

**VILLAGE OF SKANEATELES
MUNICIPAL BOARD
MINUTES OF SPECIAL MEETING – May 8, 2018**

Present: **Municipal Board:** Chairman McQuaid, Commissioners Angelillo, Blackler, Palmer and Rhoads, DMO Harty.
 Board of Trustees: Mayor Hubbard, Trustees Stokes-Cawley and Sennett.
 Village Engineer, GHD: Kevin Castro, Nicholas Hyde, and Erica Goldin.
 Skaneateles Press: Jason Gabak, editor

Excused: Commissioner Elliott

The special meeting to discuss preliminary conclusions regarding treatment of cyanotoxins in the public water supply was called to order at 5:00 pm. GHD presented from a powerpoint deck and identified the treatment alternatives that had been considered viable – specifically chlorination, filtering with granulated activated carbon and ultraviolet oxidation. One non-treatment option was considered, use of a replacement water supply. Mr. Castro set the stage that during the 2017 outbreak, while microcystins were detected at the City of Syracuse water intakes, there were no known instances of detection in the treated water made available to the public for consumption in the Village of Skaneateles, the Town of Skaneateles or the City of Syracuse. As a general rule however, the severity of algal blooms is increasing, as is their toxicity. From a planning perspective, the GHD team used a design contamination level of 10 micrograms per liter. While that is much higher than observed levels during the 2017 bloom, the treatment plan would be to take levels from 10 to below the 0.3 health advisory level for children.

Comm. Rhoads noted that there is a June 6 public discussion scheduled, so communication is important. Ch. McQuaid suggested presenting the conclusions first, so as to keep it less technical. Comm. Palmer wants to stress the inherent conservatism in the design. Mr. Castro noted that approaches are based on limited historical data. DMO Harty wants that footnoted in the report. Mr. Castro stated that while the GHD team had considered 10 possible treatment alternatives, it identified 3 approaches that were the most feasible for implementation in the Village. The fact that the Village has an unfiltered water supply was a factor in the alternatives selection.

CHLORINATION

- This is effectively the treatment method that we are using today.
- To successfully treat the toxins, we only need the same levels of chlorination that we have today.
- City of Syracuse provides initial water chlorination at the intakes, additional chlorination in the gatehouse wells, and the Village has a chemical feed system, which is a backup for the city system.

- Chlorine's effectiveness is determined by Contact Time ($CT = \text{Concentration} \times \text{Time}$). To accomplish disinfection at the design levels, the Village would need 120 CT, while the system has the ability to provide up to 347 CT. At the height of the 2017 bloom, chlorination by the City and the Village were at 418 – 773 CT, based on modification of the Village distribution configuration.
- The requirements to implement a large-scale chlorination operation would involve construction of drum storage if necessary. Beyond that there would be operational adjustments, such as rededicating the feed main to provide contact time rather than supporting distribution, as well as operating the water tanks in series rather than in parallel.
- There is 38 minutes of contact time in the water flowing to the gatehouse. Revising the operating plan as outlined would allow the Village to provide another 309 minutes after the gatehouse.
- Comm. Palmer asked that since temperature and pH are important, should the Village adjust pH? Mr. Hyde responded that there is sufficient safety factor [conservatism] without playing with chemistry. [Average temperature is 60 degrees F, and our pH is 8.3.]
- Comm. Rhoads asked what the contact times would be if the tanks are operated in parallel? Mr. Castro responded that if system is operated in parallel, water could short-circuit the tank and reach customers before adequate contact time is achieved.
- In response to a question, Mr. Castro confirmed that reverting to the previous operating methods will have an average 46% reduction in fire flow. Based on the modeled improvements from the water main project, fire flow is expected to be high, so some reduction may be tolerable.
- As a reminder, that is a temporary change and would only be needed during an event.
- The Village would likely have to negotiate levels with the Department of Health.
- If chlorination is the preferred strategy, the Health Dept. will require jar testing. Additionally, there are few to no changes in operator duties.
- This approach is cost effective and requires minimal changes; however, has impacts on the distribution system performance and should not be considered for a long-term treatment solution.

