

Update on Borough Water

It has been a little while since we have updated you about our progress with remediating the PFOS and PFOA issues in the Borough water system. It is not because we are ignoring the issue, but quite the opposite. The last time we wrote about the system, we had informed the community that we were in the process of purchasing a carbon absorption system that would treat the well that was currently shut down. At that time, we were told that the cost would be about \$350,000. The purchase of that system has not occurred as of this point. After consulting with Pennsylvania DEP and our engineers, the Borough learned that there is a way to remediate both wells, which is what PA DEP requested. Since both wells are treated through the same main lines, it was recommended that we should treat both at the same time. Therefore, in their Consent Order with the Borough, PA DEP has required that the Borough conduct a full investigation and feasibility study of every single option that could be possible to explore to remediate the water issue prior to receiving their approval to install a system. We have spent many months working with PA DEP to conduct this feasibility study and all the different options that are available. While the study is not yet completed or approved, we will share with you the current progress, as well as the most recent testing levels.

The Borough is now testing for PFAS every quarter in both Well # 1 and Well # 2. We are also testing the other wells in the Borough as well. At this point, levels in those wells are well within the acceptable range levels. However, testing results that were received on August 1, 2022, show that our system exceeds EPA Lifetime Health Advisory Level for PFOS / PFOA for both Well # 1 and Well # 2, as you have previously been informed. The Lifetime Advisory Level for PFOS / PFOA is 70 parts per trillion (70 ng/L), and has recently decreased per PA DEP's newest acceptable level guidance. In recent weeks, the Commonwealth of Pennsylvania adopted new regulatory requirements of 14 ppt for PFOA, and 18 ppt for PFOSP. FOS / PFOA levels exceeding this level were found at both Well #1 and Well # 2 within the Borough. Both wells share the same aquifer. Well # 1 tested at an elevated level of 232 ng/L per tests conducted by the Borough. Well # 2 tested at 1560 ng/L per tests conducted by the Borough. Well # 2 has been disconnected and deactivated since initial test results were received in October 2021. Well # 1 remains operational, as our studies have shown that we cannot adequately supply water to the Borough without this well operational.

Because we can treat both systems at the same time, we were required to completely re-engineer the original treatment proposal. The carbon absorption system is now estimated to cost \$1.1 million, as the system would be required to treat over 1,100 gallons per minute, as opposed to the original estimate of 550 gallons per minute. Rather than allowing us to move forward to immediately purchase the system, PA DEP has required the Borough to explore every possible option. Because we are regulated by PA DEP and we must obtain permits from PA DEP, we are required to comply. However, a complete feasibility study takes months, as every single option must be completely vetted and engineered.

Here are the options that we are exploring:

- Calgon originally designed a carbon system that was undersized, however, has recently engineered a new system based on serving both well # 1 and well # 2. However, we

have not received any calculations regarding the chemicals and effects that the run-off from the system could possibly have on sewage treatment. At this point, the Calgon system seems to be the option we are leaning towards; however, we have other options to explore. This system is expected to cost \$1.1 million and will require a large building to be constructed to house the treatment system. We must calculate the waste load and chemical impact that could occur, as it can affect the chemical treatment at the sewer plant. There is an estimated cost of \$35,000 per year to maintain the system.

- We are also currently working with a company called Knappe Associates. The company recently took 8,000 gallons of water from well # 2 to run a pilot study to see if it is feasible that their system may be a long-term solution, as they use the ion exchange solution, which may include a carbon absorption system on the end of it.
 - Info from their offer:
 - Our full onsite test will have a two-prong attack. We will be using 50% of the water we collect within our standard offering to figure out the most optimized regeneration process which will incorporate a methanol recovery system. Depending on the % methanol & % Salt mix will determine how large the recovery system will need to be. Once this concentration is figured out, we plan on loading our resin and using an electrochemical process to break down the loaded waste brine stream even further to acceptable ranges for a wastewater plant to deal with.
 - Our secondary approach utilizes our proprietary resin in a fixed pressurized bed. We estimate roughly (2) years before having to regen based on the current 70ppt rating. However, we need to run it under the conditions of reducing down to a 14-18ppt. This method will allow us not to have a waste stream that needs to be permitted.
 - We won't be able to fill out the wastewater report until we know exactly what the waste brine stream will consist of. This two-prong method will also allow us to figure out with the most cost-efficient solution is for this application.
 - Since their offer was initially made, we have reminded them that the Borough's target PFAS concentration would be "as close to zero as possible" and they have acknowledged that in other communications with me.
 - The pilot study takes four months and begins in July. Results should be pending by early winter.
 - This method could be less costly in the long-term for the Borough, however, there is not much of a proven track record in Pennsylvania municipalities with this type of treatment system. This means that PA DEP would require the Borough to conduct a 2-year pilot study as we run the treatment system. PA DEP has also issued concerns that the ion exchange system may cause other chemicals to develop in our water system. Our engineers would need to figure out if our air stripper system can remove those chemicals before they hit the drinking water.

