

**Response to Comments on the
Advanced Water Purification Program Draft Rule published on July 9th, 2024**

The following substantial comments were received on the AWP Draft rule published on July 9th, 2024 during the final informal 30-day comment period starting July 9, 2024. The Arizona Department of Environmental Quality (henceforth, identified as ADEQ or Department) did receive some comments after the 30-day comment period with the last comments received on September 30, 2024. These comments are also included in this response to comments document. The comments have been presented as is for the most part, except for fixing any typographical errors to improve readability. In this document, the Advanced Water Purification Proposed Program Roadmap published in November of 2023 is identified as the “Roadmap”, the draft rule published on July 9th, 2024 date is identified as the “draft rule” and the notice of proposed rulemaking is identified as “proposed rule”. Rule text from either the draft rule or proposed rule when quoted are in double quotation marks and using italics.

Commenter: Edward Besserglick

Comment 1 & 2: This document is very thorough. High Quality. I have a couple of questions, though. Where do contaminants that are removed from wastewater go? ADEQ is currently dealing with the remnants of iron mining in Humboldt. I live in Prescott. I do not want to see this treatment of wastewater result in another nightmare cleanup. Some of the removal process is straightforward. Bacteria and viruses can be killed. But things like PFAS are just now starting to be recognized as problems. There are many sites in Arizona that are contaminated with PFAS as shown by this map provided by the EPA https://www.ewg.org/interactive-maps/pfas_contamination/map/ (I did not see any mention of PFAS in the Draft Rule.

The tier three contaminants concern me from the standpoint that they are more likely to happen in wastewater, and in volumes that may be difficult to handle. Would the residue be liquid, solid or gaseous? How would it be disposed of. I remember in the 1960's getting sludge from the wastewater plant in Ohio to fertilize plants. I believe that practice has stopped. The process of converting wastewater to drinking water should be environmentally neutral.

Response: Contaminants are destroyed or removed during processes such as wastewater treatment and Advanced Oxidation Processes (AOP) among others. The contaminants that are not destroyed become part of the treatment plant's waste stream.

The establishment of three tiers of contaminants are more for the purpose of managing the contaminants in drinking water. This approach provides a flexible, economical and a robust program to manage contaminants to make drinking water safe. The Department does not believe that there will be any gaseous residue that will be created as part of this program. In terms of solid residue, i.e., biosolids, current regulations governing biosolids will dictate beneficial use or disposal. Biosolids are currently allowed for use as a fertilizer and are federally governed by the Part 503 rule. With regards to liquid residue, such as Reverse Osmosis reject water, APP permits will be required as part of the AWP application and will govern their treatment and discharge into the environment.

Comment 3: In addition, the water we get from a wastewater conversion should be the same quality that we currently get from facilities subject to Safe Drinking Water Standards. Mixing and averaging the numbers is not acceptable, unless the water is "better" than the original. It has to meet the same standards before it is mixed with our current drinking water. Also, we do not want a repeat of the problem that Tucson experienced when Colorado water was mixed with their drinking water. "Status quo is the way to go"

Response: The water produced by the AWP program will have to meet all the stringent requirements of the AWP program prior to any blending. The standards of the AWP program are geared towards producing safe drinking water that can be directly introduced into the distribution system without further treatment. However, if a utility wishes to blend AWP water with other current sources allowed within Safe Drinking Water Act (SDWA), flexibility exists in the program to allow that.

Comment 4: The draft rule is technical. Is there a layman's interpretation? An easy read version? The technical people probably love this. However, I would like to know the process at a 7th grader's level, not a rocket scientist's level. Perhaps a summary for the layman. I am very proud to say that I worked at

ADEQ for 21 years. This product and the approach being taken is professional and filled with a lot of detail. Thank you for a job well begun!

Response: The Roadmap that ADEQ released in November of 2023 covers the science behind the rule framework and documents the rationale for this rulemaking and contains all the details regarding the why and how a standard was developed or set. Additionally, it contains information about the literature that was leveraged to set these standards. There were some changes that were made after the release of the Roadmap and are covered in the preamble.

Commenter: Wayne Harrison

Comment 5: What safeguards are in place to filter out communicable diseases like hepatitis, HIV, coronavirus, and endocrine disruptors from pharmaceuticals and medications? PFAS? Microplastics? Meeting State and Federal standards may not protect us against these pollutants. What is ADEQ doing to protect water users from the health effects of these pollutants not on the fed or state standards lists? If nothing, then perhaps this program needs to pause to establish limits of these chemicals that go above and beyond the standards to protect the public.

Response: The AWP program is designed to remove viruses in a very deliberate manner. For viruses such as Hepatitis, HIV or coronavirus, there is a 13 log removal requirement in the rule, which translates to 99.9999999999% removal. The treatment is geared towards adenovirus (which is the most resistant virus), but was written with the more abundant virus which is the norovirus. With regards to EDCs of pharmaceutical origin multiple safeguards are put in place, namely, (i) the requirement of a robust enhanced source control program to prevent anything from getting in the wastewater, (ii) required treatment of AOP along with a specific benchmark removal requirement, and (iii) SRT requirements that ensure that the wastewater treatment plants are also leveraged for increased removal. Tier II chemical program within AWP covers all chemical pollutants that are currently not addressed in SDWA (i.e., federal standard or current approach to regulate chemicals in drinking water). PFAS will be regulated either as part of SDWA or through the Tier II program. Multiple treatment processes are effective in the removal of microplastics, such as RO. The AWP rules extend far beyond the requirements contained in the SDWA for the production of potable water. The scientific details of the program are covered in great detail in the Roadmap that ADEQ published in 2023 along with the references.

Commenter: Brian Treptow

Comment 6: I've read the FAQs and agree there is a concern for water in Arizona and the Southwest region, however, I am not comfortable drinking purified wastewater. Would like to believe there are other alternatives than wastewater.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply. The Roadmap published by ADEQ in November 2023 contains detailed information about why and how a standard was set. The science is sound on how to treat wastewater to potable water standards.

Commenter: Stephanie Clement

Comment 7: I am appalled that our state has decided to treat waste water. The same water that we flush down our toilets. There are other options than to force us to drink our own and others purified urine and feces. Stop allowing data centers to be built or just let them use the wastewater to cool their systems with and better yet let them invest in purifying the water instead of charging the rest of us to drink purified waste. Or update the infrastructures so that gray water can be used for irrigation only, I cannot imagine that would be more costly than the current plans in the long term. Stop building so much and developing so much here. It's a desert with limited resources plus it makes everything more hot. This is greed at its worst. There are other options. The chosen option is disgusting. I for one am highly insulted that the money I pay in taxes and utilities is going to fund forcing me and others to drink purified waste. It's like some kind of sick joke.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply. The Roadmap published by ADEQ in November 2023 contains detailed information about why and how a standard was set. The science is sound on how to treat wastewater to potable water standards.

Commenter: Reina Carabez

Comment 8: Could this not potentially cause illnesses and have some percentage of waste still left over even after multiple filtrations? Will we not have enough water in the upcoming future? Would we know where, when and what is specifically going to be "filtered waste water" from water bottles to tap in peoples homes? So many questions.

Response: The program goals are stringent and will not cause illness. The Department does not believe waste will be left over after multiple filtrations. There is a mandatory public outreach requirement in the rule prior to the introduction of water produced through this program.

Commenter: Harold Schroyer

Comment 9: The water industry is self monitored with the honor system. I don't trust humans to be honorable. I worked in the water and wastewater industry for over 25 years.

Response: Inspections and site visits are designed to verify data submitted by the utilities. This requirement is addressed in rule (draft and proposed) under R18-9-B807 - *Inspections, Violations, and Enforcement*.

Commenter: Elvira Pauda

Comment 10: No. Find other alternatives.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future.

Commenter: Julia Kessler

Comment 11: As a nurse I am very concerned about how honest and transparent the individuals in charge of testing this water will be, as SO many diseases can be transmitted this way. Honestly, if this

passes I'm going to just buy bottled water which in turn would also be bad for the planet due to plastic being used. I think this is going to be the case for the majority of people if this is actually done.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future.

Commenter: Alex Arnold

Comment 12: I think it's an amazing idea to progress the water purification processes in Arizona and influence the rest of the country

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply.

Commenter: David Gopen

Comment 13: This is vile. I don't ever want my kids drinking or bathing in human waste, nor do I trust the science behind it to be without mistakes. This cannot pass or I will vote against every single person involved with the process.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future.

Commenter: Amanda West

Comment 14: Health and Safety Standards: The AWP rulemaking should prioritize rigorous health and safety standards. Advanced purification technologies must meet or exceed current standards to ensure that the water is safe for consumption.

Response: The requirements far exceed what is present in the SDWA that governs the production of drinking water. Please refer to the Roadmap published by ADEQ in November of 2023.

Comment 15: Technology and Innovation Encouragement: The rulemaking process should encourage the development and implementation of new technologies and innovative solutions. This could include offering incentives or grants for research and development in water purification technologies.

Response: The rule is designed to foster technology and innovation by focusing on establishing standards and processes but providing a flexible approach on the technology used to allow future innovation. In addition, the state is working with the academic community to further the science.

Comment 16: Cost Efficiency: It's important to consider the cost implications of advanced water purification. Rulemaking should strive to make these technologies cost-effective for municipalities and consumers while maintaining high-quality standards.

Response: The guiding principles that governed this rulemaking take into account the need for balancing public health protection while, at the same time, making potable water affordable. The proposed rule framework is designed to achieve that.

Comment 17: Environmental Impact: The environmental footprint of advanced water purification systems should be evaluated. Rulemaking should promote methods that minimize negative environmental impacts, such as energy consumption and waste generation.

Response: This was a consideration in the guiding principles. Allowing the carbon treatment train is one such example of ensuring that the environmental footprint to produce potable water via the AWP program is reduced when practical for the utility.

Comment 18: Public Awareness and Education: Effective rulemaking should include strategies for public education about the benefits and safety of advanced water purification. Increasing public understanding can enhance acceptance and support for these technologies.

Response: ADEQ agrees that effective rulemaking should include public education and awareness. ADEQ has developed a webpage that provides the public with general information about AWP. This webpage addresses the AWP program and can be found on the ADEQ website at www.azdeq.gov/awp. The public can find information about AWP including the draft rule, what AWP is, and why it is important for Arizona. In addition, other items available to the public include fact sheets, an infographic, and answers to frequently asked questions (FAQs) received by the public. ADEQ has also engaged the public in more than 200 events over the past 2 years. Furthermore, to assist utilities in developing an AWP outreach program, ADEQ is working with an outside contractor to develop a *Public Communication Toolkit* containing templates and guidelines that will be available to all utilities wishing to participate in the AWP program. This toolkit will provide information and approaches on how to engage the public and guidance to develop a communication plan specific to a community interested in pursuing AWP. The templates, examples, and infographics will be available for use by the utility to allow them to develop public communication and outreach catered for their community's needs.

Comment 19: Regulatory Framework: A clear and consistent regulatory framework is crucial. The rulemaking should define specific guidelines for the design, implementation, and maintenance of AWP systems to ensure consistent water quality.

Response: ADEQ agrees that a clear and consistent regulatory framework is required along with specific guidelines. To ensure uniform and consistent quality of the potable water, specific monitoring and design requirements have been proposed in the rule. In addition, seven guidance documents are currently under development for the design, implementation, and maintenance of AWP systems. This includes guidance documents for enhanced source control program (ESCP), WRF construction and operation, carbon-based and membrane-based treatment technologies, and operation & maintenance (O&M) plan for Advanced Water Treatment Facilities.

Comment 20: Monitoring and Compliance: The rulemaking should establish robust monitoring and compliance mechanisms. Regular testing and reporting should be mandated to ensure ongoing adherence to safety standards.

Response: ADEQ agrees that robust monitoring, reporting, and compliance mechanisms must be established in the rule. Multiple Sections, such as, R18-9-C814, R18-9-F832 or R18-9-E829 and others in the rule govern these topics such as initial monitoring requirements, continuous monitoring

requirements, and ongoing monitoring requirements. The requirements far exceed current SDWA standards to ensure the water is safe.

Comment 21: Stakeholder Engagement: Engaging a broad range of stakeholders, including water utilities, technology providers, environmental groups, and the public, can help ensure that the rulemaking process is inclusive and considers multiple perspectives.

Response: ADEQ engaged several stakeholders during the rulemaking process including utilities (small, medium, and large), academia, local government, engineers, contractors, and the general public under Technical Advisory Groups (TAGs) to seek guidance and to obtain diverse perspectives. The Department benefited from the 68 member TAG group from across the country. Informally, the Department also benefited from advice from Singapore, Australia, and other countries that have implemented components of the AWP program to gain different perspectives. The Department engaged the TAG group to develop minimum standards and requirements in the following areas: wastewater treatment technologies and processes, operation and maintenance, enhanced source control, and communication and outreach, pathogen and chemical control. The TAGs developed recommendations for the rulemaking reflected in the AWP Proposed Program Roadmap. The TAGs met often and held many discussions (three 2 hours meeting a week for a period of 7 months).

Comment 21: Scalability and Adaptability: The rules should be flexible enough to adapt to different scales of implementation, from small communities to large urban centers. They should also allow for updates as technologies and methodologies evolve.

Response: The proposed rules are designed to be flexible and support innovation. The Department has established end goals and some guardrails, which ensures we are not locked into an inflexible framework. In addition, these rules are custom to the size of the utility and the contaminants that are part of that sewershed. ADEQ has not established a barrier to entry, which means any utility who wants to pursue AWP can do so.

Comment 22: International Collaboration: Encouraging international collaboration can help share best practices and innovations. Learning from other countries that have successfully implemented advanced water purification systems can inform and enhance local rulemaking efforts.

Response: ADEQ staff are part of several international science advisory committees and have closely worked with experts from other countries such as Australia, New Zealand, Singapore and Israel to make sure we are at the cutting edge of science and technology.

Commenter: Britini Parish

Comment 23: Absolutely a no! Not enough science to back this, purifying to clear all diseases and fecal matter from water for daily use. Then we have the harsh chemicals used that will now be in sewage water that will either be drunk or used on our bodies. This is a social experiment I want my family and I no part of.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities,

ensuring a safe, reliable, and sustainable drinking water supply. The Roadmap published by ADEQ in November 2023 contains detailed information about why and how a standard was set. The science is sound on how to treat wastewater to potable water standards.

Commenter: Jenn Baier

Comment 24: So I have an extremely ill child who has immune compromised and is on immunosuppressive medication for fear of transplant rejection. Are these practices 100% safe for someone under these harsh conditions? And what are the consequences for you actions if this treatment does not sterilize and purify if people in these conditions get ill or catch viral infections from your actions not being as safe as you say they will ?

Response: The Department has established a rule that ensures a safe, reliable, and sustainable drinking water supply under the AWP program. The requirements contained in the AWP rules are considerably more stringent than the current requirements for producing potable water under the Safe Drinking Water Act.

Commenter: Matt Gunsch

Comment 25: This is NOT needed and is another example of the Govt finding ways to waste money. AZ has ALWAYS planned for water shortages, and there is no need for such a program in the foreseeable future. Treated wastewater should be used for what it always has been used for, irrigation, restoring wetlands in the salt and Gila riverbeds, recharging ground water, cooling at the palo Verde nuclear plant. If you really want to save water, get rid of the golf courses, go back to desert landscaping,

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future.

Commenter: Ana Sanchez

Comment 26: I believe Contaminants of Emerging Concern, such as PPCPs should also be considered. As stated by EPA "There are many CECs and PPCPs that act as so-called endocrine disruptors (EDCs). EDCs are compounds that alter the normal functions of hormones resulting in a variety of health effects". Thanks!

Response: ADEQ agrees that CECs, such as Pharmaceuticals and Personal Care Products (PPCPs) also need to be considered in the context of public health concern in the context of the AWP rules. An analysis followed by sampling and monitoring of chemical compounds that are not currently regulated in the Safe Drinking Water Act is required in the proposed rule. These are called Tier 2 chemical contaminants. The utility is required to conduct a Tier 2 chemical analysis as specified in the proposed rule Section R18-9-E826 (D), which includes risk analysis of COCs, including PPCPs and other CECs. If these chemical compounds are present at concentrations that exceed the corresponding health advisory values, they will be included in the Tier 2 chemical list with action levels and ongoing compliance monitoring shall be required for those chemicals. As a part of Tier 2 analysis, the utility will be required to maintain a list of all potentially impactful non-domestic dischargers within the sewershed and develop a chemical inventory that are used, stored, and/or discharged from non-domestic sources, including industrial services and hospitals which generally exhibit high detection frequencies and concentrations of pharmaceuticals. In addition, advanced treatment technology, such as AOP is a required treatment

with a specific benchmark for removal of PPCPs. As specified in the proposed rule Section R18-9-F832 (C)(3), Ozone/BAC processes shall also be designed to provide no less than 1.0 log reduction for pharmaceuticals such as carbamazepine, sulfamethoxazole. Chemicals that are not removed via treatment, must be controlled through the enhanced source control program. In addition, a pollution reduction and elimination plan will be implemented by the AWPRA applicant to address both non-domestic and domestic dischargers with the goal of eliminating COCs prior to entry into the collection system.

Commenter: Karl Flessa

Comment 27: Move ahead on these rules. Other states have done so already. AWP will be an important source of water in Arizona's future.

Response: Thank you for your comments. ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply.

Commenter: Heather Anne Wright

Comment 28: Please share upcoming meetings that involve additional stakeholders.

