

Well 15 Public Information Meeting #2 – Discussion Notes

Thursday, September 8th
East Madison Community Center
Attendees: 19 (members of the public)



DISCUSSION NOTES:

Q: What will it take to “kill the PFAS off”, instead of putting it into a landfill and waiting for it to make its way out again into the environment and community?

A: (Water Utility General Manager, Krishna Kumar) That is a great question, one of the biggest challenges we are currently facing is what to do with the PFAS once we have trapped it or filtered it out of the water. Our first goal is to treat the water and remove the PFAS, then we are working to dispose of it utilizing the best available technology. The current philosophical question for the community is, if we are not happy with the current disposal options is that a reason to stop the journey, to stop our efforts to remove it from the water. New disposal technologies are emerging, while there is always a trade-off we will continue to keep the community updated, through these meetings, on the disposal options available.

A: (AECOM Senior Water Engineer, Angel Gebeau) It is extremely hard to destroy fluorinated compounds. There is a technology currently available called “De-Fluoro PFAS Destruction Technology” which utilizes plates with specialized coatings to apply electricity to water containing PFAS. This process can break the bonds of these compounds but it takes a large amount of electricity and very specialized equipment. Developing technologies to completely destroy the extremely strong carbon-fluorine bond found in PFAS is extremely challenging, most processes including incineration do not destroy them but simply move them around. There are however a lot of people putting a lot of effort into developing new and better disposal technologies. Examples include the use of UV destruction techniques and biological tools, however these new technologies are not ready yet, cannot be used on a large scale and are currently very costly.

Q: When you move the water through the treatment vessels, do you have a way of testing the water just in case the system malfunctions? How do we know the treatment system is functioning correctly/working?

A: (AECOM Senior Water Engineer, Angel Gebeau) This technology, using absorption media, although it has just recently begun to be used for PFAS removal has been around for a number of years so we know what to expect. These systems are designed to maximize the water’s contact time with the media to ensure they have the expected outcome/removal effect. We test on a small scale to determine how long we expect the media within the system to last and then since there are two tanks we can test the first one and take it offline as soon as the media

is no longer effective. By having both a lead and lag tank (two tanks placed in succession), there is a built in safety net, ensuring we meet our treatment objectives. Granular activated carbon (GAC) is not the best at removing all types of PFAS however based on the PFAS found in Well #15 water it has been found to be effective. These systems are designed with worst case scenario or increased PFAS levels over time, in mind.

Q: Option #2 was listed as being 75% effective, what does this mean in terms of the amount of PFAS that would be removed? How do you compare the treatment options and the amount of removal possible/quality of the water after treatment?

A: (AECOM Senior Water Engineer, Angel Gebeau) When the slide lists 75 it does not mean that 75% of the PFAS is still coming through or is treated, each technology on the slide was given a value so they could be compared with one another and option #2 was given a score or ranking of 75. Ion exchange and GAC would provide the most effective treatment but just GAC was found to be a very good option comparatively and would still be adequate enough to meet the treatment goals as currently established. Once again, the 75 listed for option #2 is not a percent effectiveness but a weighted score meant to allow you to compare the different options. The full explanation of how each weighted score was calculated is not listed on the slide as it was meant to be concise.

Q: What percent of the total PFAS will be removed by each of the treatment options?

A: (AECOM Senior Water Engineer, Angel Gebeau) We are currently finishing up our bench testing in order to confirm what kind of effectiveness we can expect from the different treatment options. We are looking at how low we can possibly go as far as removal, but do not have the results of these tests yet. Previous testing showed that these options would meet our health objectives, that were listed at 20 parts per trillion (ppt) but we want to wait to see what effectiveness the bench tests show.

Attendee Feedback: Given that 20 ppt is much higher than the new health advisory levels that were just released, I do not believe the “bang for the buck” analysis performed on the slides presented are accurate or realistic. The Water Utility is asking the wrong question, the proper question would be, which treatment option would remove the highest percentage of PFAS.

A: (AECOM Senior Water Engineer, Angel Gebeau) We do know from our previous testing which treatment option would work the best, that would be GAC, GAC, followed by ion exchange. The difference though would be the cost, the numeric review presented on the slide presented and associated values is based on both the treatment effectiveness and the associated cost.

A: (Water Utility Water Quality Manager, Joe Grande) It’s important to note that for all of the treatment alternatives listed, they have the same treatment objective. All treatment options listed are being compared based on the same treatment objective. If the concern is that the treatment objective we have established is not removing enough of the PFAS, than that is the discussion we should have. Treatment option #5 would add one more vessel to the system

which would allow us to extend the life of that system, therefore increasing its effectiveness score but this does not mean it is removing more PFAS than treatment option #2 for example. We are still waiting on the results of our pilot testing, so this is the theoretical information we have at this time. The pilot test results will confirm what effectiveness we can expect from each treatment option.

