume of 12,000 afy. Thus the maximum delivery capacity of the pipeline is inadequate to reach safe yield. Additionally, Prescott has not committed the imported water to safe yield and Prescott Valley has explicitly stated that their share of imported water will be used for development.

§2.6.4: Surface water recharge credits should not be used to support development. Granite Creek stream flow is one component of natural recharge. The act of diverting the stream into a constructed recharge facility does not justify awarding recharge credits subsequently used to support new groundwater-consuming homes. Surface water should instead be dedicated to “non-recoverable permanent recharge” to benefit the aquifer.

The Draft 5MP states:

“Surface water supplies in the PrAMA are inconsistently available, subject to prior appropriation, prior agreements, and pending adjudications, as well as weather and climatic conditions which may also become more unpredictable in the future.”

This warning from ADWR is directly relevant to Prescott because it has historically relied on 1,391 afy of surface water from Granite Creek that will be less reliable in the future. ADWR should require Prescott to allow “headroom” in its water use planning to protect against the inevitable loss of surface water.

§2.6.4 Communication...Safe-Yield: The last sentence states “Although it could be possible to reach safe-yield under certain limited scenarios, with current practices and conditions, the Prescott AMA is not expected to achieve safe-yield.” The “certain limited scenarios” are not explained, but must refer to the three scenarios described in the 4MP. These unlikely scenarios included the importation of water from the Big Chino aquifer, use of vanished surface water from Del Rio Springs, and other expensive additional investments in vaguely described infrastructure. These impossible scenarios were unsubstantiated fantasy and should not be mentioned.

§3.1 Introduction, and 3.5.1: “A PrAMA-wide safe-yield balance between supply and demand of groundwater does not address local concerns regarding groundwater level declines and physical
availability challenges.” This statement is very true and represents a matter of great concern to domestic well users in the PrAMA, especially in the Chino Valley area. It needs a map to specifically identify the areas of concern. For example, see Appendix B of this letter.

§3.2.1 Overview of Recharge and Recovery: One objective is stated as: “To reduce overdraft and achieve the management goals of the Active Management Areas (AMAs).” If recharge of reclaimed water is intended to help achieve safe yield, that water should not be used to support new construction. Every new building consumes groundwater (Appendix A). The management plan should no longer award new long-term or short-term recharge credits and should begin to reduce and eliminate existing unused long-term credits by imposing an annual cut to aquifer, increasing by 5%/yr for 20 years.

Another objective is “To augment the local water supply to allow future growth and development.” Every new building consumes groundwater, so this objective as stated moves the AMA away from safe yield and increases the overdraft. The objective should be restated in terms of reducing net groundwater pumping and moving towards safe yield.

§ 3.2: “The augmentation and recharge of renewable water resources is a principal mechanism by which the PrAMA can reach both safe-yield and site-specific goals.” This allegation is not substantiated. The plan provides no evidence (for example, from spreadsheet projections) that quantify how this can be true, let alone at what cost. Also, ADWR should recognize that DPR is much more expensive than recharge and recovery, so the existing lax recharge rules essentially doom DPR to irrelevance. As long as a provider can recharge and then immediately recover groundwater from a recovery well in a different location, DPR will never be adopted.

§3.2.2 Primary Program Components: The description does not include the wastewater recharged by Prescott described as “permanent recharge” in the City Charter (Article 1, Section 4 b4, aka Proposition 400). This article requires that all effluent collected from new annexations of 250 or more acres be dedicated to permanent recharge. The intent is that this permanent recharge is not recoverable and benefits the aquifer. ADWR should add terminology and accounting that will recognize this attempt to protect the aquifer and help achieve safe yield. “Cut to the aquifer” is different. §3-702 should also explain where “permanent recharge” fits.