Response: The Department has engaged the public in more than 200 meetings in the last two years. In addition to these meetings, the Department has also continued our Tribal outreach by holding Tribal Listening Sessions and encouraging Tribal consultations. The Department formally engaged 68 members as part of the technical advisory committee in addition to other meetings. The material can be found here. <https://azdeq.gov/awp-resources>. Future stakeholder meetings and Tribal Listing Sessions will be held regarding the Notice of Proposed Rulemaking and the Notice of Final Rulemaking. Once you have subscribed to the link below, you will be notified of upcoming meetings regarding AWP. Please use this link to subscribe. https://public.govdelivery.com/accounts/AZDEQ/subscriber/new?topic_id=AZDEQ_216.

Comment 29: Dear ADEQ colleagues, As a citizen of Arizona as well as a full time science faculty, microbial ecologist and environmental scientist, I support ADEQ for exploring alternative ways to reduce pressure on already precious water resources through AWP and other conservation measures, however I have some serious concerns about implementing the use of residual effluent wastewater without a cohesive plan for real-time monitoring and expanded detection of pathogenic microbes, pharmaceutical waste, and heavy metal contamination (arsenic, lead, pfas, etc.). As the scientific community discovered during the Covid-19 pandemic, wastewater can be pooled and tested for rapid detection of community outbreaks and infections. Whether this is the Sars-CoV virus or other infectious agents, it is clear that viral contagions are shed and move through our wastewater. What testing mechanisms will ADEQ put in place to routinely screen the wastewater for detection of bacterial and viral transmission and outbreak? In section 3.4.1.1.1. Pathogen Monitoring from <https://static.azdeq.gov/wqd/awp/roadmap.pdf> "Monitoring for pathogens is only required if a site-specific approach is pursued by a utility."

Response: The AWP program is designed to remove viruses and protozoa in a very deliberate manner. There is considerable research in this space that indicates a removal of these pathogens will result in the

removal of all pathogens to a safe level. For viruses such as Hepatitis, HIV, or coronavirus, there is a 13 log removal requirement in the rule, which translates to 99.999999999999% removal. The treatment is geared towards adenovirus (which is the most resistant virus), but was written with the more abundant virus which is the norovirus. For the two protozoa the removal requirement is 10 logs. There are surrogates that are continuously monitored to ensure the water is safe, and includes for example, conductivity, turbidity among others. See "Cooperation with local county public health departments, as necessary, to track COC peaks from disease outbreaks or other impactful health events;" under Section R18-9-E824, which describes the requirement for keeping track of what is happening in the community. Site specific approach still needs to achieve the same benchmark of safety. The only difference is, a utility can choose to get credits for some of the treatment or removal that occurs in a wastewater treatment plant. With regards to pharmaceutical or heavy metal a rigorous monitoring program is required as part of AWP that is much more stringent than the federal standard.

Comment 30: Secondly, although UV, RO and other filtration means are already in place for water quality, will wastewater be treated at the same level for additional detection of pharmaceutical contamination in the (waste) water supply, or PFAS, heavy metals, etc. This is something that is already not being conducted thoroughly enough with our ground and source water. It is possible that mandated testing and reporting of additional parameters will fall through the loopholes when we utilize wastewater.

Response: The Tier 2 program contained in the proposed AWP Rule is specifically designed to address chemical contaminants that are currently not regulated under the SDWA. The utility is required to conduct a Tier 2 analysis as specified in the proposed rule R18-9-E826 (D), which includes risk analysis of CECs that are present and or discharged into the sewage collection system within a specific sewershed. If these chemicals are present at concentrations that exceed the corresponding health advisory (HA) values, ongoing compliance monitoring shall be required for the chemicals at the finished water location. PFAS will be controlled through the Tier 2 program or regulated by SDWA. The US EPA is currently taking steps to protect public health by setting enforceable standards/MCLs for several PFAS compounds. Once the regulation of PFAS comes into effect PFAS will be monitored and reported under SDWA requirements and as a Tier 1 chemical (SDWA regulated chemical). Advanced Oxidation Process (AOP) is a required treatment with a specific benchmark for the removal of synthetic organics, including pharmaceuticals (PPCPs). As specified in the proposed rule Section R18-9-F832 (C) (3), Ozone/BAC processes shall be designed to provide no less than 1.0 log reduction for pharmaceuticals such as carbamazepine, sulfamethoxazole. Utility applicants are required to have AOP along with a performance benchmark using 1,4-Dioxane, that demonstrates AOP performance and removal of synthetic organics. Treatment-based approach would be most strategic for PPCPs and PFAS source control. Heavy metals will be controlled through the Tier 1 or Tier II chemical program.

Comment 31: I do not agree with the comment regarding reporting: quote: "Early warning real-time collection system monitoring should be left up to the particular utility and community, and not a requirement in rule." source I disagree with this comment because it does not provide sufficient guidance to municipal entities and does ensure alignment to what ADEQ standards. If local utilities and water quality programs do not establish consistent quality flags and real-time detection and monitoring

protocols on a coordinated level, it may leave more rural and vulnerable populations (indigenous, elderly and homeless) without safe water treatment. It is simply not enough to test once at the source and assume that re-used and recycled wastewater is safe at the tap point on round 2, 3, etc. Testing must be mandated at multiple points with a real-time approach set in place by ADEQ. What is the back-up if a high level of contamination is detected? Once a fully re-used wastewater system is in place, what will utilities have in place?

Response: Early warning system is a requirement in the proposed rule under Section R18-9-E824; however, the Department is not specifying a particular method, technology or process that a utility must use. ADEQ is in the process of developing guidance documents that will provide more detail on the establishment of an early warning system. As the program is flexible with guard rails, the Department has established specific water quality goals and will require continuous (every 15 minutes) monitoring of surrogates to detect anomalies. Current proposed rule requires testing at multiple locations and they must be continuous. Each utility is required to develop an early warning system that is specific to their community's sewershed with elements that can be implemented and achieved by that utility.

Comment 32: WaterReuse lists the following in one of their reports: Monitoring Specific Parameters Relevant to Potable Reuse: • Example parameters include: TOC, turbidity, pH, and water temperature, organics, • dissolved oxygen, chlorine, conductivity, flow, and water level. • Pathogens, once the technology is available and validated (NWRI 2020). No additional microbial parameters or molecular techniques?! How are pathogens being currently detected or - are they even being incorporated? It is now 2024! Why are we waiting on a California based agency to establish additional technology and validation criteria when a progressive state such as Arizona has a wealth of scientific research labs, universities and talented people to tackle this issue and establish the necessary validation methods for additional monitoring? Regarding the last bulleted item from this report, I'm unclear why they are still waiting for appropriate technology and validation. This is something that biomedical labs and local municipalities in concert with treatment facilities can execute and have used during the Covid pandemic. Why is there such a disconnect in this step?

Response: Currently, no reliable technology exists for continuously monitoring a specific pathogen. We rely on extensive testing and on studies that allow us to reliably leverage surrogates such as turbidity to monitor for a breach. This is in line with the Safe Drinking Water Act which has successfully delivered potable water for decades, except under this program they are considerably more stringent. In the AWP program, monitoring is continuous and at multiple locations with a requirement for immediate diversion if an excursion occurs.

Comment 33: Additionally, there are a vast array of real-time toxin detecting methods from DNA probes, RNA kits and real-time instrumentation that make this possible. Coming from this field in scientific research, I find it astounding how tied to old protocols this industry remains. Another question since my response is a bit late in the stage for public comments - is this intended to be a state-wide program which is implemented by each separate water utility and municipal agency? How will the State initiated program ensure compliance by all these unique counties in Arizona? Training? Site visits? ADEQ-AWP-roadmap-comments-6-aug-2024 As a concerned citizen, I'm also curious about how well these agencies are conveying this information to their communities and the public in general. I recently

had a phone call with a local director of water quality in Kingman and their team consists of 1 person conducting field sampling and testing for water quality. This is simply not enough to meet the demands of the growing population in this community, and I suspect water utilities will strain to adhere to new procedures. Rather than hiring more geotechnical consultants and specialists, why does the state not support our local communities and scientists by providing them with greater tools, scientific training and equipment to facilitate this enormous new change? In addition, to support the next generation of STEM students and scientists, this is a great opportunity to engage with academic institutions to provide training opportunities for future water scientists. By allowing AWP participants quote: "flexibility to develop their own Response Plans" ADEQ appears to be letting the chips fall where they may and wipe their hands clean of future infrastructure, technology or decision-making repercussions. This is simply not acting as an accountable agency by not exerting oversight at a state level. Furthermore, most of the stakeholder comments and documentation is aimed at major areas in the state. Hence, my subsequent question whether the proposed AWP is entailed for the entire state? Comments from Flagstaff, Scottsdale, Tucson and Phoenix do not necessarily apply to more rural regions. How will this be resolved to achieve a more inclusive picture? While I realize my comments are submitted quite late in the planning and feedback process, I would be happy to discuss some of the scientific points in more detail with your agency directly. As a homeowner and steward of the valuable water resources and native lands we have in our state, I'd also like to emphasize the lack of transparency and apparent involvement with additional members of tribal nations in this discussion. How will this influence their resources? Are these regions of Arizona impacted by this plan and how will ADEQ incorporate their voices in the community roadmap discussion? This is how you define inclusion and stakeholder engagement in my opinion. I look forward to receiving your replies to these comments.

Response: The proposed rule is for the entire state. The Department engaged leading world experts in the pathogen area to inform the approach that forms the core framework for this rule. The Department engaged the public in more than 200 meetings in the last two years. There are no barriers to entry to the program and any interested utility can pursue AWP if the community wishes. In addition to numerous stakeholder meetings, the Department has also continued our Tribal outreach by holding Tribal Listening Sessions and encouraging Tribal consultations. Over the past two years, the Department has conducted in-person and virtual Wastewater Operator Certification training events covering treatment processes, regulation review (APP and AZPDES), water quality sampling and safety, regulatory, contingency and non-compliance reporting, and much more.

Commenter: Donn Stoltzfus

Comment 34: Comment regarding the proposed R-18-9-C814 Source Water Characterization rule: The failure of ADEQ to require periodic and comprehensive characterizations of the source effluent using all available certified analytical methods appropriate to the medium is a serious failure of judgment and regulatory oversight. Given the over 20,000 pharmaceutical compounds prescribed for human health, and the tens of thousands of resultant compounds produced by the human body after processing those drugs, it is statistically probable that some of those compounds discharged to the wastewater collection system will eventually be studied, determined to have human health concerns, and regulated in drinking water. The process begins with knowledge about what compounds, at what concentrations, are present, and if this database is not forthcoming by rule not only does the absence of knowledge impede public

health evaluation, it prevents the public from understanding what is in the water that it is asked to consume. If nothing else, compounds already under worldwide health evaluation, such as microplastics and nanoplastics, but for which the US has not yet issued a health advisory, should be quantified as part of the source characterization effort.

Response: The AWP Rule requires a multiple treatment barrier approach with continuous monitoring requirements for surrogates that indicate if there is an excursion to the water quality. The Tier II chemical analysis followed by sampling is a framework that is designed to identify constituents of concern and control either using enhanced source control approaches or removal in a wastewater treatment plant or in the Advanced Water Treatment Facility. The AWP Rule requires each treatment train to include Advanced Oxidation Process (AOP) and requires demonstration of an AOP performance benchmark using 1,4,- dioxane. AOP is a blanket approach to remove organics that were not removed earlier in the treatment train. The required water quality standards under the proposed AWP Rule will meet or exceed the current Safe Drinking Water Act Standards. Multiple treatment processes are effective in the removal of microplastics, such as RO. The AWP rules extend far beyond the requirements contained in the SDWA for the production of potable water. The scientific details of the program are covered in great detail in the Roadmap that ADEQ published in 2023 along with the references.

Comment 35: ADEQ must support the public right to know in this regard. If not, I guess those questions such as "What is the concentration, if any, of oxidates of fentanyl in the effluent and what effects might they have on my unborn child" will be left to a befuddled public water agency official to address. likely by saying "ADEQ doesn't require us to test for that." Always an answer of last resort.

Response: Unregulated chemicals that may occur in untreated wastewater include pharmaceuticals, personal care products, and drugs of abuse and their metabolites, among others. These unregulated chemicals are often present in an AWP program's source water at concentrations that are orders of magnitude lower than relevant public health thresholds. Current scientific literature suggests this is also the case for fentanyl and its major metabolite norfentanyl, which are known to occur in untreated wastewater but at low concentrations (i.e., part-per-trillion level). To address both regulated and unregulated chemicals, AWP programs will be required to use a multiple barrier approach to produce potable water. These barriers must include a diversity of treatment mechanisms, including chemical destruction/oxidation and physical removal. For many unregulated chemicals, conventional wastewater treatment is an effective barrier on its own, and AWP programs will also incorporate advanced treatment processes to reduce chemical concentrations even further. With a robust secondary biological treatment process coupled with advanced oxidation (e.g., ozone) and/or reverse osmosis, concentrations of fentanyl and norfentanyl should be reduced to non-detectable levels or near non-detectable levels. With regard to the public right to know, utilities are required to inform the public of all sources of water used in the production of drinking water. In addition, AWP programs must also provide the public with summaries of concentrations of various water quality constituents, similar to the consumer confidence reports that are already distributed by public water utilities.

Comment 36: Judging by the lack of response to my comments of December 1, 2023, ADEQ does not feel compelled to address the cultural and religious aspects of consuming effluent as a drinking water source. It also apparently is unconcerned that the agency's public pronouncements that such water is "purified"

(an impossibility) or "safe" (undefined and subjective) could expose the agency to potential liability. So be it. But some sign that the agency has at least considered these comments, and requires the contact information of the Commenter in order to actually take the time to contact them, would be appreciated.

Response: The AWP program has specific requirements for chemical and pathogen removal. Once a utility achieves that standard the water is deemed purified or safe. The Department engaged an expert group called the technical advisory group to help define these standards and these requirements far exceed the requirements contained in the SDWA for the production of potable water. The Department has engaged with the public and experts in more than 200 meetings in the last two years. In addition to numerous stakeholder meetings, the Department has also continued our Tribal outreach by holding Tribal Listening Sessions and encouraging Tribal consultations.

Commenter: Cathy Birdsong

Comment 37: I think if there are new processes and technology to ensure safe drinking water in Phoenix this is great. Is a one day turn around enough for safety and protocols of drinking water?

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. The program requires continuous monitoring at critical control points or daily monitoring for other parameters that are industry standard and requires either diversion or shutdown if there is an excision from defined water quality goals. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply. Continuous monitoring and quickly diverting the water if there are any excursions is a key requirement under this rule.

Commenter: Robert Hollander, P.E.

Comment 38: R18-9-A801. "...sewershed..." By "sewershed" do you mean the sewer collection system?

Response: The term 'sewershed' refers to the sewage collection system that drains wastewater into a wastewater treatment plant that treats the wastewater to serve as a source for the advanced water treatment facility.

Comment 39: R18-9-A801. "Pass-through" - Shouldn't there be a recognition that "pass-through" also includes constituents that cannot be removed by a given treatment process and passes through essentially unchanged?

Response: The definition has been revised to add more clarity. The definition in the proposed rule under R18-9-801 has been updated as follows:

"Pass-through" means the occurrence of a constituent of concern exiting water reclamation facilities or AWTs in quantities or concentrations that have a significant potential to have serious adverse effects on public health or to cause a violation either of a treatment technique requirement, an action level or an MCL in the advanced treated water or finished water.

Comment 40: R18-9-A801. "Upset". Insert the phrase "...being unable..." between "...treatment train..." and "...to meet..."

Response: The definition has been revised for increased clarity. The definition in the proposed rule under R18-9-801 has been updated as follows:

“Upset means unintentional and temporary noncompliance with a performance metric resulting in an excursion or loss of performance in one or more of the unit processes”.

Comment 41: R18-9-B804.A. “Advanced Water Treatment certified operator” - Why does the draft rule allow operators holding at least a Grade 3 or Grade 4 drinking water treatment certification, but must have at least a Grade 4 wastewater treatment certification, in addition to AWT certification, to qualify as an Advanced Water Treatment certified operator?

Response: The operators must only carry an AWP Operator Certification in addition to one of the four certifications that they currently carry. A grade 4 wastewater or grade 3 drinking water or wastewater will be a shift operator. Only a person carrying a grade 4 drinking water in addition to a AWP operator certification can be an operator in Direct Responsible Charge. Refer to the R18-9-B804 (A)(3) of Proposed Rule.

Comment 42: R18-9-B804.A. “AWT validated examination” - Who will prepare the AWT validated exams?

Response: ADEQ has acquired the Grade 3 AWT operator certification exam from the American Water Works Association (AWWA) - California Water Environment Association (CWEA) CA-NV Section. The Department will be engaging a consultant to update this exam for AZ specific Rules. ADEQ will prepare the AWP operator exams and practice tests for the AWP operator certification program.

Comment 43: R18-9-C814.C.1. - Recommendation. Insert “...(See Section ___ for a list of treatment processes and associated treatment credits)...” between “...credit...” and “...in the...”.

Response: The program is designed to be flexible and on a case by case basis and the rules are written in a manner that is not prescriptive. This allows the utilities to capitalize on the advancements to leverage the latest technology and developments in the field. However, guidance documents will cover a lot of the details that are necessary such as treatment processes and the credits which will help with review of projects. Guidance documents can be updated much more easily than the rule itself.