A: (AECOM Senior Water Engineer, Angel Gebeau) The pilot testing does include multiple kinds of PFAS, in order to mimic what could be a worst case future condition.

A: (Water Utility Water Quality Manager, Joe Grande) We should not make the assumption that just because ion exchange is better at treating the short chain compounds that, that is what we should concentrate on. The highest concentration of our contaminants are the longer chain compounds. Choosing a system that is going to remove what we have not theoretically what might be there, is going to be most important. Therefore we are basing our decision on both what we currently have and what we might have in the future.

Attendee Feedback: Feels that the Water Utility is still flying blind as far as what PFAS compounds are present in the water. Cited example of recent Guardian article that described the results of testing of a sample of Madison water utilizing both EPA method 537 and listed the amount of total organic fluorine. Would like to know why we are not testing the effectiveness of treatment options based on amount of total organic fluorine removed.

A: (Water Utility Water Quality Manager, Joe Grande) We will not be utilizing the total organic fluorine test because it has not been standardized and it is not recommended as a metric for drinking water. We have asked and have been told that it is not recommended that we use this test.

Attendee Feedback: Does not believe that the slide of cost to benefit ratios presented is accurate because it does not include the total cost of PFAS to human health. Examples include the cost to treat hypertension, kidney disease, cancer, high cholesterol, lower birth weight. Concerned that these costs do not appear to be specifically factored into the calculations on the slide and therefore do not account for the health effects of PFAS to people. Would like to include these costs in order to make a meaningful decision.

A: (Water Utility Water Quality Manager, Joe Grande) These things are included in our analysis through the treatment objective that was established. Whatever you choose as your treatment objective, currently it has been set at 20 ppt which we agree may be inadequate, that is the basis for these cost benefit analyses. Each of the treatment options listed on the slide are meeting the treatment objective that was originally set, if we are hearing that that objective was set too high we can discuss that.

A: (AECOM Senior Water Engineer, Angel Gebeau) The pilot tests are designed to tell us how long the treatment is effective at non detection levels, until PFAS is detected. That way we

understand better the full progression, although we are still limited by the current detection capabilities of laboratories.

A: (Water Utility General Manager, Krishna Kumar) This is a great discussion, the purpose of this meeting was to determine what expectations and requirements the community would have. All of the treatment options are still available but both the effectiveness and cost need to be taken into account. We will provide additional information at the next meeting on the results of the pilot test and how this affects the Water Utilities thinking as far as the different treatment options. Ultimately there are federal and state standards emerging and now existing, and these will be the ultimate requirement that will need to be followed. State and federal standards exist for many different types of impurities, although PFAS standards have been slow in coming out we hope that by the time we finish our analysis of treatment options they will be out. We commit to meeting all state and federal standards for PFAS. We are not the standard setting agency but will follow the guidance of the standard setting bodies. We look forward to sharing the results of the pilot testing and wanted to share information on the treatment options and implications, with you at this meeting.

Q: Where did the judgment to set the treatment objective at 20 ppt come from? It is my understanding that by statute the Water Utility Board can set its own action limit.

Q: Where could a list of all of the PFAS found at Well #15 be found?

A: (Water Utility Water Quality Manager, Joe Grande) A [full list of PFAS test results](#) for Well #15 can be found online. Testing was performed as part of the feasibility study and for this analysis before we sent water to AECOM. Twelve types were found, with PFHxs at about 20 ppt, PFOA at about 5-6 ppt, and PFOS at about 5-6 ppt. In total that's 32 ppt and our treatment objective is focused largely on those specific compounds because they are found at the highest concentration at Well #15. We have tested for all 36 PFAS compounds that can be tested for with standard methods and the WI list. We are different here in Madison because we have not focused solely on PFOA and PFOS we have instead concentrated on the full list. It is helpful to know which specific PFAS are present so we can target those compounds. We have used multiple testing methods in order to get the most comprehensive results of what PFAS are present. [[https://www.cityofmadison.com/water/documents/PFAS UW15 2017 2022.pdf](https://www.cityofmadison.com/water/documents/PFAS_UW15_2017_2022.pdf)]

Q: Where is Well #15 located?

A: (Water Utility Water Quality Manager, Joe Grande) At 3900 East Washington Ave., behind the Wendy's.

Attendee Feedback: Comments on the communication style of the meeting, the flow of how questions have been answered, as well as the layout, design and information included on the cost-benefit analysis slide. Would like a more thorough explanation of how the scores on the slide were calculated and how they were weighted. Believes that a landfill would not be a disposal option for PFAS but rather a storage option for the future when more treatment

options for that waste are available. Would like PFAS waste to be treated in state or an in state disposal option. As someone potentially drinking this water in the future this attendee would be interested in the absolute best treatment option, with a goal of treatment down to whatever level will not make anyone sick. Would like the Water Utility to assist residents with disposal of spent water filters utilized within their private residences. Would like the Water Utility to conduct testing of any soil disrupted through project activities/the construction of the new library building at Reindahl Park, for PFAS. Would like the Water Utility to provide bottled water to at-risk communities across the city, those who could be most affected by PFAS.