§3.2.3 Recharge Facility, Storage, and Recovery Data - Storage and Recovery Data Trends: The discussion of augmentation by importing groundwater from the Big Chino is grossly in error. The only way imported groundwater can help achieve safe yield is if the imported water is dedicated to permanent recharge. Prescott Valley has publicly committed to using Big Chino water for growth, not
for safe yield, and each new home will consume additional groundwater. ADWR needs to improve their understanding of local water policies.

§3.3 Alternative Water Supplies Assessment: The statement “While imported groundwater is not a renewable water supply, it is a valuable alternative to groundwater pumped from within the PrAMA” is incorrect. Groundwater from the Big Chino aquifer contributes 80-86% of the base flow of the upper Verde River, and that surface flow is regarded as renewable water supply by Salt River Project and other very senior appropriative rights claimants in the Verde Valley. The “valuable alternative” statement is an inappropriate value judgement made by ADWR that is not shared by most of the AMA citizens, who place far greater value on a flowing river.

REPEAT - CORRECTION NEEDED:
The text contains a typo: “PhxAMA”

§3.3.1 Reclaimed Water: The benefit stated as “Land subsidence caused by over-pumping of groundwater can be partially reduced by reclaimed water use/recharge” is inappropriate and unlikely. First, there is no detected subsidence in the PrAMA (yet), and we are unaware of any instances where recharge can inflate a collapsed aquifer, which is unlikely to accept recharge. Second, as long as reclaimed water recharge is awarded credits that are used to authorize additional development, there is no benefit.

§3.3.2 Surface Water: The statement “Although base flows at Del Rio Springs are used to irrigate land both inside and outside of the PrAMA, the City could execute its water rights and begin using the flows at this site” is inconsistent with reality and should be removed from any scenarios. Although Prescott does hold surface water rights to Del Rio Springs, that right is essentially useless. There is now only a trickle of surface flow from Del Rio Springs, and that is projected by ADWR (Nelson, 2002) to decline to zero by 2025. USGS hydrographs show groundwater discharge at Del Rio Springs to be 4,000 afy in 1960, declining steadily to about 500 afy at this time. That decline is due to groundwater pumping in the Little Chino Aquifer, mainly by Prescott’s well field. Prescott has already captured its surface water rights by intercepting groundwater flow that was naturally destined for Del Rio Springs and the Verde River.

§3.4 Recharge Program Goals and Objectives: We suggest deleting the objective “Maximize storage of alternative supplies to offset Colorado River shortages and groundwater depletion.” This objective is irrelevant to the PrAMA because it receives no water from the Colorado River or the CAP.
Similarly, the objective “Support efforts to utilize the canal conveyance infrastructure to the fullest extent possible in order to provide greater flexibility to deliver alternative water supplies, including delivery of recovered water” is also irrelevant because the PrAMA does not have canals.

We suggest adding this goal: “Improve efficiency of wastewater recovery by reducing landscape water use, connecting septic tanks to sewer, and other means.”

Chapter 4: Agricultural: Most of this chapter is irrelevant to the PrAMA. We suggest trimming this section to contain only relevant parts to the currently limited and declining agriculture in the PrAMA. Including this irrelevant information makes the 5MP excessively long and complicated, and it gives the impression that ADWR has created the plan by copy/paste from other AMAs. The PrAMA deserves a plan accurately reflecting its unique needs.

Chapter 5: Municipal
§5.1 Municipal: CWAG views the municipal conservation requirements chapter as weak, inadequate, confusing, overly complex, and ineffective. Tweaking the 4MP program is not an effective means of improving water conservation - fundamental changes are needed.