Comment 44: R18-9-E824.B.9.- Septage hauler and/or Non-hazardous Liquid Waste (NHLW) programs have been tried in the past. They have many challenges, including monitoring of loads and the timing of the monitoring and subsequent introduction of the load to the WRF. Holding facilities may be necessary to store the loads until analytical results are available. Surrogate measures, such as pH, may be helpful as a screening measure, but is not definitive of load contents.

Response: ADEQ appreciates the comment. The draft rule in Section R18-9-E324(B)(9) requires the utility to include a septage hauler control program that tracks and monitors loads. The rule also requires a load sampling program and the retention of the load sampling records for five years. The rule is designed as such to allow flexibility so that a utility can develop a program that is representative of their community’s treatment process and needs. This includes the type of sampling plan, the chemicals or use of surrogates to sample, the need for holding storage tanks, and other parameters needed to determine compliance with the AWP rule requirements. This flexibility in the rule is designed to encourage the establishment of a septage hauler program by the utility.

Comment 45: R18-9-E826.D.5.a.i.(2) - Will guidance be issued on "appropriate bioanalytical studies and/or bioassays"? EPA performs or assesses the results of voluminous toxicological studies to establish RfDs and CSFs for various programs (e.g. National Primary Drinking Water Regulations, surface water quality standards). This will be a challenging undertaking for an AWPRA.

Response: The Rule has been further streamlined for when appropriate bioanalytical studies and/or bioassays are required. Additional clarity has been added to the rule for engaging a project advisory committee when a chemical that is completely new is encountered.

Comment 46: R18-9-E826.D.5.e. Where does the 10% come from? Is this a safety factor?

Response: The 10% is taken from a report published by the U.S. EPA, 'A review of the reference dose and reference concentration processes' dated 2002. However, this section has been updated based on other comments received. In the draft rule, the '10%' was used to calculate the health advisory (HA) or risk analysis for chemicals based on RfD or CSF. The Rule has been updated to remove the calculation of HA based on RfD or CSF. Specific sections R18-9-E826 (D) (5) and (D) (6) have been added to the proposed rule for chemicals that do not have a health advisory in the EPA 2018 HA Table. Threshold concentrations are calculated by ADEQ and added to the proposed rule for common chemicals with no HA in the Table, but with RfD or CSF.

Comment 47: R18-9-E827.C.1.f.ii. Is this essentially saying that PBIs do not have to show as great a level of removal of pollutants as do the actual treatment processes, as determined by analysis of the specific pollutants? Why was 75% chosen as the base?

Response: The 75 percent removal is based on TAG recommendation and from the approach adopted by the State of Colorado for their Direct Potable Reuse (DPR) program. PBIs are not necessarily toxic. Rather, compounds that have chemical properties that make them removable by some treatment processes but recalcitrant to others. If there is a MCL or health advisory for a chemical the utility has to comply with that requirement. This requirement is to ensure that the processes are working as designed.

Comment 48: R18-9-E828.C.1.b. Under R18-9-E828. Pathogen Control, am I understanding this monitoring sequence properly? It appears that a lot of confidence is being placed on this one day of a given week of every month in a 24 month period, as indicative of the highest pathogen values. Pathogen levels can vary for many reasons (e.g. prevalence of disease in the sewershed, stormwater flows). Perhaps this analysis should be performed for two-12 month periods (i.e. first month, one sample taken daily; 11 months of sampling, once per month on day of highest pathogen levels, for two cycles), to account, at least partially, for this variability. I acknowledge this would make the monitoring more complicated.

Response: The use of composite samples along with the samples at the treated wastewater location is expected to dampen fluctuations in the original signal coming into the wastewater treatment plant. The Department believes that the two years of sampling is sufficient to capture any variability if it exists.

Comment 49: R18-9-E828.C.7. This paragraph should be clear regarding the starting and ending points over which the LRVs must be achieved (e.g. from WRF effluent to just before the first disinfection step at the AWTF, if I understand this correctly).

Response: All participants of the AWP program must remove 13 log viruses, and 10 log for the two protozoans when the accounting starts from raw wastewater and ends at the finished water location of this program. The site specific approach is another way of saying, a utility can take credit for treatment within a wastewater treatment plant. As the program is flexible, specific locations have not been listed.

Comment 50: R18-9-E828.C.8. Are these the highest concentrations found at the beginning and ending of the process train?

Response: These concentrations are only at the beginning of the accounting under this section.

Comment 51: R18-9-E829.D.3.d.i. Why 10 times the action level?

Response: A chemical's concentration of 10 times the health advisory (HA) is based on non-cancer endpoints. A level greater than 10 times the HA reduces the margin of safety provided.

Comment 52: R18-9-E829.D.3.d.ii. Similar to Comment 13, why 100 times the action level?

Response: The level '100 times the health advisory corresponds to a lifetime cancer risk of 1×10^{-4} .

Comment 53: R18-9-E830.B.2.vii. Reports of GI illness are likely to be first received by county and or state health department staff. Health department staff would then notify the AWPRAs.

Response: The Department has made a note of this information and will add it to the guidance document.

Comment 54: R18-9-F832.A.3.b.i. The use of "...no less than..." is confusing. Do you mean "Within six months..."? Also, will subsequent phases of this rulemaking incorporate expected lead and copper rules (e.g. inventory portions of Lead Copper Rule Revisions, new requirements under the Lead Copper Rule Improvements)?

Response: The language has been updated to "Within six months..."

Comment 55: R18-9-F832.A.3.b.ii. Basically following the corrosion control requirements of the Lead Copper rules (whatever of these is effective).

Response: Yes. Additional information will be included in the guidance documents.

Comment 56: R18-9-F833.A.2.c. I recommend adding "ii. Treated water that exceeds demand." To the list.

Response: This is just documenting what is causing an water quality excursion and what is being done to address it. The intent is different.

Comment 57: F18-9-F834.C.1.a.iii. How will this procedure establish appropriate alert and action levels, if it does not account for organics that are added from the sewersheds of the AWPRAs and any partners?

Response: The goal is to keep it similar to what was in the original drinking water prior to the introduction of water from AWP with some buffer.

Commenter: Nathan Grandbois

Comment 58: Hello and thank you for reading this. I have lived here for 16 years now and Phoenix is my home. Water is the largest threat to the safety of Phoenix and all of southern Arizona. All people who reside here and pay state/local and/or income tax should not have to pay a fee for Individual use. There should be limitations, but all people who have paid their share of appropriate taxes should be entitled to at least the amount required to remain healthy and sanitary. No Individual should be able to profit from their water allotment via arbitrage.

Income disparity is becoming greater and homeless is rising. All humans can agree we need to have clean air and clean water available to us for personal use free of charge, I feel.

Please consider allowing a personal use allotment for any tax payers or residents of the associated counties and native american communities.

I appreciate the effort that has gone into this and I look forward all you good people, including lawyers, ensuring the future security of Phoenix's and all associated residents.

I wish I was a lawyer, I hope the joke was well received.

Response: The comment is not within the scope of this rulemaking.

Commenter: Scottsdale Water, Suzanne Grendahl (Comments 59 - 75)

Comment 59: We appreciate the opportunity to comment on the Arizona Department of Environmental Quality (ADEQ) Advanced Water Purification (AWP) Draft Rule. Our objective with ADEQ is the fundamental goal of developing economical and health-risk based rules that allow for the permitting, operation, and direct use of Advanced Purified Recycled Water (APRW). In pursuit of this objective, Scottsdale, as the only existing Advanced Water Purification Facility (AWPF) permit holder, is uniquely positioned to understand the needs and ramifications of this process. Scottsdale recommends that ADEQ consider a few adjustments during the development of a proposed rule for AWP. The major areas of concern involve the following themes: Flexibility in the operator certification process for Advance Water Treatment Operators to allow Grade 3 Wastewater Treatment Operators to qualify for the new certification. The lack of certified operators is well documented in the number of certified operators in ADEQ's data base, particularly those available to pull shift duty. Without such flexibility, Scottsdale and the State of Arizona risk not having sufficiently trained and certified staff to operate APWFs.

Response: The Department has updated eligibility requirements for AWPO certification in the Rule and now allows Grade 3 Wastewater Treatment (WW) Operators to be eligible for AWPO certification. The Department strongly believes that the drinking water treatment and operational knowledge must be assessed for wastewater operators. The AWPO examination for Grade 3 and Grade 4 WW operators will include the additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator. The following requirement is added under R18-9-B804(F)(6) of the Proposed Rule: "For applicants with a Grade 3 or Grade 4 wastewater treatment operator certification, the examination shall include an additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator examination".

Comment 60: Structure and define ultimate compliance points to be distinct locations representing process control at the AWT "finished water", separate from the compliance point for drinking water at the Entry Point to Distribution System (EPDS).

Response: At a high level, there are two compliance points, one for the state managed AWP program and the EPDS which has federal requirements under the Safe Drinking Water Act. CCPs are also compliance points as these locations must demonstrate compliance with a certain surrogate. However, data from these locations will only be submitted to the Department if a water quality excursion was not diverted.

Comment 61: Align ongoing monitoring locations and schedules for Tier 1 and Tier 2 contaminants at "finished water" and on a quarterly basis, with public notification only at the EPDS.

Response: Tier 1 chemicals are monitored quarterly as required by the Safe Drinking Water Act (SDWA). However, monitoring of Tier 2 chemicals is required at a monthly interval. Both California and Colorado with DPR (AWP) rules require monthly sampling of Tier 2 chemicals. As specified in the proposed rule R18-9-E829 (D) (3) (f), upon request and ADEQ approval, the monitoring frequency can be reduced from monthly to quarterly based on the review of the most recent two years of monthly analytical results showing a chemical that has not been detected. Ongoing monitoring of Tier 1 and Tier 2 chemicals is required not only at the finished water, also at the treated wastewater to appropriately characterize the source water. There is considerable variability in treatment that cannot otherwise be captured without actual measurements of this highly variable source. ADEQ has updated the Public Notice process as specified in the proposed rule R18-9-E829 (D) (3) (e)(ii). Public notification will only be required if an exceedance occurs and the water is distributed to the public (if diverted, public notification is not required).

Comment 62: The process for obtaining a Demonstration Permit should be streamlined to encourage the ability of utilities and their public to interact on the subject of APW and facilitate operator learning and training on an operating system.

Response: The Department agrees that the Demonstration permit can be streamlined to encourage utilities and their public to interact on the subject of AWP. The Department has made several changes to the draft rule published to facilitate such interactions and increase the opportunity for operator training. See Section R18-9-B804 (A)(4), R18-9-B804 (K)(6)(b) and (d) in the proposed rule for operator training and towards operators gaining experience. In addition, see R18-9-C817 (C)(1)(a) which reduces the piloting requirement. Demonstration permits in the proposed rule will allow a utility to serve water to the public as quickly as possible and create those opportunities while still being safe.

Comment 63: Full Scale Verification should follow current Commissioning timelines used for treatment plants.

Response: Current commissioning timelines within the SDWA only apply to surface water and groundwater treatment plants. The federal framework did not contemplate the use of treated wastewater as a drinking water source.

Comment 64: Determination of health risk associated with chemicals must be prescriptive and allow alternative options such as using Safety Data Sheets (SDS) provided by discharger when MCL's or Health Advisories are not available. The use of bioanalytical studies and/or bioassays is impractical and is open to the bias of the reporting laboratory or agency.

Response: Changes have been made to the rule. All non-domestic dischargers will be regulated under the Tier 2 chemical program. Tier 2 has a stepwise approach that primarily uses the 2018 drinking water health advisories list for establishing action limits. However, it is expected that certain chemicals discharged by a non-domestic discharger may not have a health advisory or may not be present in the drinking water list. In such situations, a methodical stepwise approach was adopted in the proposed rule, with chemicals being added to the Tier II list based on calculations using available data in national databases, literature or other credible sources. To make the process less burdensome to the applicants, the Department has already calculated health advisory values for some of the contaminants lacking HAs in the 2018 drinking water list. These calculated values have been added to the rule to help identify Tier II chemicals that will need to be monitored, but this list will only have monitoring requirements.

In the event the applicant finds a contaminant with no existent information at all, even after exhausting all these methodical steps, then the rule leverages the use of Bioassays as a last resource. For these chemicals, HAs must be established and will be treated like all other Tier II chemicals. Moreover, the rule also addresses situations when bioassays may not provide conclusive information by leveraging the use of the enhanced source control program.

Comment 65: Operator Certification: Scottsdale Water appreciates the intent of ADEQ to ensure that operators of AWT facilities possess the necessary expertise and qualifications. However, we have significant concerns about the exclusivity and restrictiveness of the current certification requirements. Many of the terms used in the draft AWP rule are different and distinct from the terms used in the existing rules regarding operators. Specifically:

- Terms: What is the difference between an AWT Operator and a Shift Operator? They are defined separately yet seemed to be used interchangeably.

Response: AWP operator definition is provided under R18-9-B804(A)(3). AWP operator is the operator who holds a current certification in either Grade 3 DW or Grade 4 DW or Grade 3 WW or Grade 4 WW and who has passed the AWP validated examination, and meets the AWP qualifying experience requirements. This definition defines eligibility criteria for an AWP operator. The shift operator is the operator who holds AWP operator certification and has at least either a current Grade 3 DW or or Grade 3 WW or Grade 4 WW treatment certification and who is responsible for the operation of a AWTF for a specified period of the day and shall be present at the site during the duration of the shift.

Comment 66: Direct Responsible Charge (DRC): The Draft Rule inconsistently implies that the DRC must be onsite for potentially 16 hours per day. If the DRC is intended to be one person, that is not practical and creates redundancy with the shift operator. The language should be amended to state that a DRC, or their designee, must be available. The rule states that the shift operator makes all decisions related to treatment and therefore is onsite 24/7/365. Requiring the DRC to be onsite does not align with current code in R18-5.

Response: The draft AWP rule does not require one person to be onsite for 16 hours. The draft AWP rule requires a Direct Responsible Charge (DRC) to be onsite at all times when the treatment is happening and the DRC can be a different person each shift. These rules are specific to the AWP program and are designed to meet the needs of this program.

Comment 67: Grade 3 Wastewater Treatment Operators: We request that ADEQ align the Rule with existing regulatory standards and broaden qualifying experience definitions to include relevant operator certification and grade level, and experience in both water and wastewater disciplines. Furthermore, it is crucial that ADEQ address the inconsistent experience requirements for water and wastewater certifications, ensuring equitable criteria that reflect the roles' complexities and responsibilities. By establishing a clear and equal pathway for wastewater operators to test with the same criteria as water operators, ADEQ can create a more inclusive and practical certification process that recognizes the diverse skills and experiences of all operators. This approach will not only ensure fairness and accessibility but also benefit the shrinking labor pool of qualified operators, addressing the state's existing shortage of skilled professionals. The AWT test can and should be structured to allow for this flexibility and if redundant on some knowledge areas for some, it will be merely a confirmation of that knowledge. We request that ADEQ create a pathway for Grade 3 Wastewater Operators to become AWT operators/shift operator.

Response: The Department has updated eligibility requirements for the AWPO certification in the proposed rule and will allow Grade 3 Wastewater Treatment (WW) Operators to be eligible for AWPO certification. The Department strongly believes that the drinking water treatment and operational knowledge must be assessed for wastewater operators. The AWPO examination for Grade 3 and Grade 4 WW operators will include the additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator. The following requirement is added under subsection R18-9-B804 (F)(6) of the proposed rule: "For applicants with a Grade 3 or Grade 4 wastewater treatment operator certification, the examination shall include an additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator examination".

Comment 68: New Certification Category - Section RI 8-B804 (K)(5) discusses either receiving certification as an "AWT DRC" or as an "AWT shift operator". They are taking the same certification tests and may have the same experience. Does this mean they are actually receiving different certifications, or does it mean they "will be recognized as" or they "can serve as" a DRC or Shift Operator?

Response: The AWTP operators will receive the same certification, however, their certification will have different recognitions on their role within the AWP program, i.e. a DRC or a shift operator. The eligibility requirements are different for DRC and shift operators therefore, different designation for AWP operators.

Comment 69: Grading of Plant and Associated Operator: The Draft Rule in section R18-9-B804(D) (5-6) does not clearly align with the established AAC requirements for treatment facility rating and operator certification for staffing. A Grade 4 Collections or Grade 4 Water Reclamation Plant (WRP) is allowed to be operated by one level below the grading of the plant, i.e. a Grade 3 Operator.

Response: All AWPRAs facilities must follow the requirements under AWP Rules. The collection system and WRF which are providing treated wastewater to AWTF are considered AWPRAs facilities and must follow the requirements under Article 8. For grading and operator's certification requirements for AWPRAs facilities, the requirements under Article 8 supersedes the existing requirements under Chapter 5. The collection system and WRF, which are AWPRAs facilities, will require Grade 4 operators.