Q: Will the water that is coming out of the lag tank of the treatment system (final treatment vessel) be tested to ensure the system is working?

A: (AECOM Senior Water Engineer, Angel Gebeau) Yes water from both tanks will be tested, the results from the second tank should always be the same, with no PFAS present. Results from testing of the first tank will be looked at to determine if there are any changes. If we start to see the lead tank have breakthrough it can be pulled offline. The media can then be replaced and the two tanks can be flipped so that what was the lag tank is now the lead and that media can be used to exhaustion. Testing will be done routinely.

Attendee Feedback: The most important results for residents, who will be drinking the water, will be water leaving the treatment system. As long as this finished water is tested that is what is most important.

Q: What is the timeframe for the routine sampling of water within and through the treatment system? Monthly? Quarterly? Annually?

A: (AECOM Senior Water Engineer, Angel Gebeau) DNR is currently working to establish what this required timeframe will be. Most utilities that have put in an emergency treatment system are testing on a monthly basis. It does take almost a month at times to get these results back, because the labs are also understaffed and there are challenges. The media itself should last in most cases over a year, in some cases it can last for only a few months, but in any case we will have results of any breakthrough from the first tank well before the second tank is compromised.

Q: Within the tanks of activated charcoal or ion exchange, will there be any mixing?

A: (AECOM Senior Water Engineer, Angel Gebeau) No we do not want mixing because the water needs to slowly make its way through the media and slowly exit the vessel. We don't want to mix the water because the top media may already be loaded with PFAS, instead we want it to go straight through to leave all PFAS behind.

Attendee Feedback: Concerned about the possibility of channeling within the treatment media, believes that mixing may help to break up any channeling that could occur.

A: (AECOM Senior Water Engineer, Angel Gebeau) We have specific requirements for contact time, of the water to the media, to avoid channeling. This contact time helps to avoid the movement or channeling of contaminant through the media. It can happen but once again that would be seen in the test results for the lead tank, backwashing is not recommended.

Q: If we have an idea of where the majority of the PFAS is coming from, and there should at some point be a mitigation plan, is this treatment potentially a way to get it out of the groundwater? Is the PFAS going to pool in the groundwater indefinitely or where does it go?

A: (AECOM Senior Water Engineer, Angel Gebeau) Although we have an idea of where the source may be, we do not know exactly what remediation is planned at that source. There are some communities in the state that have decided to treat at wells where water is contaminated because they do not want it to migrate to other wells.

Q: The WI Air National Guard was supposed to conduct a study or assist with mitigation of this issue, to assist with cost, is this part of the Bipartisan Infrastructure Law? Have you heard when they will be assisting with mitigation or providing funds for clean up?

A: (Water Utility Water Quality Manager, Joe Grande) We do not believe the Bipartisan Infrastructure Law provides funding for this type of thing. Instead the allocations for drinking water and wastewater are specific to utilities and public systems, that's where the dollars are allocated. The Department of Military Affairs is responsible for the steps that will be taken towards clean up. The land is owned by the county and leased by the military, the effort is being led by the military with guidance from the DNR. The City does not really have a role, we don't own the land so we have no control over the land. Our role is delivering safe, high quality water to our customers.

Attendee Feedback: Described an example of an area in Minnesota where a landfill leaked and released a plume of PFAS. A treatment system was installed which removed PFAS from the water and as a secondary effect it removed it from the groundwater. Provided information on a site investigation that may currently be going on/funded by the Air National Guard, as well as an interim stormwater treatment system Dane County has put in for water going into Starkweather Creek.

Attendee Feedback: Treatment only works if we stop putting more PFAS into the environment, concerned about pesticides which are utilized by the County and others.

Q: Why are the costs which have been communicated today for the different treatment options so much higher than previous estimates communicated?

A: (Water Utility Water Quality Manager, Joe Grande) Previous estimates were based on a pumping capacity of 1,000 gallons per minute, we have asked AECOM to estimate for 40% increased capacity this time around. Additionally, initial estimates were just for the equipment whereas costs communicated today are life cycle costs or the cost to both install the

equipment, modify the building, and to operate it over the course of twenty five years. Every one of these options requires some modification to the building. There are a lot of differences between costs communicated in a feasibility study and those calculated when developing conceptual design options.

Q: The grant application will be coming due for funding for this project soon, assuming that you will need to have made a decision on the treatment option when it is turned in, when will this decision come to the Water Utility Board?

A: (Water Utility General Manager, Krishna Kumar) Yes the application that will be due must include the potential cost of the project. The cost that will be requested for the project will be set forth and will need to be approved at the October meeting of the Water Utility Board.

Q: What portion of the project cost can be requested through the grant request?

A: (Water Utility General Manager, Krishna Kumar) Capital costs of the project can be covered by the grant, not operating costs.