Small providers and exempt wells need support. The statement “The programs for small providers and large untreated providers are unchanged from the 4MP” represents inadequate management effort by ADWR. With this unjustified and unexplained statement, ADWR neglects the possibility of improving management for 25% of the AMA demand. For 2019, the AMA Data spreadsheet shows:

<table>
<thead>
<tr>
<th>Demand Sector</th>
<th>% of Municipal Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Municipal</td>
<td>75.7%</td>
</tr>
<tr>
<td>Small Municipal</td>
<td>10.2%</td>
</tr>
<tr>
<td>Exempt</td>
<td>14.2%</td>
</tr>
</tbody>
</table>

The PrAMA has no conservation programs for small and private water providers and exempt wells. Chino Valley is primarily served by exempt wells. The Town of Chino Valley is a small municipal provider with a very timid increasing block rate structure and no other conservation incentives. Small providers and exempt domestic wells typically lack funding to enact and support water conservation programs. ADWR should assist these providers by supplying programs and financing assistance. Please review this link to understand the scarcity and weakness of current conservation programs in the PrAMA: https://cwagaz.org/index.php?option=com_content&view=article&id=373&Itemid=846
A far more critical issue is the failure of the 5MP to recognize that hundreds of wells on the edges of the aquifer are failing now. The Draft 5MP totally ignores hundreds of families – many are low-income – that suffer significant financial burdens due to a failing well. See Appendix B for a map and explanation. A failing well requires the homeowner to haul water at a cost of up to $200/month and cuts the property value by 50%. The well failures reflect falling water levels in the Little Chino Aquifer caused by excessive groundwater pumping. The number of homes affected will grow as over-pumping continues. The individual homeowners on the margins of the aquifer bear the burden while the municipal pumpers enjoy the benefit. We do not understand how ADWR can ignore this compelling social justice issue. This is an enormous deficiency in the Draft 5MP that should be corrected.

**Total GPCD:** The requirement to improve GPCD by 1% compared to the preceding 3-year average is inadequate and without justification. The plan presents no justification that 1% is achievable or effective or optimal. Where did this weak requirement come from? Is the 1% reduction a one-time, fixed requirement for the life of the 5MP; or is it intended to be an annual improvement? It will take decades before conservation significantly reduces groundwater pumping. The text needs clarification. CWAG suggests ADWR should require improved Category 7 BMPs as part of the GPCD program.

**NPCCP:** The BMP components contain some excellent conservation measures, however there is no information about the expected effectiveness or costs of each BMP. The result is that a provider will adopt the easiest, not the most effective, BMP. The draft plan provides no justification for requiring fewer BMPs for providers having fewer connections. ADWR should require all providers in the NPCCP program to prepare an adaptive management plan with milestones and monitoring that will, over a 10-year planning period, include all the BMPs in Categories 1-8. The tiers should be discarded; every provider should be required to participate in all the BMPs for Categories 1 - 8.

**BMP 4.1 Low-Water-Use Landscape Requirements:** Low-water-use landscapes should be required for 100% of landscapable area, no groundwater to be used - landscape irrigation only by using harvested rainwater. No new turf! Require incentive program for removal of existing turf.

**BMP 4.6 Graywater or Rainwater Systems and 6.5 Non-Residential Graywater Incentive:** CWAG believes that graywater collection and use is inappropriate for urban environments, and that the most efficient use of graywater is for it to be collected into the sewer system for cleaning and recharge. Instead of watering landscapes with graywater, drought-tolerant plants should be used. The collection and use of rainwater for landscape plants is a preferred practice. We suggest that BMP 4.6 and 6.5 be modified.
**BMP 4.12 Conservation Rate Structure:** ADWR should set minimum standards for the rate structure that include reasonable limits on base charges to assure that water remains affordable for low-income users with low consumption. Prescott has an excellent example that has proven effective, demonstrating that water users respond to higher costs of water. Prescott Valley and Chino Valley have extremely weak rate structures. Reducing landscape water use is a top priority, so conservation rate structures should aggressively target seasonal increases in water use in addition to the requirements in BMP 5.7.

**BMP Category 7 Planning:** These BMPs are excellent and should be a base requirement for every provider in the PrAMA in both the NPCCP and GPCD programs. ADWR should establish plan requirements including adaptive management planning: a) a 10-year future plan with annual milestones; b) periodic review of progress in achieving milestones; c) adjustment of programs to achieve milestones; d) community representation and participation.