Comment 70: Compliance Points: The Draft Rule moves between different inferred compliance points and does not define those points in a way to understand their location. Specifically, the use of the term "finished water", though defined, creates confusion. The precise compliance points must be clearly identified and used consistently throughout the document. Finished water compliance point must be the specific monitoring location where all permit requirements are met. The EPDS is a Safe Drinking Water Act (SDWA) defined term that necessitates compliance for all MCLs associated with treatment. Monitoring at the finished water compliance point is to demonstrate compliance with the AWP permit alone. The finished water compliance point should be clear for systems that 1) intend to go directly to distribution; or 2) systems that intend to go to the head of the Drinking Water Treatment Facility (DWTF) (without gaining AWT credits); or 3) or systems who want to blend into drinking water storage at the end of a DWTF; or 4) a system that want to gain AWT credits up to some specified location within their DWTF. Each of these examples should have the same "finished water" compliance point location at the end of all treatment associated with APW Permit. If a system intends to 1) go straight to distribution, then their finished water compliance point may be at the EPDS, but that should be stated clearly; 2) a system that wishes to send water to the head of the DWTF, for reasons other than gaining log-removal credits, the finished water compliance point is after the AWT discharge point to the DWTF; or 3) a system that wishes to discharge AWT water to the head of finished water reservoirs, the finished water compliance point is after the AWT discharge point to the DWTF reservoir; or 4) a system that wants to gain AWT credits in the DWTF would have their finished water compliance location after the last treatment where they gain credit. The EPDS in examples 2 and 3 stays separate from the finished water compliance point. The EPDS in example 4 may or may not be at a different location than the finished water compliance point depending on design. The draft rule does not make clear the different options and the definitions are not adequate to explain. Again, for APW to be successful in Arizona, flexibility in how it can be designed and implemented is critical. The quality of the water produced must be assured and measured at a spot that makes sense for the community or utility implementing APW.

Response: The Department reviewed the draft rules based on this comment to ensure consistency. As the program is designed to be flexible, it is impossible to capture all the different AWP scenarios without the program getting prescriptive. However, to add clarity, the definition of 'Finished Water' has been updated in the proposed rule, and the sampling location for ongoing monitoring is clearly defined. The terms Advanced Treated Water (ATW) and Finished Water have been reviewed throughout the rule and updated accordingly in the proposed rule. By updating these terms, the Rules are now clear on the sampling points for the AWP program and sampling points for other AWP scenarios. For the compliance with the AWP program, only ATW will be required to be monitored. The Finished Water will be required to monitor at EPDS prior to distribution. The updated definition for 'Finished Water' is as follows: *"Finished water" or "finished drinking water" means water produced by an AWT, or a drinking water treatment facility, and which is introduced into a distribution system or served for human consumption without additional treatment, except for measures required to uphold water quality within the distribution system."*

Comment 71: Tier 1 SDWA Regulated Contaminants: Not all WRPs are specifically designed to meet drinking water standards and therefore should not be held to drinking water maximum contaminant levels (MCLs). Ongoing monitoring at this location prior to the AWT is burdensome and offers no

compliance value. Each utility must decide if this monitoring point will assist in meeting compliance and should add monitoring for process control at places that the utility decides will provide benefit for the operation. In addition, monitoring at the finished water compliance point should be used for process control only, as the drinking water compliance point is at the EPDS. The only exception would be if these two points were in the same place. Scottsdale supports monitoring and reporting for Tier 1 on a quarterly basis at the finished water compliance point. In addition, public notice should be applied exclusively for exceedances at the EPDS.

Response: Tier 1 chemical monitoring at the WRF effluent/treated wastewater location is required to appropriately characterize the source water. There is considerable variability in treatment that cannot be otherwise captured without actual measurements of this highly variable source. Compliance monitoring for Tier 1 chemicals (meeting SDWA-MCLs) occurs at the finished water location. Compliance monitoring at the finished water location (before the EPDS) is necessary because if an exceedance of MCL occurs, it will alert and allow the operator to divert the non-compliant water before it is distributed to the consumers. ADEQ has updated the Public Notice process as specified in the proposed Rule R18-9-E829 (D) (3) (e)(ii). Public notification will only be required if an exceedance occurs and the water is distributed to the public (if diverted, public notification is not required).

Comment 72: Tier 2 Unregulated Chemicals. Scottsdale Water cannot support ongoing monitoring at the WRP effluent. Ongoing monitoring at this location prior to the AWTF is burdensome and offers no compliance value. Significant treatment for these contaminants will occur in the AWT where compliance is designed to be met. Scottsdale Water will support process control monitoring at the finished water compliance point on a quarterly basis. Performing this monitoring at the suggested monthly interval is burdensome and is more stringent than Tier 1 contaminants that are regulated. In addition, public notice should be applied exclusively for exceedances at the EPDS.

Response: Monitoring at the WRF effluent is required to characterize the highly variable source water. There is considerable variability in treatment that cannot be otherwise captured without actual measurements of this highly variable source. Monitoring at the WRF effluent will provide insight into potential illicit discharges, discharge violations, new non-domestic sources, changes in practices of existing non-domestic sources, and consistent, proper operations of the wastewater treatment facilities. Monitoring of Tier 2 chemicals is required at a monthly interval. However, monitoring frequency can be changed to quarterly based on the review of the most recent two years of monthly analytical results showing a chemical has not been detected. ADEQ has updated the Public Notice process as specified in the proposed rule R18-9-E829 (D) (3) (e)(ii). Public notification will only be required if an exceedance of action level occurs and the water is distributed to the public (if diverted, public notification is not required).

Comment 73: Demonstration Permit: According to R18-9-C817 an Advanced Water Purification Responsible Agency (AWPRA) applying for a Demonstration Permit must meet all the requirements of a full-scale permit, except for full-scale verification. While this approach aims to ensure thorough evaluation, it mandates the completion of both a one-year Initial Source Water Characterization (ISWC) and a Pilot study before granting Demonstration Permit. This sequential approach, requiring the ISWC to be completed prior to final design and the one-year pilot, could potentially delay entities seeking a

Demonstration Permit by up to two years. This delay is particularly concerning given that a public outreach program with taste testing is the most effective path toward public acceptance. The two-year delay would mean the demonstrations might not commence until just before the full-scale facility comes online. Utilizing a robust pilot as a Demonstration "skid" is a prudent way to fulfill the pilots intent, while building trust and acceptance with the public. A shorter timeline for obtaining the Demonstration Permit would be beneficial. Risk assessments should consider that the volume of water used for taste testing is small and one-time.

Response: Changes have been made to the draft rule, to address the time needed to start serving water to the public. While the Department does see value in engaging the public early, this has to be balanced with rigor to ensure the process is robust and safe. The updated language in the proposed rule is based on discussions with members of the TAG to account for at least 6 months of testing in some cases. The rule language has been updated to remove the requirement for one year of piloting and added a requirement to perform start-up testing for six months. The new language can be found in the proposed rule under R18-9-C817 (C)(1)(a) - *"The piloting requirements in R18-9-C815 may be abbreviated at the Director's discretion, but may not be of a period of less than 6 months."*

Comment 74: Full Scale Verification: Requiring a one-year Full Scale Verification is impractical and not the best use of highly treated water. The industry standard for bringing a full-scale drinking water plant online, including treatment plants for superfund sites, is generally only 60 days. The required one-year Pilot Study already covers the seasonal variations in source water. The commissioning time for full-scale is simply to prove the equipment is functioning as designed as the treatment has already been validated in the pilot. In addition, not putting this very expensive highly treated water to the best beneficial use would be unfortunate especially considering the drought and shortage conditions.

Response: The requirement for full scale verification is specifically designed to address dimensional similitude, i.e., challenges with scale.

Comment 75: Tier II Risk Determination: Requiring an AWPRA to "determine a chemical's health risk through reasonably appropriate bioanalytical studies and/or bioassays" is not practical. It is not clear what these methods are and whether there is lab availability for these tests to be performed. In addition, who is expected to interpret the lab results and determine a chemical's health risk? A utility does not have staff qualified to make these determinations. An allowance should be made in the rule for the use of SDS provided by a discharger if it indicates no health impacts exist for the chemical being discharged. The OSHA Haz Com Standard 29 CFR 1910.1200 could be used as an approved method to determine hazard of chemicals. If the concern is proprietary chemicals or hazardous substances then 101(14) CERCLA, 101(33) CERCLA or a hazardous waste defined as 40 CFR261.3 or 49 CFR 1714.8 of RCRA could be used. There are also lists ofNIOSH chemical hazards.

Response: The draft rule language has been updated for when Bioassays/Bioanalytical studies will be required. Specific sections in the proposed rule R18-9-E826 (D) (5) through (D) (8) have been added to the Rule for chemicals that do not have established health advisory (HA) values in the Safe Drinking Water Act - Health Advisories Table. Calculated threshold concentrations are included for known or common chemicals with no HA but with RfD or CSF in the EPA HA Table. For chemicals that have no values at all (no HA, RfD, or CSF) in the EPA HA Table, relevant health advisories in peer-reviewed

literature and/or federal or state databases will be used. For any other unknown chemicals that do not have an established HA in the Safe Drinking Water Act - Health Advisories Table, do not have an RfD or a Cancer Slope Factor (CSF) in any peer reviewed literature, federal or state databases (no established values at all), and is being discharged by an impactful non-domestic discharger, the AWPRA shall conduct bioanalytical studies and/or bioassays and determine the health risk of the chemical. The applicant may consult with the department and the Project Advisory Committee in this determination.

Commenter: Maricopa County Environmental Services Department, Jim Miller (Comments 76 - 140)

Comment 76: Dr. Karthik Kumarasamy, Ph.D., PE Principal Engineer, Groundwater Protection Arizona Department of Environmental Quality 1110 W. Washington St. Phoenix, AZ 85007 Subject: via e-mail: Kumarasamy.karthik@azdeq.gov. MCESD comments on Draft Advanced Water Purification (AWP) Regulations A.A.C. R18-9-A801 through R18-9-F837, 79 pages 1 page pertaining to LTF, and 3 pages pertaining to fees. The Maricopa County Environmental Services Department (MCESD) is pleased to have been provided the opportunity to continue to comment on the AWP draft rule-making and permit development process. MCESD is an agency providing regulatory functions for approximately 67 wastewater treatment systems, 35 reclaimed water systems, 36 industrial pretreatment wastewater facilities, and 219 water systems in a county with greater than 60% of the state's population. We recognize that this rule-making process is necessary and timely because of extended regional drought and the long timeframes associated with implementing water reclamation, indirect potable re-use and direct potable re-use projects in a manner that advances the public's confidence. MCESD is currently progressing towards the County Board of Supervisors' and the Arizona Board of Health's consideration of modifications to the Maricopa County Environmental Health Code to remove explicit prohibitions that would limit or exclude advanced water purification as contemplated by the rule making. For the benefit of other MCESD reviewers, the public, and ADEQ reviewers, we have prepared both written comments (this letter) and a red-lined mark-up of the 79-page draft rules. We commence these comments by summarizing our support for specific provisions of the draft regulation. We then follow with technical comments. We have used terms as defined in the draft rules throughout this document.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply.

Comment 77: COMMENTS IN SUPPORT OF SPECIFIC RULE PROVISIONS: MCESD is in full support of the definition of "Technical Barrier" as proposed. Our understanding is that current definition if applied to a UV/AOP process would require constant operation at the design dose in order to receive credit for contaminant removal. It is our further understanding that vendor algorithms or features that enable power reduction based on flow rate or contaminant concentration or surrogates such as UV transmittance or TOC or would not meet this definition, and that this type of feature is inappropriate to meet the concept of a constant operation. The unacceptability of this vendor promoted feature should be addressed in rule and/or a guidance document.

Response: ADEQ agrees and any change shall be verified via a letter from the company. Added Section G(4) under R18-9-C816. Verification letter from an independent party certifying that the performance of

an equipment engineer is relying on the manufacturer for treatment credits. In addition, resume/credentials from the entity who is certifying the product. In-situ validation during pre-commissioning is required for vendor designs that claim treatment credits.

Comment 78: R18-9-804 (C) Certification Committee: Designating a single entity, such as the Certification Committee, is crucial to ensure compliance with the requirements outlined in the Article related to AWP projects. This helps streamline decision-making and accountability. However, if ADEQ intends to delegate the AWP permitting and oversight to local authorities, it is essential to explicitly mention the inclusion of delegated local authority representatives in the AWP Certification Committee.

Response: The Department does not plan to delegate the program to the Counties.

Comment 79: R18-9-804 (D)(1)(a) Certification, General Requirements: MCESD is in support of the operator in “Direct Responsible Charge” (DRC) of an AWP facility being required to be on-site and have Grade 4 drinking water certification and AWT certification as defined in R18-9-804 (A).

Response: ADEQ appreciates the County’s support on AWP operator certification requirements.

Comment 80: MCESD supports comprehensive initial and on-going (periodic) source water (wastewater) characterization.

Response: ADEQ appreciates your comment and agrees with a comprehensive initial and ongoing source water characterization.

Comment 81: R18-9-C814 (F): MCESD supports language allowing the ADEQ director to deny an AWP permit based on non-compliance with the ISWC requirement or insufficient data.

Response: ADEQ appreciates the support from MCESD towards the rule that allows the ADEQ Director to deny an AWP permit based on non-compliance with the ISWC requirement. The support from local government, the public, and the utilities will ensure the public receives safe drinking water as required by rule.

Comment 82: R18-9-D823 (C)(3): MCESD supports language that the ADEQ director may terminate an AWP permit in cases of false information or misleading reports.

Response: ADEQ appreciates the support from MCESD towards the rule that allows the director to terminate an AWP permit in cases of false information or misleading reports. The support from local government, the public, and the utilities will ensure the public receives safe drinking water as required by rule.

Comment 83: R18-9-E826: MCESD (A)(2)(c) is supportive of the requirement to conduct a Tier 2 chemical contaminant analysis at every permit renewal.

Response: ADEQ appreciates the support from MCESD for the requirements to conduct Tier 2 chemical contaminant analysis at every permit renewal. The support from local government, the public, and utilities will ensure the public receives safe drinking water as required by rule.

Comment 84: R18-9-E826: MCESD (C) is supportive of the requirement to maintain a chemical inventory list.

Response: ADEQ appreciates the support from MCESD for the requirement to maintain a chemical inventory list. The support from local government, the public, and utilities will ensure the public receives safe drinking water as required by rule.

Comment 85: R18-9-E826 (F): MCESD is supportive of AWP permit applicants being required to select optimized demonstration (pilot) and full-scale AWT treatment train based on Tier 1 MCLs, a generated Tier 2 list, and a pass-through interference list.

Response: ADEQ appreciates the support from MCESD for the requirement to require AWP permit applicants to select optimized demonstration (pilot) and full-scale AWT treatment train based on Tier 1 MCLs, a generated Tier 2 list, and a pass-through interference list. The support from local government, the public, and utilities will ensure the public receives safe drinking water as required by rule.

Comment 86: R18-9-E826 (F)(2): MCESD is supportive of AWP permit applicants being required to control chemicals that are not sufficiently treatable in the selected AWT treatment train by source control methods.

Response: ADEQ appreciates the support from MCESD for the requirement to control chemicals that are not sufficiently treatable in the selected AWT treatment train by source control methods. The support from local government, the public, and utilities will ensure the public receives safe drinking water as required by rule.

Comment 87: R18-9-F835: MCESD supports demonstration-scale and full-scale verification requirements proposed in the draft rules.

Response: ADEQ appreciates the support from MCESD for the requirement to demonstrate full-scale verification requirements. The support from local government, the public, and utilities will ensure the public receives safe drinking water as required by rule.

Comment 88: TECHNICAL COMMENTS: 1. “Raw Water” and “Treated Water” Augmentation are expressly defined. The document is silent as to whether ATW water would be allowed to be introduced into the finished water reservoir of a groundwater treatment plant or surface water treatment plant. The rules would benefit from such clarity as MCESD is aware of multiple entities contemplating this undefined scenario.

Response: Additional clarity will be added in the guidance documents. The program is flexible and the current definitions did contemplate this scenario. If ATW meets finished water criteria, then it can be introduced at any location within the distribution system.

Comment 89: The definition of “Pilot Study”, “Pilot Train”, or “Pilot” is poorly worded and implies that dimensional similitude is unnecessary, or representativeness of full-scale, or accuracy of the result is not important. Suggest re-wording.

Response: The requirement for full scale verification is specifically designed to address dimensional similitude, i.e., challenges with scale. A specific definition for full scale has been added in R18-9-A801 of

the proposed rule. However, a change to the pilot definition is not necessary. The updated definition in the Proposed Rule is as follows: *“Full scale” means the complete implementation and operation of a AWP system that is designed to treat treated wastewater to finished water standards and to meet the potable water demand of the community.*”

Comment 90: The definition of “Surrogate Parameter” is not specific to the wastewater or water or matrix being treated and needs to be. Surrogates should be chosen from amongst the contaminants present in the wastewater or water being treated.

Response: The terms “Surrogate” and “Surrogate Parameter” are used in different contexts throughout the rule language of the program. For that reason, the definition is not tied to a point in the treatment process, allowing the specific rule language to fill in the context appropriately. Surrogates are essentially something that can be measured in a reliable way to verify adequate treatment has occurred. There is flexibility in the rule for a utility to choose surrogates amongst the contaminants that are present in the wastewater or water being treated.

Comment 91: Within the definition of “Treated Wastewater”, it is not clear what is meant by “oxidized” wastewater.

Response: The definition contained in R18-9-A801. Definitions specifically for “oxidized wastewater”. captures the numeric water quality goals that define oxidized wastewater.

Comment 92: Multiple guidance documents are referred to throughout the draft rules in the context of establishing “Best Management Practices” (BMPs), “Best Practice”, or “good engineering practice”. MCESD requests that these documents be made available for public comment.

Response: The guidance documents are currently in process and they will be made available upon completion.

Comment 93: It is not clear whether guidance documents will have additional process criteria. Based on the draft rules, there is a great need for additional and specific design criteria. The Draft rules are silent on unit process redundancy and reliability requirements. The public would benefit from published unit process criteria for each type of treatment plant situation; raw water augmentation, treated water augmentation, entry into finished water reservoirs (if permissible), scalping scenarios, etc.

Response: The draft rule includes flexibility in the program to support innovation. However, once a choice has been made about the process, specifics of the requirements are listed in the guidance document as best available approach or good engineering practice. If a deviation is proposed, the applicant must demonstrate that. Please refer to the definition of “good engineering practice”.

