

From: Melissa Merrell, PUB Analyst

To: Director Stuhr and Deputy Director Solmer, Portland Water Bureau

Re: Questions from the Portland Utility Board prior to the July 11 meeting

On: July 5, 2017 amended July 10, 2017

The members of the board request your consideration of the following questions.

1. It is apparent from the AWWA guide that ultraviolet treatment has many limitations. Not only is it essentially limited to cryptosporidium, but when the quality of the water changes to even slightly more than 5% turbidity, then the treatment becomes very problematic. (If I need to be corrected on the previously stated facts, please correct.) Further, the AWWA Guide points out there are new viruses, etc. that are constantly evolving that water managers have to identify and then determine how to treat. So my question ultimately focuses on a risk management focus. What is the risk to the city to build an ultraviolet treatment plant and then find out there will likely be additional challenges to treat?

- 1.a. How often has the watershed had turbidity events and what are the main causes?

Water Quality regulations prohibit the Water Bureau from serving Bull Run Water when the turbidity (cloudiness in the water due to suspended particles) exceeds 5 NTUs The bureau has switched to groundwater due to turbidity events 9 times since 1985.

<https://www.portlandoregon.gov/water/article/344756>

2. If money was no issue, what is the best overall treatment approach to take today to best position the city for what may possibly develop in the future? What is the relative cost of this most comprehensive approach compared to the ultraviolet plant currently cited as about \$100 million?
3. The AWWA guide also states very small amounts of crypto (oocysts) are typically not well screened using a multi-level sand type screening. Other than ultraviolet, what other technologies best screen for this challenge?
4. To my brief reading of this tome, what chemical treatment approaches has the city considered compared to an ultraviolet approach?

5. Given the magnitude of the decision and possible investment/rate impact requirements, what is the possibility of going to the regulatory body and presenting a schedule to allow more thorough analysis of the possible technical approaches and the financial requirements. In my experience in the electric utility industry, while not always granted, a well-structured plan presented with firm dates to move ahead in a thoughtful manner was hardly unknown in securing additional analysis time.
6. I continue to be skeptical about the true viability of detailed drawings and engineering design for a UV plant developed 5 years ago. Not only is it a matter of availability of equipment and similar specifications to fit footprints, but there is also the issue of technology/equipment improvements that have occurred in the past five years. I believe there should be a quick review of the current plans by a third-party to determine how much additional engineering design might be required. When framed as part of a plan that is included in a request for longer time to conduct a thorough analysis, such a review would ensure the city understands exactly what the magnitude of changes would be required to the current UV detailed design.
7. I am interested in a couple of points of clarification. The two options have been framed as 1) a 2012 UV plant design, and 2) a hypothetical and yet to be designed or costed filtration plant. It would seem that both numbers are speculative. Does the 2012 number reflect construction cost escalation and what is the basis for the range provided for filtration.
8. What are the Water Bureau plans to maintain compliance and at what cost while either of these options are constructed? One is a five year out and the other 10 years out.
9. The bureau just set up capacity to do testing for cryptosporidium in-house rather than contracting with outside labs. What will the testing requirements be before and after a treatment facility goes online?
10. What enforcement authority does OHA have and what may happen if the city does nothing?
11. What would the impacts of development of either treatment facility be for the watershed?
12. During the Council work session there was a discussion about “phasing”; building UV now and filtration in the future. I would like some clarification about this – I understand

that PWB said the UV buildings could be repurposed later if filtration is built. But, they did not say what that repurposing would be for, and whether it would be related to treatment in a 'filtration' future. It's my understanding that water filtrations plants are stand-alone facilities and any 'pre-built' buildings at Headworks would not make later construction of a filtration plant at Lusted Hill any cheaper than if the UV plant was never built?

13. The mayor also asked for more detailed cost estimates and how to pay for them including some idea of rate impacts. He also asked for a probabilistic study of costs and benefits for both. I don't know if PWB can get those done by the 11th, but better information would be helpful.
14. Going with either plan, we're looking at 5 to 10 years out. Is there's a back door exit? Suppose we go with UV and it takes 5 years to complete the facility, but over those five years there's no other crypto problematic samples, what then? Do we still implement UV and/or go ahead with the next stage of filtration? Once either facility is in the pipeline, does that commit us to 'full steam ahead' no matter the evidence? This seems especially relevant given that Paul Lewis stated that there was no evidence of human health problems/threats from crypto outbreak.