**BMP Category 8: Research, Analysis, and Innovation**
Combating and surviving the continuing increase in PrAMA groundwater overdraft requires new strategies to augment our groundwater. This is an important function that should be actively supported and assisted by ADWR. Local communities do not have the data, skills, and resources to innovate. This is an important function that should be actively supported and assisted by ADWR.

For example, Water Neutral Development (WND) needs and deserves state and local study. WND subdivisions can be constructed to be a net contributor to groundwater, a win-win solution that effectively decouples water resource limits from growth. There are tremendous potential benefits from capturing runoff from rain or snowmelt in new suburban developments within the PrAMA and directing that runoff to permanent aquifer recharge. WND represents a straightforward strategy that could be developed now and in the near future to respond to continuing growth and growing overdraft. A more complex variation would be to capture storm or meltwater runoff from urban parking lots, roadways and expansive rooftops for purification and return to the PrAMA aquifer system. In the longer term, this strategy may be essential to our continued quality of life in the PrAMA. A preliminary analysis of WND for future subdivisions concludes:

- Homes with well/Septic systems consume more groundwater than the amount of stormwater that can be potentially collected. We need other solutions for rural homes, realizing that it is economically unrealistic to extend municipal water/sewer to large-lot rural homes.
- Subdivisions constructed under Prescott’s pre-2020 water codes, except for large lots that are relatively rare in the area, consume more groundwater than the amount of stormwater that can be potentially collected. This is due to high landscape water use (28% seasonal water use) and to direct reuse of treated wastewater for golf courses.
• Even if WND programs cannot supply 100% of a subdivision’s groundwater consumption, a partial offset is helpful and successful.
• Subdivisions constructed under Prescott’s post-2020 water codes, with the added assumption of zero landscape water use, consume less groundwater than the amount of stormwater that can be collected and actually contribute a surplus to the aquifer.
• The preliminary estimates are promising enough to warrant further investigation.

Objectives for Community Conservation Plans:
The municipal conservation plan in the Draft 5MP lacks focus and is overly complex. We suggest simplification by relying on two general objectives that community conservation plans should incorporate:

- **Reduce groundwater pumping.** ADWR should specify a 10-year goal.
- **Increase the volume of wastewater for recharge.** ADWR should specify a 10-year goal.

There are a number of local programs that can increase wastewater recovery volume:

  a) Require new subdivisions to recover as wastewater at least 90% of the potable water delivered. See Appendix A for more information.

  b) Convert existing septic systems to sewer.

  c) Prohibit new or renewal contracts for sale or lease of treated effluent.

  d) Reduce the direct reuse volume consumed by current effluent users. Existing golf courses should be restructured to minimize water use by reducing irrigated areas or using artificial turf. No new golf courses using natural turf should be permitted.

  e) Eliminate the use of groundwater for landscape irrigation.

Landscape Water Use: The Draft 5MP fails to address the use of groundwater for landscape irrigation – the largest single water use category in the PrAMA. Using Prescott as an example, 28% of groundwater pumped is used seasonally. This water is evaporated and cannot be recovered. Groundwater should not be used for landscapes. Instead, attractive landscapes can be maintained by using drought-tolerant plants and rainwater harvesting.
Chapter 6: Industrial: Most of this chapter is irrelevant to the PrAMA. We suggest trimming this section to contain only relevant parts to the current industrial activity in the PrAMA, which does not have large-scale power plants, dairy production, and cattle feedlots. Including this irrelevant information makes the 5MP excessively long and complicated, and it gives the impression that ADWR has created the plan by copy/paste from other AMAs. The PrAMA deserves a plan accurately reflecting its unique needs.