Comment 94: Are the existing new source approval requirements waived for “raw water” and “treated water” augmentation scenarios? If not waived, how should new source approval be administered?

Response: Both those scenarios will involve some sort of blending, i.e., we blend ATW with either untreated water from conventional sources or water that is treated from a conventional source. When blending a conventional untreated source with that of ATW, new source analysis for the source is required and all the requirements of ISWC will apply for treated wastewater source. As there could be so

many combinations depending on what engineering problem a utility is solving, this program does not address specifics. However, ADEQ will add additional details in the guidance document.

Comment 95: Recognizing that some systems have multiple wastewater facilities within their collection system, what role, if any, does a delegated local authority (LA) have with local pretreatment program?

Response: The AWP program will be managed by ADEQ. Local authorities will not have delegation to manage the AWP program. The pretreatment program, as defined by the EPA's National Pretreatment Program, will continue to exist as it exists today.

Comment 96: R18-9-A803: It is not clear what "considered a surface water under the SDWA" means from an administrative or plan review perspective. Please be specific with regard to plan review and administrative procedures.

Response: All rules of surface water apply when it comes to monitoring and reporting to the US EPA. However, as the requirements of the AWP program are much more stringent than US EPA requirements, meeting state requirements will satisfy the requirements of US EPA. ADEQ is developing a database that will take the AWP data and convert it into what is required for SDWA purposes for monitoring and reporting. With regards to plan review and admin procedures, as the requirements of the AWP program is much more stringent, review per rule and good engineering practice, i.e., guidance. However, some parameters such as coliform bacteria are collected under SDWA which have to be collected for reporting purposes.

Comment 97: R-18-9A803: Treated wastewater is considered surface water under the SDWA: Treated wastewater suitable for discharge to a receiving surface water is not necessarily equal in quality to that of the surface water receiving it. Is it fully appropriate to grant it equality as a source, especially if it piped directly to an AWTF. Maybe so with the required WRF effluent quality assessment for use as AWTF source.

Response: The scope of the statement "treated wastewater is presumptively considered surface water" is limited to this rule only and when that water is being used as source under the AWP program.

Comment 98: R18-9-A803 (C): ATWs are defined as Public Water Systems. PWSs are required to have NSF compliance. Which processes in an AWP facility are required to be NSF 60/61 compliant?

Response: Only up to the downstream location of the wastewater treatment plant where wastewater characterization occurs the exemption to NSF 60/61 applies. Beyond that point all requirements compliance to NSF 60/61 applies.

Comment 99: R18-9-B804: Anticipating further discussion and potential modifications to the draft rules, MCESD will wait before modifying the Maricopa County Environmental Health Code to conform to new Advanced Water Treatment Operator Certification Requirements.

Response: Thank you for your comment.

Comment 100: R18-9-B805 (B) AWPRA Joint Plan: Delegated local authorities should be provided a copy of all AWPRA joint plans. If authority is delegated from the State to a County for regulation of PWS

facilities, would AWPRA need to include County in Joint Plan? Would the State inspect the WRF, and would the delegated county inspect the AWTF? Would two regulating agencies conduct combined inspections?

Response: ADEQ appreciates the comment regarding providing a copy of the AWPRA joint plan to delegated authorities. The AWP program will reside with ADEQ. While some counties may continue to have delegation for their drinking water facilities, the ADEQ will continue to regulate the AWP portion of the project. All AWPRA participants will have access to the joint plans.

Comment 101: R18-9-B806 (D) General Requirements, Confidentiality of Information: ARS 49-205 does not mention Local Authority (LA). Such data should be available to LA if LA is involved with the administration of the drinking water program.

Response: ADEQ appreciates the comment regarding making the data available to the Local Authority. The AWP program will reside with ADEQ. While some counties may continue to have delegation for their drinking water facilities, the ADEQ will continue to regulate the AWP portion of the project.

Comment 102: R18-9-B806 (D)(2) General Requirements, Confidentiality of Information: Consider adding the following text at (D)(3): Information which deals with the existence, absence, or level of constituents and contaminants in the wastewater used as a source for an AWP facility, or a drinking water treatment facility.

Response: As the term “level” does not define a specific threshold concentration, the presence of a contaminant means the source and discharges are captured by this statement.

Comment 103: R18-9-B807 (A) Inspections, Violations, and Enforcement: AWPRA facilities that are deemed a part of a PWS and are defined as a DWTF in the proposed regulation and thus, under current delegation agreement, could be regulated by a delegated county.

Response: Any County delegation agreements will be updated to add clarity as needed.

Comment 104: R18-9-B808 (A)(2) Record Keeping: The word “all” should be inclusive of untreated wastewater that is the source of the WRF that is subsequently treated by the AWP facility.

Response: ADEQ agrees with that.

Comment 105: R18-9-B809: This paragraph’s title “Compliance with Plans” pertains to Pilot and Demonstration scale testing. Consider utilizing a new paragraph title. This paragraph is written poorly. The paragraph begins by discussing pilot facilities. Consider dropping the term “Pilot” and utilizing the term Demonstration Test utilizing pilot and/or full-scale equipment and by defining a minimum and maximum flow rate. This paragraph, as written, allows an entity to build a plant and call-it a pilot and doesn’t limit where the treated AWP water may be distributed, including the potable water distribution system – a construct that defeats the purpose of pilot testing.

Response: Changes were made to the proposed rule to add clarity. However, as this subsection is covering all stages of design and type of permits, all of them are being referenced.

Comment 106: R18-9-B811: Outreach; Public Communication Plan: Local government is identified for community engagement, but it is not clear if an applicant is required to reach out to the County or delegated local authority.

Response: The draft rule in R18-9-B811(3) - *Community Engagement* states that an AWPRA applicant shall develop a list of all relevant stakeholders and interest-holders that they intend to communicate with. The list does include local health authorities and can include other groups. The AWP program will not be delegated to the counties and reside with the State.

Comment 107: R18-9- C812: Pre-Application Conference: Project Advisory Committee: The two topics of this paragraph should be separated. Pre-application conferences should not be a pre-requisite to establishing a project advisory committee. The paragraph states that the “PAC recommendations are advisory only”. It is not clear how ADEQ would utilize the Project Advisory committee's recommendations. Consider making it clear under which circumstances the project advisory committee's recommendations would be implemented. Consider making the project advisory committee a standing committee for consistency.

Response: The draft rule in R18-9-C812 - *Pre-Application Conference; Project Advisory Committee* requires the department to schedule a pre-application conference with the AWPRA to determine if a Project Advisory Committee (PAC) is required. The role of the PAC is to provide project-specific technical consultation. The PAC only provides advisory recommendations and the Department will use the recommendations to review the project and approve it as needed. The rule cannot specify each scenario of when a PAC is required, and therefore, it will be determined on a case-by-case basis.

Comment 108: 21. R18-9-C815 (B)(3)(a) Pilot Study: Objectives need to include numeric finished water criteria for each constituent, or contaminant.

Response: Other subsections of this article are addressing this requirement, such as in Section R18-9-C815(3)(g) or as in Section R18-9-C815(5), ADEQ does not believe a change to the draft rule is necessary.

Comment 109: R18-9-C815 (B)(3)(e) Pilot Study: The paragraph allows the entity to explain why a proposed pilot approach is representative of full-scale. ADEQ has not proposed any criteria to judge the validity or appropriateness of the explanation provided. For example, is ADEQ looking for dimensional similitude? Is ADEQ looking for representativeness of full-scale performance? Is any flow rate too small or too large?

Response: ADEQ has learned that an AWWA manual is under development to address scale differences and ADEQ will review and consider updating guidance as necessary.

Comment 110: R18-9-C815 (B)(4) Pilot Study: This paragraph, as written, suggests that the ISWC may not be finalized prior to the pilot effort. If the ISWC is not completed, the pilot test design may be inadequate for the constituents detected in the source characterization. There should be a requirement to finalize the ISWC prior to the submission of the Pilot Study Plan.

Response: Multiple sections in the rule require compliance with all numeric water quality criteria. The program is flexible, however, before water is served to the community, compliance must be demonstrated.

Comment 111: R18-9-C815 (C)(1) Pilot Study: This paragraph as written, requires sampling at a minimum of two locations (influent and effluent). This paragraph Inconsistent with paragraph R18-9-C815 C(2) and should be re-written to include the influent and effluent of each process necessary to achieve the pilot study objectives. As stated, only overall performance of the pilot is evaluated, not individual treatment processes.

Response: These locations actual chemical removal and pathogen removal must be demonstrated. However, at CCPs, performance needs to be demonstrated via surrogates and continuous monitoring parameters.

Comment 112: 25. R18-9-C816 (A)(2)(a)(iv) (3): The phrase "System Demand" is used. There is no way to separate AWP demand from water demand. System demand is probably not best word for these circumstances. Perhaps, "Selected Capacity" is a more appropriate phrase. There is no way to separate AWP demand from water demand. Consider re-wording at multiple locations within the draft rules.

Response: The Department explored other terms, but as system demand is an ambiguous term to both review and approve objectively, it has been retained.

Comment 113: R18-9-C816 (G): Pilot Study: This paragraph describes requirements for design documents to be stamped by an Arizona Registered professional engineer. This paragraph does not adequately address delegated design or vendor design, which is important when it comes to certification of pathogen LRV or chemical contaminant removal. MCESD has seen a recent AWP project related submittal where the engineering firm would not take responsibility for the vendors design or present calculations prepared by vendors with an AZ PE stamp. MCESD is advocating that the Engineer of Record be required to take responsibility/be assigned responsibility for coordinating all vendor designs and delegated process design. Such calculations and designs should be required to be included in design reports and not provided separately without a PE stamp.

Response: Subsection (G) of the draft rule has been updated to address this comment. The Department agrees and any change shall be verified via a letter from the company. Added Section G(4) under R18-9-C816 in the proposed rule. Verification letter from an independent party certifying that the performance of an equipment engineer is relying on the manufacturer for treatment credits. In addition, resume/credentials from the entity who is certifying the product. In-situ validation during pre-commissioning is required for vendor designs that claim treatment credits.

Comment 114: 27. R18-9-C817 (G): Demonstration Permit: Same comment as directly above.

Response: Subsection has been updated to address this comment.

Comment 115: R-18-9-C818 Compliance Schedule: Traditionally, ADEQ has used compliance schedule for un-built capacity items in APP permit beyond initial construction. This practice should not be

implemented for AWP. An AWP facility should not be permitted capacity for 10 mgd and only build 2, because source wastewater quality will change.

Response: Distribution to the public is prohibited without Department approval. Section R18-9-D821 (B) defines what a significant amendment is and when it is required, source water quality changes are specifically accounted for at the process level.

Comment 116: R18-9-D822 (C)(1)(i) Permit Term; Renewal: Consider adding DWTF as a location where excursions should be monitored.

Response: As several parameters are monitored continuously using surrogates, this is captured if an existing DWTF either partially or fully becomes part of this program.

Comment 117: R18-9-D822 (C)(10) Permit Term; Renewal: The phrase “ a renewed demonstration of compliance” should be defined to mean calculations or performance data or both.

Response: As this subsection references the minimum design criteria, this requirement already applies.

Comment 118: R18-9-E824 (B)(9) Enhanced Source Control: Requirements for septage hauler load sampling are weak. Adding a frequency of sampling or a percentage of loads or adding the term representative sampling should be considered.

Response: The rule has established minimum requirements to allow the utility to implement a septage hauler program that is specific to their treatment process. The rule embeds flexibility by requiring a load sampling program, without prescriptive elements, and requires records to be retained for a period of at least 5 years.

Comment 119: R18-9-E824 (B)(10) Enhanced Source Control: Requirements for early warning are weak.

Response: The proposed program is flexible and the minimum requirements in rule have to be met, such as online monitoring instrumentation, a process for notification, a response plan, and other measures are needed by the utility’s sewershed or treatment process, or by the Department. The Department believes that this approach is sufficiently protective of public health.

Comment 120: R18-9-E824 (B) (11) Enhanced Source Control: Qualifications for independent 5-year audit? Someone other than the design firm? Is the expectation that this independent party will examine process limits and design criteria relative to observed contaminants and applicable requirements?

Response: The intent of the rule is to have a third party audit the effectiveness of the ESCP in controlling discharges. The independent party conducting the audit will determine the level of information required to verify the effectiveness of the ESCP program. While the term “independent” has not been explicitly defined in the rule, however, if the design firm that designed is also auditing the program, the Department does not consider that firm to be an independent party. The objective of this effort is to ensure that the ESCP program is able to supply the designed quality of water to the downstream processes reliably.

Comment 121: R18-9-E824 (C)(1)(d) Enhanced Source Control: It is not clear what is meant by downstream processes. Does this include WRF, AWPTF, and DWTF?

Response: Yes, it includes all. The downstream treatment process includes everything that will treat the wastewater.

Comment 122: R18-9-E824(C)(1)(e) Enhanced Source Control: Should DWTF be added to this paragraph?

Response: ADEQ appreciates the comment. However, the Department believes the rule is clear. The 'downstream treatment process' statement can include the DWTF.

Comment 123: R18-9-E825 (A) Tier 1 Chemical Control; MCLs: Please verify which version of 40 CFR 141 Subpart G is being referenced. Arizona Administrative Code references 2014 for Drinking Water. Are we utilizing 2014 or something more recent?

Response: The 40 CFR 141 Subpart G is the most recent version published as 7-1-23 edition. <https://www.govinfo.gov/content/pkg/CFR-2023-title40-vol25/pdf/CFR-2023-title40-vol25-part141.pdf>. The Rule language has been updated based on this comment. The updated/current rule language: *"For the purposes of this Article, Tier 1 chemicals are the chemical contaminants that have "Primary Drinking Water Standards" under 40 CFR 141 (published July 1, 2023), including those with Safe Drinking Water Act-required Maximum Contaminant Levels or Treatment Techniques."*

Comment 124: R18-9-E826 (D) Tier 2 Analysis; Inherent to the use of projected daily load is the poor assumption that waste discharges are uniform. This is not a valid substitute for actual sampling. The calculation at D(3) normalizes the expected concentration and does not represent the peak concentration needed for the design of certain processes such as UV/AOP, or Air-stripping and would not represent the peak concentration in a RSSCT for GAC. This calculation method assumes no variation in the waste load and no variation in the wastewater flow. A peaking factor would need to be applied for treatment process design.

Response: The load is projected and is based on what is used, stored or discharged, the Department believes peaking factor definition is not explicitly required.

Comment 125: R18-9-E826 (D)(5)(a)(i)(2 through 4): Paragraphs 2, 3, and 4 appear to describe a regulatory approach that is applicant defined and dependent instead of a regulator defined approach. Is this kind of approach uniform or wise?

Response: Subsections 2 through 4 in the draft rule are about Bioassays. The Rule language has been updated for Bioassays/Bioanalytical studies. The new procedure adds clarity of when bioassays are needed.

Comment 126: R-18-9-E827 (C)(2) Introduction of Performance based indicator compounds: Nominate or physically introduce? Pilot only, or full-scale? This suggests that a potentially toxic chemical is going to be introduced at concentrations that may not be completely removed or removed to below a specific concentration. Have the pollution or public health consequences of this proposed approach been adequately considered?

Response: As specified in the proposed Rule Section R18-9-E827 (C) (1) and (2), the performance based indicators (PBI) can be selected from the pre-existing chemicals identified in treated wastewater or

introduced as a new chemical if no pre-existing chemicals are relevant as a PBI. During pilot study, verification will be done for the initially chosen PBIs to evaluate the treatment train performance. This will be repeated at full scale as well. All newly introduced chemicals would not necessarily be toxic, for example, sucralose that does not have known health impacts and is a useful PBI for RO. However, for other PBIs that are deemed problematic, such as 1,4-dioxane, when spiked for AOP, it shall be monitored under Tier 2 analysis with associated action level and diverted if necessary. Action levels or health advisory limits will be imposed to ensure compliance at the finished water location to keep the concentration below any health limit.

Comment 127: R18-9-E28 (C) Pathogen Control: A site-specific log reduction approach should not be allowed because it cannot account for community spread of communicable disease. If allowed, it should be included as a Minimum Design Requirements and two years of water quality analysis report of the proposed source similar to SDWA - LT2 rule, which public water systems are required to monitor for indicators of potential contamination. These monitoring activities help water systems assess the quality of their source water and determine the appropriate treatment processes needed to ensure the safety of the drinking water supply.

Response: Site specific approach will not change the goal. This approach allows for taking credit for some of the treatment that occurs at the wastewater treatment plant.

Comment 128: R18-9-E831 Annual Report: AWP annual report should be attached to the Public Water System Consumer Confidence Report. That will increase consumer knowledge of drinking water sources, quality, susceptibility to contamination, treatment, and drinking water supply management.

Response: Consumer confidence reports (CCR) currently require all of these components to be included. It will contain all information a traditional CCR will contain in addition to added specifics that capture the AWP program elements. As elements of the annual report are already a requirement under CCR, a change to the proposed rule is unnecessary.

Comment 129: R18-9-F832: Minimum Design Requirements: Regarding Pathogens – Minimum design requirements should include two years of proposed water quality analysis report of the proposed source similar to SDWA - LT2 rule, which public water systems are required to monitor, for indicators of potential contamination. These monitoring activities help water systems assess the quality of their source water and determine the appropriate treatment processes needed to ensure the safety of the drinking water supply.

Response: A two year sampling requirement similar to the SDWA LT2 rule is required for all facilities taking pathogen credits under site specific option.