- We are also partnering with Lehigh County Authority, employing Gannett Fleming as a hydrologist, to explore the interconnection between the City of Allentown and the Borough of Emmaus. This process will take no less than 4 months to complete. The process began in August. If it is found to be feasible to connect, and this is found to be a long-term solution, it will take well over a year to design and construct the interconnection, with the cost possibly exceeding several million dollars. However, we will not know this until the study has been completed. We expect the results of the study by November. This is a long-term, and very expensive possible solution, and the connection would not occur for at least a few years, as there is a lot of infrastructure that would need to be set in place. Even if we do not choose to do this as our solution, we do believe that we need to continue these discussions for the future, for at the very least, emergency back-up solutions.
- We are also exploring the possibility of shutting down well # 1, as this would bring the Borough into compliance theoretically, however, we have a possible disaster if we do that. On average, Borough residents consume between 1.3 million and 1.5 million gallons of water per day in the Borough. With well # 2 shut down, the four remaining wells produce enough water handle demand as well as any emergency issues, such as a fire, or even a leak in the system. If we shut off well # 1, we will only be pumping, on average, 2,389,536 gallons per day out of our three remaining wells. This would leave less than 1,000,000 gallons per day of excess production on an average day. While this may sound suitable, it is dangerously low. In the past 10 days, the Borough has replaced three water leaks. The last water leak was in the amount of 1.1 million gallons and took just under 24 hours to find and repair. This would have depleted any possible excess reserve and would have jeopardized the Borough's ability to supply the community with water. We asked PA DEP if we could shut the well down and turn it on only for emergency situations. We would then notify our residents through an autodial an electronic notification if we had to do this. In our minds, this would eliminate PFAS from getting into the system, but we would supplement when we absolutely needed to. PA DEP would not agree to the idea, as they would require that the Borough would have to go through a full permit application, which isn't feasible. Obtaining a permit to turn water on and off takes months, not hours, therefore, they PA DEP informed us that this is not a feasible option, and that they believe the well must stay on.
- One other option that the Borough is exploring is simply digging another well in town. As we employ the hydrologist, we are seeking their guidance regarding possibly digging an additional well in the community and simply shutting off both well # 1 and well # 2 on a permanent basis. DEP out of Bethlehem reached out to us to discuss possible financial and technical assistance with this. It will cost several hundred thousand dollars to test dig wells and obtain adequate sampling. It will cost several million dollars to build a well system and well house. PA DEP out of Harrisburg warned that, just because we relocate another well, we might still be pulling from the same plume of water, which would cause that well to be contaminated as well. They informed me that our last Wellhead Protection Plan that was conducted was very thorough and examined all of the directional flow of our

water system. Therefore, they recommended that we give that information to our hydrologist, and they would most likely be able to determine from that what locations might be feasible. This suggestion literally saved us tens of thousands of dollars in engineering costs. This option seems less and less feasible as we move forward.

- We recently also met with another company called Suez / Veolia. They are similar to Calgon. They are taking water samples and running analysis as well, as they feel that their systems may be feasible as well. Additionally, they informed us that they have a possible temporary solution, as they have “mobile” treatment units, where they have treatment systems inside of trailers that they can temporarily put on a property to treat their system until the permanent solution is built. This temporary solution is obviously intriguing to the Borough, especially if it can treat the water to an acceptable level of PFAS to help buy time for the permanent solution. We have received their test results back and will be meeting with them again in the next few weeks to discuss their possible solutions. The concern for the temporary treatment system is that it can handle at least 600 gallons per minute and reduce the PFOS / PFOA down to acceptable levels before it hits our system. If their results show that they can, this is a very viable, short-term option.

PA DEP has required that the Borough conducts a full feasibility study including every one of these options. Pilot studies in testing the chemical removal possibilities, flow impacts, and side effects to sewage treatment take months. The studies from the hydrologists also takes several months at a cost of approximately \$30,000 to conduct. It is vital to the Borough, PA DEP, and our citizens, that we are sure that whatever removal option is selected, is a long-term, permanent solution that properly removes the PFAS chemicals from our drinking water. The pilot testing processes as well as the complete feasibility studies are necessary to properly understand what the correct option shall be. While this has certainly taken much longer and is much more complicated than we hoped, it is the correct and necessary approach, as we cannot afford to simply put a system and hope it works. That is not a financially responsible decision, it is not an ethically responsible decision, and it is especially not the responsible decision to ensure the health and safety of our citizens. We are working every day to try to resolve this. We apologize that this process has taken so long, but we need to make sure that the treatment is appropriate and approved by PA DEP, per their requirements.

We also encourage you to continue to learn as much as you can about PFAS. We have included some educational information in past newsletters. We stated that we continue to learn more and more about PFAS, as more studies continue to come out. Several studies have shown that fish and deer have both tested positive for PFAS in Bucks County. Most recently, a study was released that there are high concentrations of PFAS in our rainwater, both locally and around the world, as it was even found in precipitation as far south as Antarctica, per a study by Stockholm University, as published in *Environmental Science and Technology*.