The primary relevance to the PrAMA is water for golf courses. The plan gives detailed allocation calculations for golf courses but neglects to state an objective. CWAG suggests that the plan objective should be to reduce the direct reuse volume consumed by current effluent users and to prohibit the use of groundwater on turf. No new golf courses using natural turf should be permitted, and existing golf courses should be restructured to minimize water use by reducing irrigated areas and/or by using artificial turf.

Chapter 7: Implementation

7.7.6.4 Future Stakeholder Processes: Great! Move this effort from the future to now by incorporating community-based adaptive management conservation planning into the 5MP. This will be an excellent use of the Water Management Assistance Program.

Summary and Conclusion:

The management goal of safe-yield is deeply flawed in that it is a political, not scientific concept, that carries no penalty for failure and provides no incentives – it is a system designed to fail. Despite these structural problems with safe-yield, it is the statutory goal. We recognize that may be impossible in the PrAMA, but ADWR is required to try. The Draft SMP is an inadequate try. Far more can be done.

The providers in the PrAMA have known for two decades that they should plan for safe-yield, but they have done nothing – not even beginning to plan discussions to begin planning efforts. Instead, the providers compete for water, often exploiting loopholes in water law to secure water allocations to support water-consuming growth. This historical experience shows that providers need some incentive to begin planning.

ADWR has the authority to require better planning. The first step forward is for all providers to develop a long-range, forward-looking conservation plan, as we have described above. For both GPCD and NPCCP providers, ADWR should require the plan to adopt all the BMP’s in a reasonable time. This planning approach relieves ADWR from posing specific solutions and places that responsibility in the hands of local providers. ADWR’s new role would become the planning manager: establish goals and
objectives, specify the elements of the plans, provide technical assistance, vet the plans, and assist with monitoring and compliance.

CWAG views the last 20 years of ADWR management as a failure. The Draft 5MP is a tweak on an unsuccessful management structure, thus it is also likely to fail and perpetuate that failure for an indefinite future time.

Unless ADWR makes changes, nothing will change.

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Appendix A: Wastewater Recovery in homes.

Net Loss of Water from Each New House

The potable water supplied to existing homes and business in the Prescott Active Management Area (PrAMA) is 100% groundwater. Because we are pumping groundwater faster than it is being recharged, we are now depleting our aquifers and consuming our stored water resources.

Each new home or building consumes groundwater - more water is delivered than is returned to recharge. Therefore, each new home or building increases the overdraft.

Some local officials assert that artificial wastewater recharge will prevent increasing the overdraft. That is incorrect. CWAG estimates that for the City of Prescott only 29% of groundwater pumped is recharged into the aquifer. Moreover, this recharged water does not benefit the aquifer because state water law awards recharge credits that the cities use to pump additional water to support new development. Recharge credits are the primary source of water for new subdivisions in Prescott Valley. (See: https://cwagaz.org/index.php?option=com_content&view=article&id=365&Itemid=854)

Proposition 400, approved by Prescott voters and added to the Prescott City Charter in 2006, provides that all wastewater from new annexations over 250 acres must be dedicated to permanent recharge that cannot be recovered to support development. Thus the wastewater recovered from new annexations under Prop 400 does benefit the aquifer to the extent that leaks, evaporation, and direct reuse are minimized.
To explain, consider how water flows through an average single family home. This example uses 2020 data from Prescott to estimate losses. Prescott Valley will be very similar.

About 8% of the groundwater pumped is lost in pipeline leaks before it reaches the home water meter. In an average year, an average Prescott homeowner uses 0.17 acre-feet per year (afy) of municipal water. Of this groundwater, 28% is for outside uses, mainly for irrigating landscape plants. All water used for irrigation is lost to evaporation. Thus 36% of the groundwater pumped is lost before entering the home.

The remaining 64% is delivered for use inside the home. After evaporative losses due to cooking, showers, clothes dryers, dogs, and other uses, we estimate that 95% of the interior water used is recovered in the sewer system. The result is that only 61% of the groundwater pumped is sent to the wastewater treatment plant to be processed. Note that this example is for a home connected to the municipal sewer system; a home using a septic tank will return zero water to the wastewater treatment system, but may contribute 0-35% recharge to the aquifer depending on local soils, vegetation, and location.