Comment 130: R18-9-F832: Minimum Design Requirements: Regarding Pathogens – The repurposing of WWTF structures, basins, and processes into AWT facilities should be prohibited or unless expressly permitted by the regulatory agency.

Response: If the design follows drinking water standards, such as NSF 60/61, such re-purposing may be allowed on a case by case basis.

Comment 131: R18-9-F832 (A)(1)(c)(ii)(1 and 2): Minimum Design Requirements: Regarding Pathogens – The credits listed are not minimum design criteria. Credits are not a design requirement. Credits are applied to satisfy a minimum design requirement.

Response: The Department requires that any process that is receiving credit must be designed for a minimum of at least 0.5 logs and no less.

Comment 132: R18-9-F832 (A)(1)(J)(i): Minimum Design Requirements: Regarding Pathogens – It is not clear what “simultaneously followed” means in the following sentence: “The Operation Plan shall be simultaneously followed pursuant to R18-9F836”.

Response: Language has been updated to add clarity “The treatment train shall be continuously operated to achieve the log reduction value targets using validated treatment log reduction values and must conform to the Operations Plan pursuant to R18-9-F836.”

Comment 133: R18-9-F832 (A)(2)(b)(i): Minimum Design Requirements: Regarding Chemical Control - The requirement to have three diverse and separate treatment processes, including AOP and one (undefined) physical separation process is presented. This approach is poorly conceived and defined. The approach results in an unequal, perhaps arbitrary level of protection that may not result in compliance with performance requirements or be protective of public health. The approach outlined is one that you would not use in the design of a drinking water facility attempting to remove/or reduce specific chemical contaminants.

Response: This approach is designed to provide a flexible program. However, guardrails for the design of treatment for this program are introduced via these minimum requirements. This approach ensures that both chemical and pathogens are adequately removed using a multiple barrier approach that is used in the design of drinking water plants. Even though there are specific numeric criteria for compliance with all established water quality standards, these requirements ensure that the system is robust and employs a true multiple barrier treatment.

Comment 134: R18-9-F832 (A)(3)(d)(i): Minimum Design Requirements: Regarding Chemical Control, 1,4-Dioxane indicator. The use of 1, 4 dioxane, which is listed in the referenced health advisories and hence a Tier II chemical, is not necessarily protective of public health nor does it mean that MCLs for all contaminants can be met. AOP in groundwater remediation are not designed in this manner. AOP in water treatment are not designed in this manner. UV/AOP should be designed based on reactor specific destruction rate constants developed in the water matrix that they are treating so that a maximum contaminant concentration can be reliably reduced to below a target concentration (typically the MCL) without producing other regulated contaminants due to incomplete oxidation/mineralization. Even in the unlikely coincidence that 1,4 dioxane is appropriate today as a surrogate for chemicals in wastewater passing through AWT in Arizona, it is unlikely to remain representative going forward. Furthermore, if one designs or operates UV/AOP based on the concentration derived from the calculated contaminant load, it will underestimate the maximum design concentration.

Response: 1, 4 dioxane is one established benchmark to answer the question, what is enough AOP based on literature. However, it is not the only benchmark that an applicant can choose. Applicants are free to

choose any surrogate as long as they benchmark against this study. This ensures that surrogates are chosen with care.

Comment 135: R18-9-F832 (A)(3)(d)(iii): Minimum Design Requirements: Regarding Chemical Control, AOP Validation Report. Consider adding a requirement that destruction rate constants specific to the reactor being proposed are documented in the AOP validation report.

Response: The approach presented in this rule is based on sound literature reviews that are accepted in three other states.

Comment 136: R18-9-F832 (B) WRFs that deliver treated wastewater to AWTFs: These WRFs may be subject to MCESD review for ATC/AOCs, if MCESD's current approach continues.

Response: County delegation agreements will be updated as needed.

Comment 137: R18-9-F833 Technical, Managerial, Financial: This section mixes requirements for both the applicant and the facility. Consider reorganizing this paragraph into one or more paragraphs.

Response: This requirement is for AWPRA who will be the permittee, owner and operator of the facility. All the Technical, Managerial and Financial requirements shall be fulfilled by AWPRA who will be the applicant for the permit. The language in the draft rule is clear and no update is needed.

Comment 138: R18-9-F834 (C)(1)(b)(v) Total Organic Carbon Management: There is no Tier II on the CCL5 list. Not clear which chemicals are to be sampled.

Response: It is NDMA and formaldehyde. This subsection has been updated for clarity in the proposed rule.

Comment 139: R18-9-F834 (C)(1)(b)(vi) Total Organic Carbon Management: There is a requirement to comply with two CCL5 DBPs that have health advisories. Seems arbitrary since there are more than two. Can this be any two?

Response: It is NDMA and formaldehyde. These are the only two chemicals that are in the 2018 drinking water health advisories list. This subsection has been updated for clarity in the proposed rule.

Comment 140: RED-LINED COMMENTS: A red-lined draft with specific MCESD comments is attached. These comments were made by Jim Miller, Sujana Attaluri, Kenyata Mangar, and Eric Matson, and coordinated by me. Respectfully, and on behalf of the Drinking Water and Treatment Programs. Jim Miller, PE jim.miller@maricopa.gov D: 602-506-6933 Maricopa County Department of Environmental Services Water and Waste Management Division Water and Wastewater Treatment Program Manager

Response: The Department appreciates the detailed comments from MCESD.

Commenter: City of Flagstaff, Jolene Montoya (Comments 141 - 157)

Comment 141: R18-9-B804 D d-f – Couldn't these three statements be consolidated? "All AWTFs must have a certified DRC and certified AWT staff for operation, which included CCPs."

Response: The requirements under Section R18-9-B804 (d) and (f) are different. '(d)' states that all AWTFs must be operated by AWP operator while '(f)' states 'all CCPs shall be operated by an AWP

operator' which means if the pathogen/chemical credits are taken at the WRF then the WRF will require an AWP operator as well. The language in the Rule does not need an update.

Comment 142: R18-9-B806 C – What is the point of stating it shall be municipal wastewater in origin. Is that to preclude any other type of wastewater (i.e. strictly Industrial) from being part of an AWPRA?

Response: The Department included the word 'municipal' to clarify that the wastewater should be predominantly of domestic origin. It may, however, contain some commercial, and industrial wastewater. The rule is not intended to cover sewersheds that are strictly of industrial origin.

Comment 143: R18-9-C814 C – Some chemicals require grab samples (i.e. cyanide, oil & grease, pH, VOCs, etc.). Also APP permits only require grab samples.

Response: The Department believes this is the best approach to sample wastewater when this water is being used as a source for the AWP program.

Comment 144: R18-9-C815 B.6 – What if the facility already has an APP? Will the current permit need to be modified?

Response: Yes, if the existing WRF with an APP supplying treated wastewater to AWTF, then the existing APP will be modified to add the additional discharging information.

Comment 145: R18-9-D823 A.2 – add willingly to the statement.

Response: It is difficult to verify the demonstration of "willingly", i.e., intent of the information provided. The Department believes adding the term "willingly" is not necessary.

Comment 146: R18-9-E824 B.4.a – "meets one of more" replace of with or

Response: The rule was updated in the proposed rule.

Comment 147: R18-9-E824 B.4.a.ii & iv – Those two statements mean the same thing

Response: (ii) addresses no impact to a numeric water quality goal, but (iv) addresses non-compliance. The first is needed to understand the program and the later is needed to ensure compliance with a health benchmark.

Comment 148: R18-9-E824 B.4.a.i – Does that mean all the definitions of significant industrial users (EPA 40 cfr 403.3(v))? What would vi include because that code includes that statement ?

Response: It means it is a categorical industrial user or others that meets the requirements of the National Pretreatment Program (NPP). If the source meets the requirements of the NPP then it is considered a potentially impactful user per AWP. The source must meet the requirements of the AWP program. It is possible that the requirements of the NPP program are different.

Comment 149: R18-9-E824 B.11 – Need clarification. Is ADEQ not going to do the audits? Does the AWPRA have to hire the independent party or will ADEQ?

Response: The AWPRA will contract the audits required in this section. The rule requires an audit to be conducted every 5 years by 'an independent party'.

Comment 150: R18-9-E824 B.13 - Wouldn't it be easier to adopt by reference EPA code 40 cfr 403.5 (prohibited discharges)?

Response: The rule is designed to address Arizona standards. Although the EPA Title 40 of CFR under Section 403.5 are similar, utilities not subject to the NPP program can apply to be in AWP. Therefore, the requirements are embedded in the Arizona rules. In addition, the AWP program is to produce drinking water and transition from the goals of the Clean Water Act.

Comment 151: R18-9-E824 E – Why does the committee need to have members from the regulated dischargers? What is the purpose? What if the AWPRA doesn't have any partners?

Response: This is relevant to the enhanced source control program. The regulated community plays an integral role in working with the utilities to ensure proper implementation of the ESCP along with applicable emergency response procedures. This ensures all parties are in communication and appropriate procedures are being put in place. Additional clarity will be added to the guidance documents in development.

Comment 152: R18-9-E826 C - Need to specify if chemicals are on the EPCRA or CERCLA lists (or whatever ADEQ chooses). Otherwise, this reads as every single chemical at a location which could include dish soap, glass cleaner, toilet bowl cleaner, etc. Which would be a burden on source control programs to find out for every non-domestic discharger. How often does this list need to be generated?

Response: The procedure does not require every chemical, the initial list is derived from the 2018 drinking water health advisories. However, there may be chemicals that may interfere with processes that don't have a health advisory and need to be controlled.

Comment 153: R18-9-E829 F.3 - What is "all ammonia"? Right now AZPDES permits require an impact ratio for compliance at the WRPs and APPs don't have ammonia limits.

Response: This requirement applies as ammonia can/will be transformed to nitrates/nitrites. This requirement applies at the finished water location and not at where APP compliance is required.

Comment 154: R18-9-E830 B.2.viii - The enhanced source control program rules don't mention controlling pathogens. The pathogen control rules don't mention using enhanced source control programs as a control mechanism.

Response: There is no method to control pathogen shedding other than working with health departments and leveraging monitoring of surrogates. The focus is on treatment.

Comment 155: R18-9-E830 H – APP requires quarterly submittal results. The AWPRA ammonia & nitrate/nitrite requirements are quarterly. Shouldn't this match?

Response: The requirements of this rule are based on producing drinking water and have to adhere to drinking water standards. This is a necessary transition to move from complying from the requirements for the Clean Water Act to the Safe Drinking Water Act and AWP.

Comment 156: R18-9-E832 A.3.g – Needs clarification. What is the purpose of this cross-connection in relation to the AWTF? There are other rules for cross-connection control programs for drinking water systems, but these don't specify if it is for the AWTF only.

Response: All requirements contained in this section of the rule only applies to the AWP program.

Comment 157: R18-9-E834 C.1.b.iii – Check with ADHS, because method 5710C isn't on any of the approved methods lists.

Response: All requirements contained in this section of the rule only applies to the AWP program.

Commenter: City of Glendale, Megan Sheldon (Comments 158 - 185)

Comment 158: Please see attached letter for comments. August 7, 2024 [submitted online: <https://azdeq.commentinput.com/?id=VKBRkugJj>] Drinking Water Monitoring and Protection Unit Safe Drinking Water Section ADEQ Water Quality Division 1110 West Washington Street Phoenix, AZ 85007 RE: Initial Comments on the Draft Rules for Advanced Water Purification To Whom it May Concern, The City of Glendale (also referred to as “City” or “Glendale” herein) appreciates the opportunity to comment on the draft rules for Advanced Water Purification (AWP) program. City staff reviewed the following draft rules released by the Arizona Department of Environmental Quality (ADEQ) on July 9, 2024: Arizona Administrative Code (AAC), Title 18, Chapter 1, Article 5 – Licensing TimeFrames AAC, Title 18, Chapter 9, Article 8 – Advanced Water Purification AAC, Title 18, Chapter 14, Article 1 – Water Quality Protection Fees. Definitions (R18-9-A801) The definition of “advanced water purification” indicates the term is only applicable to the direct introduction of advanced treated water (ATW) into a drinking water treatment facility or public water system’s distribution system to consumers. However, the definition of “blending” seems to imply that raw water augmentation is also an option (mixing ATW with another water source prior to introduction into a drinking water treatment facility) but this “indirect” introduction of ATW would contradict the definition of AWP. Please clarify.

Response: Raw water augmentation is the introduction of ATW into a DWTF.

Comment 159: A wastewater collection system is considered an “advanced water purification responsible agency (AWPRA) facility”, but would not be part of an “AWP project”?

Response: It is part of the AWP project. See definition of “AWP project” or “Advanced Water Purification project” means all facilities related to the advanced treatment of treated wastewater to drinking water standards operating under an AWP permit or demonstration permit.

Comment 160: Is there a federal definition for “health advisory”? As the definition is currently written, the acceptable levels for a chemical substance could be determined by EPA, ADEQ, Arizona Department of Health Services, a county, a city or town, a non-profit agency, a university, or any other individual or group.

Response: The term health advisory (HA) is borrowed from the Safe Drinking Water Act (SDWA). The US EPA issues health advisories for contaminants that are not subject to a National Primary Drinking Water Regulation (NPDWR). HA values/levels identify the concentration of a contaminant in drinking water at which adverse health effects and/or aesthetic effects are not anticipated to occur over specific exposure durations (e.g., 1 day, 10 days, a lifetime). With regards to the question, who will determine a chemical -

A chemical becomes part of the established Tier II list only when a chemical is discharged by an impactful discharge and does not have any RfD or CSF, a health advisory in consultation with the agency is created.

Comment 161: Should "...that is not 'original drinking water'" be added to the end of the definition for "product water" or "produced water"?

Response: The Department does not believe it is necessary to make that change.

Comment 162: Who determines a "target chemical"? As the definition is currently written, a "target chemical" could be determined by EPA, ADEQ, Arizona Department of Health Services, a county, a city or town, a non-profit agency, a university, or any other individual or group.

Response: Target chemicals are initially established by the AWPRA and verified by ADEQ.

Comment 163: There is a definition for "interference" and a similar definition for "treatment interference." Will ADEQ delete the "or 'interference'" from the definition for "treatment interference"?

Response: The difference between the two is (i) (interference) results in non-compliance of finished water and (ii) (treatment interference) results in an outcome that does impact a finished water, just a/some treatment processes, but not the overall outcome requiring public notice of a diversion. Interference means a compromise to the minimum requirements of finished water standards that triggers both reporting to ADEQ and to the public (if not diverted). Change to the proposed rule is not needed.

Comment 164: Is "not" missing from the definition of "upset": "...one that does not result in a treatment train to not meet a performance metric"?

Response: By adding a "not" that would mean non compliance.

Comment 165: In addition, the City suggests adding the following definitions: Cross-connection (used at R18-9-B805(B)(6)) Indirect potable reuse Raw water (used in the definition of "raw water augmentation") Source water (used in the definition of "robustness"; used at R18-9-A803(B) and in other sections of the draft rule) Source water conveyance system (used at R18-9-F833(A)(2)(b)) Operator Certification (R18-9-B804) R18-9-B804(B) – Suggest adding "AWPRA" in front of "facilities" R18-9-B804(C)(3) – How many years will a committee serve as the chairperson or as other officers of the certification committee? R18-9-B804(D)(1) – What is the difference between d and e? R18-9-B804(D)(5) – Requiring all collection systems contributing to the AWTF to be operated by a Grade 4 collection system operator could be problematic for smaller systems.

Response: The term cross-connection has a standard definition, and the Department does not see a need to redefine it. As Indirect potable reuse is out of scope of this rulemaking, the Department does not see a need to define it. Raw water is untreated water that is used as a source for a drinking water facility permitted under SDWA. No definition for Source water conveyance system. A definition for source water was added. "Source water" means water that is characterized for chemical constituents and pathogens based on which treatment or source control is designed. Membership term is the same for all as described in subsection (4). Additional clarity has been added to R18-9-B804. AWP systems are complex and must be operated by the staff that are highly qualified.

Comment 166: As listed in R18-9-F833(A)(2)(b), the AWP program creates another conveyance system (treated wastewater being sent to the AWTF) if the AWTF is some distance from the WRF or WWTP. Does this “source water conveyance system” need to be operated by a Grade 4 distribution system operator or an AWT shift operator?

Response: There are no requirements placed on operators for the “source water conveyance system”. It is in the realm of management of assets akin to the management of raw water for a conventional drinking water plant.

Comment 167: Public Communications Plan (R18-9-B811) R18-9-B811(B)(1)(a) requires notification of all drinking water consumers of the AWPRAs intention to apply for an AWP Permit. What is the timeline for this notification?

Response: The rule does not establish a timeframe for notifying the public of its intention to apply for an AWP permit for treatment and distribution of ATW as a drinking water source. The utility must determine the adequate amount of time necessary to provide the public notice of its intention prior to applying for a permit.

Comment 168: R18-9-B811(B)(1)(b) requires maintaining communication with the consumers. How will ADEQ evaluate compliance with this requirement? R18-9-B811(B)(1)(c)(iv) uses the term “Department-approved method.” The City suggests adding “in R18-9-B811(B)(2)” to the end of this requirement. R18-9-B811(B)(3)(a) requires the involvement of local governments. How will ADEQ evaluate compliance with this requirement? R18-9-B811(B)(3)(b) requires the development of a stakeholder list to include “medical professionals.” How will ADEQ evaluate compliance with this requirement?

Response: The requirements in the draft rule under Sections R18-9-B811(B)(1)(b), R18-9-B811(B)(3), and R18-9-B811(B)(3)(b) are a requirement of the Public Communication Plan which must be submitted to ADEQ for review and approval. This plan and other elements of the AWP program are subject to inspections conducted by ADEQ to ensure compliance. In addition, the AWPRAs must certify the Public Communication Plan and include metrics demonstrating compliance with the requirements as noted in the draft rule in the same section. Thank you for the suggestion to add the requirements in R18-9-B811(B)(2) to the end of R18-9-B811(B)(1)(c)(iv), however, the Department does not see the need to make this change since the rule immediately addresses this requirement in the same section.

Comment 169: Enhanced Source Control (R18-9-E824) R18-9-E824(B)(4)(a) – Who determines whether a source “has potential to have serious adverse effects on public health”? Who determines whether a source “has potential to cause a violation of a Tier 1 standard”? R18-9-E824(B)(4)(f) – What is a “significant impact on ATW quality”? For example, a significant impact could be +/- 10% change in the chemical concentration but the ATW is still meeting drinking water standards. R18-9-E824(B)(4)(f)(i) – Who determines “all necessary sewer lines” to investigate?

Response: Under the Enhanced Source Control Program (ESCP) the AWPRAs must conduct an assessment of the sewershed to identify, control, or eliminate chemicals of concern (COCs) that may pose serious adverse effects on the treatment process or human health. Through this assessment, the AWPRAs must

work with non-domestic dischargers to understand the processes at the establishment and if they can impact the downstream processes, such as the collection system or treatment plants, or have adverse effects on human health. The ESCP rule in Section R18-9-824 requires the identification of potential for impact on violations. In addition, the AWPRA must provide a list of the impactful non-domestic discharges to ADEQ, updated as needed, and an annual report that details that violation and enforcement activities that occurred during the year. The AWPRA bears the ultimate responsibility to ensure compliance with their permit.

Comment 170: Water Quality Protection Fees (R18-14-102) While the City understands the complexity of reviewing an application for an AWP permit, an AWP demonstration permit, or a significant amendment to an AWP permit, a maximum fee should be specified in Table 1 of R18-14-102. Establishment of a maximum fee is necessary to ensure ADEQ works with the applicant to reach a final decision, rather than continue to charge an hourly rate.

Response: The Department understands the concern, however, AWP projects are very complex involving the review of Initial Source Water Characterization, Pilot Plant Study, Enhanced Source Control Program, WRF, and AWTF design and permitting. If the AWPRA is taking pathogen credits at DWTF, the review extends to include the DWTF as well. A thorough review involves a lot of different aspects of all these facilities which could take time and at this point it is difficult to estimate the maximum review time for these complex projects. Similar to other AWP program components, the Department is interested in gathering data for any improvement/changes/updates to the program and understands any challenges encountered during the review. Therefore, there is no maximum fee set up to bound the review.

Comment 171: Additional Comments Under R18-9-A802 (Program Review), will ADEQ notify the public when a review of the AWP program is triggered? Will the public be able to provide input on the program review?

Response: As with any rulemaking, any updates to the rules will result in the public being notified and will have an opportunity to comment and provide feedback.

Comment 172: In R18-9-A803, the term “source water” is used but is not defined under R18-9-A801.

Response: A definition for source water has been added to the proposed rule and is as follows:
“Source water” means water that is characterized for chemical constituents and pathogens based on which treatment or source control is designed.

Comment 173: Also under R18-9-A803, include a statement that these rules do not apply to indirect potable reuse.

Response: As the definition of “Advanced Water Purification” or “AWP” is the treatment or processing of treated wastewater to advanced treated water standards for the purpose of delivery to a drinking water treatment facility or a drinking water distribution system, the Department does not believe it is necessary to include that these rules do not apply to IPR.

Comment 174: Under R18-9-B806(B), there is an exception for WRFs to meet the lead-free standard. This exception needs to include wastewater collection systems.

Response: The Department does not believe it is necessary to include or make a note of the lead free exemption for the wastewater collection system as characterization of treated wastewater occurs downstream of the wastewater treatment plant. This is expected to capture any contamination. In certain cases, as some of the treatment, particularly for pathogens, would occur in the WRF, it was necessary to include the WRF exception for clarity.

Comment 175: R18-9-C814(C)(2)(a) requires “twelve monthly composite samples.” Does this mean a 24 hour composite sample one time per month for 12 months?

Response: That is correct.

Comment 176: R18-9-C816(A) – For each wastewater collection system contributing wastewater to the WRF or WWTP that is providing treated wastewater to the AWTF: How does the collection system provide a legal description, including latitude and longitude?

Response: The draft rule under Section R18-9-C816(A)(1)(c) - *Advanced Water Purification* states: The legal description, including latitude and longitude, of the location of all AWPRA partner facilities. The collection system is attached to some kind of partner facility which can provide the lat/long for the facility location and the sewer length and components of the sewer line.

Comment 177: How does the collection system estimate the expected operational life of the collection system when the lifecycle varies across the collection system? R18-9-D821(B)(1) –

Response: The expectation is to list the design life of the collection system.

Comment 178: The addition or closure of an industrial discharger could result in a change in the water quality (improved water quality or potentially impair water quality) of any unit of operation or the ATW. Is this considered a change to the enhanced source control program and require a significant AWP permit amendment?

Response: Any changes in the form of addition or removal into the AWPRA project shall be updated in the ESCP and verified that it meets the chemical control requirements. It may not require an amendment, only an update of the ESCP plan in some cases.

Comment 180: This could result in frequent significant amendments at a high cost to the permittee and a substantial effort by ADEQ staff. Please clarify this requirement.

Response: The Significant amendment requirements are noted in rule. Not all changes will result in significant amendments. The AWPRA will work with ADEQ to determine certain scenarios that may lead to the need for a significant amendment. As the goal is to produce drinking water, the Department believes it is a necessary step.

Comment 181: R18-9-D822(C)(1)(a) – Please provide more information on how the permittee shall monitor excursions at the collection system.

Response: The early warning systems requirements are located in R18-9-E824 - *Enhanced Source Control* and requires an early warning system designed to attain advance notice of an incoming COC peak. The

intent of the rule is to allow the utility the flexibility to establish an early warning system specific to their community.

Comment 182: R18-9-D822(C)(4) – Documentation of any periods of operator absence within the most recent AWP permit term is unnecessary. R18-9-B804(D) already requires the Direct Responsible Charge or a shift operator to operate the AWTF at all times.

Response: The Department understands that the requirement is to have the DRC or shift operator at all times, but during the permit renewal the Department would like to get the summarized information on the absence of the operator. Similar to other AWP program components, the Department is interested in gathering data for any improvement/changes/updates to the program and understand any challenges the facility may have encountered with regards to operator certification. Therefore this requirement was added under the permit renewal section.

Comment 183: R18-9-E826(B) and (C) – Should these reference “impactful non-domestic dischargers” rather than “all non-domestic dischargers”?

Response: No. This is step 1 which requires a list of all nondomestic users.

Comment 184: R18-9-E831(8) – Change “sight” to “site” Recommend the addition of language about protecting site-specific and process-specific information as critical infrastructure.

Response: The language was updated in the proposed rule.

Comment 185: R18-9-F832(A)(3)(a) – Given there is already a Stage 2 DBP Rule for TOC removal, this requirement may be repetitive. R18-9-F382(A)(3)(d) – It is understood AOP can help to breakdown organic compounds of concern and the draft rule requires an AOP treatment process in the pilot and full scale treatment trains. If organic compounds are found to be at relatively low concentrations, can the requirement for AOP be waived?

Response: The federal framework where Stage 2 resides did not anticipate the use of treated wastewater as a source for drinking water. Hence, those requirements are inadequate in terms of a framework for TOC management. AOP is a blanket approach to address a whole range of unregulated organic compounds.

Commenter: Sierra Club, Sandy Bahr (Comments 186 - 192)

Comment 186: Please consider these comments from the Grand Canyon Chapter of the Sierra Club, a passionate and dedicated group of individuals who are deeply committed to the protection and preservation of Arizona's natural resources, particularly our cherished waterways. Sierra Club is one of the nation's oldest and most influential grassroots organizations whose mission is “to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments.” Sierra Club has more than 3.7 million members and supporters with 35,000 in Arizona as part of the Grand Canyon (Arizona) Chapter. We understand that the Arizona Department of Environmental Quality (ADEQ) is advancing water purification technologies in order to attempt to address the growing challenges of water scarcity and contamination. However, we have

several concerns and recommendations regarding potable water reuse generally and the Draft Rule specifically, which are essential to ensuring the protection of public health and the environment.

Response: ADEQ values your input and appreciates you taking the time to review the Advanced Water Purification (AWP) Draft Rule and provide us with your thoughts to help shape Arizona's water future. Our goal is to introduce Advanced Water Purification as a viable option for Arizona communities, ensuring a safe, reliable, and sustainable drinking water supply.

Comment 187: Stringent Water Quality Standards: The Draft Rule must establish stringent water quality standards that exceed the minimum requirements of the Safe Drinking Water Act. Advanced water purification technologies should ensure the removal of not only common pollutants but also emerging contaminants, including pharmaceuticals, microplastics, endocrine-disrupting chemicals, and per- and polyfluoroalkyl substances (PFAS). Continuous monitoring and rigorous testing protocols should be mandated to ensure the public is protected from these contaminants.

Response: The program requirements contained in the proposed AWP rule go far beyond the requirements of SDWA. The Tier II program is specifically geared to address any contaminants that will impact human health and are not currently regulated within SDWA. The current proposed program is both flexible and robust to address this specific issue.

Comment 188: Public Health Safeguards: Public health must be the top priority in the implementation of any water purification process. We recommend the inclusion of comprehensive health risk assessments that consider both short-term and long-term exposure to recycled water. Additionally, the rule should require transparency in reporting water quality data to the public, ensuring that communities have access to information about the safety of their drinking water.

Response: The program requirements contained in the proposed AWP rule go far beyond the requirements of SDWA. For example, the Tier II chemical program is geared to address contaminants that will impact human health and are not currently regulated within SDWA and may be of concern in an AWT train. Short term non-cancer and cancer risks are being assessed via the definition of health advisories for chemicals of concern. The program has a monitoring component for chemicals of concern and control component via enhanced source control, removal component via wastewater treatment and advanced water treatment. More specifically, processes such as AOP are blanket processes designed to remove numerous organic compounds that may be present. All pathogens are considered to have acute health risks and are managed accordingly. In addition, more stringent monitoring requirements for nitrogen address the increased risk and ensures that short term risks are mitigated effectively.

Comment 189: Environmental Considerations: Advanced water purification processes can have significant environmental impacts, including energy consumption, chemical use, and waste generation. A thorough environmental examination of any proposed purification project should be conducted. This review should include strategies for minimizing the carbon footprint, reducing chemical usage, and managing waste by-products responsibly. Reclaimed water is currently used for maintenance of landscaping, and in some cases for creation and/or improvement of wetlands and riparian habitats. The cost/benefit analysis when considering AWP projects should include determining whether the use of

energy, chemicals, etc. is worth the added potable water. Reclaimed water currently being used for wetlands and riparian habitats should not be reallocated to potable reuse.

Response: The AWP program to deliver safe drinking water was developed with public health as the primary controlling factor, considerations towards reducing the environmental footprint was also factored in as these were part of the guiding principles (reasonably affordable, protective of the public health and the environment, specific practical, flexible and implementable) that governed the development of these rules.

Comment 190: Community Involvement and Equity: It is crucial to involve local communities, especially those disproportionately affected by water quality issues, in the decision-making process. We encourage continued opportunity for public engagement, including public hearings and comment periods. Additionally, measures should be taken to ensure that advanced water purification projects do not exacerbate existing inequalities in water access and quality.

Response: The Department appreciates the comment and is working to ensure the public is educated and aware of AWP. ADEQ has developed a webpage that provides the public with general information regarding AWP. This webpage addresses the AWP program and can be found on the ADEQ website at www.azdeq.gov/awp. There, the public can find information about AWP including the draft rule, what AWP is and why it is important for Arizona. In addition, other items available to the public include a fact sheet, an infographic, and answers to frequently asked questions (FAQs) to common questions received by the agency are available.

To assist utilities in developing an AWP outreach program, ADEQ is working with an outside contractor to develop a Public Communication toolkit that will include templates and guidance that will be available to all utilities wishing to participate in the AWP program. This toolkit will provide information on approaches to engage the public and guidance to develop a communication plan specific to a community interested in pursuing AWP. The templates, examples, and infographics will be available for use by the utility to allow them to develop public communication and outreach catered for their community's needs.

Comment 191: Current Use of Reclaimed Water: As mentioned above, reclaimed water is currently used for non-potable applications such as irrigating golf courses, parks, and other green spaces. Additionally, some areas of the state possess incredibly valuable and significant wetland and riparian habitat created, supported and/or improved through the use of effluent, such as some reaches of the San Pedro River in the southeastern corner of the state, Tres Rios Wetlands in Phoenix, Gilbert Riparian Preserve, and the Santa Cruz River in Tucson. While there is significant pressure to expedite the implementation of Advanced Water Purification (AWP) systems, we must make sure that the appearance of doing something is not prioritized over doing what's right. It is crucial to recognize that AWP is not a panacea and may not yield the net gain to the water supply initially anticipated due to these existing uses of reclaimed water. Therefore, it is essential to approach this process with care, thoroughness, deliberation, and inclusivity in determining the best path forward.

Response: ADEQ concurs and supports approaching the development of AWP facilities with care, thoroughness, deliberation, and inclusivity.

Comment 192: Contingency Planning and Emergency Response: The rule should require comprehensive contingency planning to address potential system failures or contamination events. Emergency response protocols should be developed and regularly updated, ensuring that rapid and effective measures can be taken to protect public health and the environment in case of an incident. In conclusion, while we recognize the significant water quantity challenges we are facing in Arizona, it is imperative that potable reuse be approached with caution and prudence, and that the Draft Rule incorporate robust safeguards to protect public health and the environment. We urge ADEQ to consider our recommendations and to engage with stakeholders to develop a rule that reflects the highest standards of safety, sustainability, and equity. Thank you for the opportunity to provide comments on this important issue. We look forward to continuing our work together to ensure the availability of safe and clean water for all.

Response: The Department is thankful to you for your time and comments. The rule has specific requirements for how to manage excursions or deviations from required water quality goals. AWP systems are required to have continuous monitoring in addition to diversion and shut plans. These will be reviewed periodically and updated as part of the permit renewal process.

Commenter: City of Phoenix, Troy Hays (Comments 193 - 197)

Comment 193: I am writing on behalf of the City of Phoenix to express our appreciation for the opportunity to provide feedback on the Arizona Department of Environmental Quality (ADEQ) Advanced Water Purification Draft Rule. We recognize and share ADEQ's dedication to develop rules that safeguard public health and economic viability; and that allow for the permitting, operation, and direct use of Purified Water. We also recognize the shared understanding that this new source water will significantly contribute to providing sustainable water resources across Arizona and Phoenix. Ultimately, the beneficial use of this water will be regulated by the Safe Drinking Water Act (SDWA) and as such, new rules proposed by ADEQ should not intentionally or unintentionally create standards or requirements that exceed the scope of the SDW A. Based on the extensiveness of the rule and the limited time to review the draft rule we are unable to fully comment. However, below are summary comments for your consideration.

Response: The Department is thankful to the City for their time and comments.

Comment 194: R18-9-B804 Advanced Water Treatment Operator Certification. In general, we support the requirements necessary to obtain an A WT operator certification and appreciate the flexibility of the water and wastewater treatment operator certification prerequisites. We do however have concerns with redefining terms, such as, the Direct Responsible Charge and Shift Operator; and the time that they must be present at the A WTF. These terms are already defined in the existing Drinking Water Rules. Our recommendation is that ADEQ not redefine these terms, but, rather incorporate them into the A WP rules by reference to the existing Drinking Water Rules.

Response: The definition for 'Direct Responsible Charge' (DRC) is similar to the existing rule which is defining responsibility of DRC. There is no definition of 'shift operator' or 'absence' in the existing operator's certification rule. Considering the variability of source water for the AWTFs and treatment trains being complex, the operator certification requirements and definitions which are added in AWP

Rule are specific to AWT operators for AWP program and are needed. The proposed rule R18-9-B804(D)(1)(a) defines the requirements for DRC.

Comment 195: R18-9-E824 Enhanced Source Control and R18-9-E826 Tier 2 Chemical Control. We would like to discuss with ADEQ the full impact and need to further regulate "nondomestic dischargers" and Tier 2 Chemicals beyond the existing federal and state rules.

The proposed rule appears to create arbitrary requirements to identify, catalog, test, monitor, and report constituents that are not regulated by the Safe Drinking Water Act (SDWA) and have no maximum contaminant level (MCL) or health-risk based standard. As such, the proposed requirements may not result in improved health outcomes and could create a financial burden on ratepayers. The proposed Tier 1 chemical control requirements provide more than sufficient safeguards to protect public health along with the Tier 3 chemical control.