The wastewater treatment plant consumes about 7% of the incoming effluent, leaving 57% of groundwater pumped as treated wastewater available for use. A portion of the treated wastewater (26% of groundwater pumped) is used to water golf courses (direct reuse) and the remaining 31% is sent to recharge ponds near the airport. After about 2% evaporation loss from the recharge ponds, we estimate that only 29% of the groundwater pumped is recharged into the aquifer.
We can do better. In 2020 Prescott upgraded the water conservation incentives and required that all new construction use drought-tolerant landscape plants from a list maintained by ADWR. The plant list should reduce landscape water requirements, but we have no data so we will assume no groundwater is used for landscapes to calculate the best possible result from the new policies.

For a new subdivision home that is connected to municipal sewer system (no septic tanks), using drought-tolerant plants with no use of groundwater on landscapes, and assuming no additional direct reuse, CWAG estimates that a maximum of approximately 80% of the groundwater pumped could be permanently recharged to benefit the aquifer. This demonstrates the importance of controlling landscape water uses for all water customers.

Even in the best possible case, approximately 20% of the groundwater pumped is not returned to the aquifer. Therefore: new growth increases the overdraft and harms the aquifer.
Appendix B: Failing Wells in the Prescott AMA

Groundwater levels in the Chino Valley area have been falling for decades. Typically, for a well drilled 50 years ago, the depth to water will have increased 80-100 feet. The human and economic effects of falling water levels causes distress for many citizens, but is largely unnoticed by municipal water users.

Of all well user groups, large municipal systems will be least affected by falling groundwater levels. Municipal wells can be drilled in the most reliable and productive water areas; for example, Prescott municipal wells are located outside of their service area. As groundwater supplies begin to fail, large municipal utilities have financial capacity: bonding authority and a broad user base to share costs, to construct pipelines, drill new wells, and purify water. Although falling water levels will affect them through cost increases, they will have water long after other users have none.

Small private water systems typically have less financial means and as water tables fall may find it more difficult to maintain the required water quality and quantity. Their wells are typically located within their service area, not necessarily in the most productive spot in the aquifer.

Small domestic wells (exempt from ADWR reporting requirements) that provide water to families will suffer the greatest personal impacts from a dry well: a substantial financial cost and/or loss of a large portion of the single most important investment for a family – their home. Domestic wells are now going dry on the margins of the AMA. In western and southern Chino Valley, along Williamson Valley Road, and in Coyote Springs north of Highway 89a, established homes need to deepen or drill a new well. Domestic well failures can have devastating impacts on families.

When a domestic well fails, a family has a few options: haul water or invest $10-20K in a new well with no assurance of finding water. Typically the homeowner elects to haul water at a cost of up to $200/month. The failed well cuts the property value by 50%. The well failures reflect falling water levels in the Little Chino Aquifer caused by excessive groundwater pumping. The number of homes affected will grow as overpumping continues. The individual homeowners on the margins of the aquifer bear the burden while the municipal pumpers enjoy the benefit.

We do not understand how ADWR can ignore this social justice issue.

This is an enormous deficiency in the Draft 5MP that should be corrected.
The map below is a Google Earth View centered on the Little Chino Sub-basin. The yellow pins identify homes having large, 2,500 gallon water storage tanks that are an indicator of a failing well. Note that the pins are on the edges of the sub-basin, within the PrAMA, exactly where the effects of falling aquifer water levels are expected to first appear. CWAG has identified over 500 failing wells and associated these wells with records in the GWSI and 55 databases. Our assessment is preliminary, but it indicates a potentially larger problem that has not been recognized or acknowledged by the PrAMA providers or by ADWR.

These failing family wells deserve equal protection under Arizona water laws, similar to the support provided to municipal providers.