Response: Tier 2 chemical monitoring is required for AWP program as these chemicals have adverse impact on public health. While not currently regulated under the SDWA, contaminants such as N-Nitrosodimethylami (NDMA) or 1,4-Dioxane among others are classified as carcinogens by the US EPA in the form of health advisory (HA). Published articles report higher concentrations of Tier II chemicals in treated wastewater than traditional drinking water sources (surface water or groundwater). In addition, for AWP projects, without any environmental buffer, pulses of low molecular weight compounds may pose chronic and subchronic threats to public health. Furthermore, both states (California and Colorado) with AWP (called Direct Potable Reuse or DPR) rules, require the monitoring of Tier II chemicals. ADEQ clarified in the Rule which focuses on chemicals based on the established Health Advisories (HA) and/or Reference Dose (RfD) for specific chemicals that are listed in the 2018 edition of the Drinking Water Standards and Health Advisories Table. In addition, ADEQ also clarified in the Rule Section R18-9-E824: Enhanced Source Control that AWPRA shall generate a list of impactful non-domestic dischargers from the potentially impactful non-domestic dischargers list, instead of focusing on all non-domestic dischargers and the contributing chemicals from the impactful non-domestic sources.

Comment 196: Article 8 Advanced Water Purification. References or requirements within Article 8 and RI 8-9-E824 through RI 8-9-E831 regarding public notice of exceedances that are not Tier 1 should be reconsidered. This includes, but is not limited to, Tier 2 and Tier 3 Action Level and Alert Levels, Enhanced Source Control constituents, and all other related references and constituents. Testing, monitoring, and public notice of constituents that have not gone through the Environmental Protection Agency's rigorous health-risk based assessments and that are not regulated by the SDWA will result in additional economic burden placed on ratepayers with no additional public health outcomes.

Response: AWPRA is required to provide public notification for Tier 1 chemicals as specified in Section R18-4-119 and 40 CFR Section 141.201 and for Tier 2 chemicals exceeding action levels. ADEQ has updated the Public Notice process as specified in the Rule R18-9-E829 (D) (3) (e)(ii). Public notification for Tier 2 will only be required if an actual exceedance occurs and the water is distributed to the public (if diverted, public notification is not required). If the non-compliant water exceeding safe level is distributed to the consumers, public notification is required to ensure that consumers know if their water is safe and to alert them to any potential health risks.

Comment 197: The City of Phoenix is committed to working collaboratively with ADEQ on the development and eventual approval of Advanced Water Purification rules. We strive to achieve a regulatory framework that provides ADEQ with the appropriate level of oversight, while also affording utilities the flexibility to design and operate facilities in a manner that aligns with the health-risk based requirements of the SDWA and offers economically viable options for our ratepayers. We look forward to continuing our dialogue with ADEQ and finding mutually agreeable solutions that uphold our shared commitment to providing safe, affordable, and sustainable water for Phoenix and communities across Arizona. Troy Hays, Water Services Director, City of Phoenix

Response: Thank you for the comment. ADEQ appreciates the City's participation in the rule development process, supporting ADEQ with data requests and making staff available for answering questions when needed. In addition, ADEQ is thankful for the City's review of the rule as well.

Commenter: WaterReuse Arizona (Comments 198 - 303)

Comment 198: General Comment: AWP Guidance - An AWP guidance is referenced in the rule in several places but has not been published. By including reference to a guidance document, the guidance potentially becomes a rule and yet the guidance has not been published for review. We recommend publishing as soon as possible and to limit impact on the final rule schedule.

Response: The rule has been updated and the reference to the guidance documents have been removed. All guidance documents will be made available at a later date once completed.

Comment 199: General Comment: Definitions. There is a list of defined terms. Use of these terms throughout the rule improves the clarity of the rule in later sections. Missing terms should be verified and added to the list.

Response: The defined terms were reviewed and any undefined terms have been added or updated where necessary in the proposed rule.

Comment 200: R18-9-B804. Advanced Water Treatment Operator Certification. We recommend flexibility in the operator certification process for Advanced Water Treatment Operators to allow Grade 3 wastewater treatment operators to qualify for the new certification. There is a significant shortage of operators in ADEQ's database and this would increase the availability to train and use shift operators.

- a. We recommend that the language should be adjusted to state that the DRC or their designee must be available at all times.
- b. The rule requires that collection systems that supply an AWT must have a Grade 4 Collection System Operator. Is this feasible given the upstream cities that may discharge into a WWTF and then into an AWP?
- c. Section J – Reciprocity: Please provide clarity on reciprocity. The only current example of a validated AWT operator examination is that of CA/NV AWWA. The regulation implies that AWT certification in Arizona will be one single grade whereas the Californian system includes three levels (AWT3/AWT4/AWT5). Please confirm that CA/NV AWWA AWT3 is sufficient for consideration of reciprocity.

Response: The Department has updated the eligibility requirements for the AWPO certification in the proposed rule to include Grade 3 Wastewater Treatment (WW) operators. The Department strongly

believes that drinking water treatment and operational knowledge must be assessed for wastewater operators. The AWPO exam for Grade 3 and Grade 4 WW operators will include a drinking water component that tests knowledge equivalent to the Grade 3 drinking water treatment operator. The following requirement is added under R18-9-B804 (F)(6): *“For applicants with a Grade 3 or Grade 4 wastewater treatment operator certification, the examination shall include an additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator examination”*.

a. The Department believes that the DRC must be on site at all times when the facility is in operation. With the shorter residence times such as 45 minutes, it is important to have the DRC on site while the facility is in operation to make any crucial decisions.

b. If explicit treatment is not provided, chemicals must be controlled. In the case of the AWP program that occurs via the enhanced source control program and is a component of all AWP projects. Under enhanced source control, an assessment of the sewershed is required to not only identify but to control or eliminate chemicals of concern which could have adverse effects on the treatment process or human health. There is also a requirement for an early warning system which will need skilled operators. The current requirements for the wastewater operator programs both for collection systems and for treatment were geared towards compliance with Clean Water Act, this additional requirement if based on the end goal of producing potable water. The Department believes that a highly skilled and knowledgeable operator with collection system certification is necessary for source control through the collection system. Therefore, the operator with the highest grade, i.e., Grade 4 for the collection system is needed for AWPRAs facilities.

c. The proposed rule allows certification from another jurisdiction whose examination is substantially equivalent to AWPO examination in Arizona and which is validated by the Department. Upon finalizing the AZ AWPO certification examination, the Department will review if the AWWA - CEWA CA-NV Section Grade 3 exam is valid for AZ AWPO certification. The rule is being written in a flexible format. As exams are being developed, the Department cannot provide a definite answer at this point in time.

Comment 201: R18-9-C817. Demonstration Permit. The process for obtaining a Demonstration Permit should be streamlined to encourage the ability of utilities and their public to interact prior to submission of a full-scale AWP and facilitate operator learning and training on an operating system. R18-9-C817 mandates a Demonstration Permit must meet all requirements of a full-scale permit, except for the full-scale verification. This would mean that the one-year of ISWC and the pilot study for one-year would be required. This sequential approach would lead to a 2-year delay and likely have the Demonstration Permit coming barely before the full-scale permit. Risk assessments should consider the volume of water used for taste testing which is small and typically one-time

Response: Changes were made to the proposed rule to allow even greater flexibility. However, prior to serving the public the demonstration facility must demonstrate that they are able to successfully achieve the water quality goals reliably. While that approach may increase the testing time period, the facility can simultaneously conduct the ISWC and design/build the demonstration facility using the initial results without following a sequential approach. The testing period has been reduced under the Departments discretion to at least 6 months in some cases. The Rule language has been updated and the testing/piloting requirements are updated to 6 months from one year in some cases. The following language is added to the Rule:

R18-9-C817 (C)(1)(a) - *“The piloting requirements in R18-9-C815 may be abbreviated at the Director’s discretion, but may not be of a period of less than 6 months.”*

Comment 202: R18—9-E824. Enhanced Source Control requirements need work. There is a reference to a Guidance Document in this section which then makes the Guidance Document part of the rule. However, the Guidance Document is not available for review with the rest of the rule.

Response: The reference to the guidance document has been removed. The Department will make guidance documents available for the stakeholders when completed.

Comment 203: We would recommend using the term Impactful non-domestic dischargers throughout which is in the definitions section. Not all non-domestic dischargers have the potential to affect the AWPRA’s ability to effectively treat and monitor

Response: The Department believes that to identify which discharger is impactful, one needs to know the entire set.

Comment 204: R18-9-E824. Collection System Early Warning Monitoring. B (10) (a – e). The regulation here seems to be more in line with California's DPR regulations in terms of requiring an early warning system for an advanced notice of a COC peak. This is more prescriptive compared to states such as Colorado, which does not specifically require early monitoring systems and relies instead on periodic compliance reports, slug control plans for specific dischargers, notifications of upset and random inspections by the “DPR Supplier” (referred to as AWPRA in ADEQ regulations). Below are a few specific comments for consideration: 1. The prescriptive language in ADEQ regulations might incur additional burden on utilities which already have a good sense of sewershed characterization in terms of the qualities and quantities of discharges. Warning technologies are not sophisticated nor reliable enough yet to be able to detect individual COCs. CA regulations call for monitoring indicator compounds and surrogates but do not broaden it to COCs. Simplifying this to indicators and surrogates to match CA regulations would be easier for early warning systems to be able to meet the regulatory requirements.

Response: The Department has not prescribed a specific method, technology, or process except that some form of early warning system is required. Based on conversations with Singapore, El Paso, Texas, and others, the Department believes that this is a necessary element in the rule.

Comment 205: Moreover, the term "peak" is not well defined and can be grounds for misinterpretation. Wastewater flows are diurnal in nature, so is a "peak" based on a signal to noise ratio of 3? Maybe a 3X or 2X the average? Some other control setpoint? As written, there is no way to validate what a "peak" means and who determines what constitutes a "peak"

Response: The requirements are not prescriptive other than highlighting that there are peaks and plans must be put in place to mitigate or address them. The definition of a peak is beyond the scope of this rulemaking.

Comment 206: R18-9-E826. R18- 9-E826. Tier 2 Chemical Control D (1-7) This section is the most prescriptive and adds extensive requirements for utilities instead of offering this as guidance. 1. Both CA and CO have adopted a more high-level approach by requiring the chemical inventories to be based on

MCLs, notification levels, health advisory levels, etc. issued by federal and state agencies. For Tier 2 chemicals, in the absence of such guidance limits, AWPRA can refer to resources such as NWRI and WRF publications for determining alert and action levels for a chemical, as recommended by CO (Section 4.5.1 in DW016 Direct Potable Reuse Policy).

Response: The Rule has been updated with specific Sections R18-9-E826 (D) (5) and (D) (6) for chemicals that do not have established health advisory (HA) values in the EPA 2018 HA list. Calculated threshold concentrations have been included for known or common chemicals with no HA but with RfD or CSF in the EPA 2018 list. For chemicals that have no values at all (no HA, RfD, or CSF), relevant health advisories in peer-reviewed literature and/or federal or state databases will be used.

Comment 207: In the absence of health advisory levels, ADEQ regulation is asking utilities to assume the role of toxicologists and calculate risk levels for Tier 2 chemicals based on RfDs and CSFs. Putting the onus on utilities to complete a risk evaluation and set a contaminant threshold value for any new contaminant carries dangerous precedent because such rulemaking should by default also carry over to any drinking water utility with potential for source water contamination from upstream storage sites. Thus, the regulatory agency is essentially bypassing the confines of the SDWA and creating an environment of self-imposed regulations and action. Instead, the onus of establishing risk thresholds should be with regulators, not utilities, to ensure uniform accountability across the water community. If ADEQ intends to enforce these calculations, one approach is to establish an expert panel within ADEQ to compile such a database and provide guidance to utilities. Imposing the complex risk calculation tasks on utility personnel is not only risky but also highly inefficient as multiple utilities will be going down the same path. For instance, in response to California's draft regulations on source control (Section 64669.40), WaterReuse California has asked the Water Board to develop a Water Board Expert Panel that will identify CECs and threshold levels for DPR projects. Until then, DiPRRAs will monitor for CECs (https://watereuse.org/wpcontent/uploads/2024/02/2024-01-26_One-pager_WRCA-DPR-MajorProvisions.pdf).

Response: The Rule has been updated to remove the calculation of health advisories based on RfD and CSFs. Specific Sections R18-9-E826 (D) (5) and (D) (6) have been added for chemicals that do not have health advisory (HA) in the EPA 2018 HA Table. Threshold concentrations are calculated by ADEQ and added to the Rule for common chemicals with no HA in the Table, but with RfD or CSF.

Comment 208: The requirement to use bioassays to determine a chemical's alert and action is almost impossible with the current state of science. There is still a lack of a reliable framework backed by research consensus that can help us determine specific alert and action levels from bioassay responses. The greatest success thus far is with estrogen receptor and aryl hydrocarbon receptor assays, but these assays do not capture other toxicity endpoints that are still being studied. Moreover, bioassay responses are not directly linked to human health endpoints, can be highly site-specific, are susceptible to phytoestrogens (e.g., soy products) and other non-relevant concomitant chemicals, and might not even be reproducible for the same water matrices. The complex synergistic and antagonistic effects of chemicals present in a wastewater matrix makes it difficult to identify the specific chemical and its alert and action level concentrations. With current language it appears ADEQ requires utilities to conduct bioassays specifically with each individual chemical (that doesn't have an MCL/RfD/CSF), which can

produce a completely different response compared to a mixture of chemicals. If the chemical in question produces a positive result and the overall wastewater matrix produces a negative result, or vice versa, how should the utility interpret this data? How will ADEQ guide the utility in such scenarios? While bioassays can be recommended to understand the high-level toxicity profile as in CA's case, it cannot be relied on for setting alert and action levels without standardized guidance from federal and/or state agencies. Again, the onus should not be on utilities here, as each utility might get a different response and go in different directions.

Response: The draft rule language has been updated for when Bioassays/Bioanalytical studies will be required. Specific sections in the proposed rule R18-9-E826 (D) (5) through (D) (8) have been added for chemicals that do not have established health advisory (HA) values in the Safe Drinking Water Act - Health Advisories Table. To make the process less burdensome to the utilities, threshold concentrations or HA values are calculated by ADEQ and included in the proposed rule for known or common chemicals with no HA but with RfD or CSF. For chemicals with no values at all (no HA, RfD, or CSF) in the EPA HA Table, relevant health advisories in peer-reviewed literature and/or federal or state databases will be used. For any other unknown chemicals that do not have an established HA in the Safe Drinking Water Act - Health Advisories Table, or do not have an RfD or a CSF in any peer reviewed literature, federal or state databases (no established values at all), and are being discharged by an impactful non-domestic discharger, the AWPRA shall conduct bioanalytical studies and/or bioassays and determine the health risk of the chemical. The applicant may consult with the department and the Project Advisory Committee in this determination.

Comment 209: There is a significant concern about having utilities set their own limits for Tier 2 constituents from two aspects: 1) Arizona and many utilities are facing a significant water shortage. This requires additional water supplies to be investigated and established. The concept that the AWP rule is optional is not reality for many utilities and therefore, the cost of the program needs to be recognized and understood. Based on ARS 41-1055, B.3(a), we would suggest that the least cost approach to protecting public health must be used in this regulation. Detailed epidemiology and bioassays for various constituents that are not currently regulated by EPA or ADEQ places a significant cost burden on utilities that do not specialize in this area. Utilities establishing their own limits is not part of their normal responsibility and belongs instead with the government. Utilities that under regulate will be at risk for not protecting public and those that over-regulate may not be able to afford their proposed programs. As written now, the risk assessment for many utilities will cause a needed program to go unutilized. Above, we offer a recommendation that is potentially a better balance for this task.

Response: The Rule language has been updated to reduce the calculation workload to a minimum. A specific section has been added to the Rule Sections R18-9-E826 (D) (5) and (6) which includes the calculated threshold concentration for chemicals for which no established Health Advisory (HA) values are available under the EPA HA table. Bioassays/Bioanalytical studies are required only when a chemical does not have an established HA in the Safe Drinking Water Act - Health Advisories Table, or aren't listed in Sections R18-9-E826 (D) (5) and (6), or do not have an RfD or a Cancer Slope Factor (CSF) in any peer reviewed literature, federal or state databases (no values at all), and are being discharged by an impactful non-domestic discharger. Only in that case, the AWPRA shall conduct bioanalytical studies and/or bioassays and determine the health risk of the chemical. The applicant doesn't have to develop

these studies alone, the rule allows for the creation of a Project Advisory Committee (a group of experts) to help in this determination.

Comment 300: R18-9-F834. TOC Monitoring Should Be a Tool. ADEQ should not set a TOC limit. TOC monitoring can be an operational tool, but not a limit. SDWA regulations already adequately address TOC and disinfection byproducts.

Response: The federal drinking water framework did not anticipate the use of treated wastewater as a source for producing potable water and is not adequate enough to manage TOC that originates from wastewater. In addition, both California and Colorado have specific rules with established TOC limits for controlling and limiting wastewater derived TOC.

Comment 301: Advanced Oxidation. Advanced Oxidation Processes (AOP) should not be specifically required so as to not stifle innovation. 1,4-dioxane spiking is not necessary to confirm process performance, given the state of the AOP technology.

Response: The Department believes AOP is necessary as part of the treatment train. In addition, both states such as California and Colorado have an AOP requirement.

Comment 302: Permitting and Administration. ADEQ should not establish Project Advisory Committees – it confuses the permitting process. Stakeholder costs and burdens are not adequately considered.

Response: Project Advisory Committee is only required when external expertise is needed, such as bioassays or taking credit for the wastewater treatment plant for treatment, and is meant to aid with the decision making process. Additionally, striking the section on Project Advisory Committees would not have the effect of removing ADEQ's ability to seek technical input from external parties, it would only remove stakeholder input on the composition of the members of the committee.

Comment 303: We recommend that ADEQ not delegate AWP permitting to county agencies.

Response: ADEQ does not plan to delegate the AWP program to county agencies.