GRANULAR ACTIVATED CARBON

- This operation essentially forces water through a vessel containing specialized material, GAC, which the microcystin adsorbs to.
- Implementation would require a building addition to house 3 GAC contactors, which are 22 feet high and 10 feet in diameter, plus piping to connect them.
- Since GAC media must be cleaned periodically, the installation requires an equalization tank to for backwash storage and discharge to sanitary sewer.
- Comm. Angelillo was concerned that since tanks would normally be in stand-by mode, wet storage could lead to bacterial growth. Disinfection of treatment vessels prior to the algae season would be part of the operation plan.

- GHD confirmed that these tanks would only be on-line if we have an event. The trigger point will be determined by DOH. The evaluation assumed operation for 6 months per year.
- There would be a building addition required adjacent to the pump station.
- Assumed operation is at 900 GPM; the rate could be increased to 1,388 gpm to match existing peak design flow.
- As first step, need to do on-site rapid small-scale column tests (RSSCT) to select appropriate GAC material (6 weeks – Not in current scope of GHD work. Need a proposal)
- Then need a pilot demonstration project to obtain DOH approval to implement. (Also not in current GHD scope)
- Plant requires Grade IIA operator; Village currently has a Grade C operator
- Approvals and equipment cannot be obtained before 2018 bloom season, so must rely on chlorination short-term. Mr. Hyde suggested that the pilot project could be run during the 2018 season; could be done with rental equipment.
- Advantages are no disinfection by-products; system could be expanded to satisfy a future filtration mandate. Disadvantages are that backwash must be disposed of at WWTP, requires additional water plant operator licensing/staffing, Carbon replacement is required every about 5 years and there is a high capital cost for the equipment procurement, installation and building addition.

ULTRAVIOLET ADVANCED OXIDATION

- Hydrogen peroxide is added, then water flows through high powered UV reactors, similar to existing UV equipment. Requires rechlorination after UV oxidation.
- Process implementation would require that the existing 2 reactors be upgraded to 4 lamps each and that 2 new 4 lamp reactors would be added.
- Requires bulk storage of hydrogen peroxide and sodium hypochlorites for chemical feed, a building addition and installation of a chemical unloading pad. Portable storage may be possible to eliminate bulk storage and DEC CBS permit.
- Would need to route chemical delivery trucks through adjacent City property for egress.
- DOH approval requires an on-site pilot; DOH is undecided about full-scale demonstration need
- Operator level is Grade IIB required
- Advantages are that the Village is already familiar with the equipment and its operation. There is no waste stream from the process. Disadvantages are high capital and maintenance costs, requires additional water plant operator licensing/staffing. Byproducts are unknown and it may require hazardous bulk storage.

REPLACEMENT WATER SUPPLY

- Village could obtain water from OCWA's Otisco Lake water treatment plant. It is possible to construct a 16 inch main pipeline to carry the water.
- Water alone would cost over \$500,000 per year.
- This is the most expensive option.

- Otisco already has algal treatment in place.

QUESTIONS

- Comm. Angelillo asked if the City was looking at extending the intakes into deeper water. Mr. Castro said potentially yes, but that decision would probably benefit turbidity issues more, since the cyanobacteria have the ability to move up and down in the water. 2017 sampling indicates microcystins were found at deeper lake levels.
- The Board asked about the State grant program of \$65 MM. Mr. Castro believes the largest amount will benefit watershed programs, with some funding available for individual projects and some for treatment.

COST ANALYSIS

- GHD explained its analysis of capital and operating costs. The approaches were compared on a 20 year present worth basis, using a 4 % borrowing rate and a 2% cost of living discount rate.
- Comparing costs on that basis:
 - Chlorination \$ 160,000
 - GAC \$ 5,800,000
 - UVAO \$ 7,100,000
 - New water \$22,000,000
- Costs GAC and UVAO include 2 new full-time operators
- There might be the possibility of using a GAC portable system, but that is not a good permanent solution
- To add filtration (in the event of the loss of filtration avoidance) probably requires a doubling of the GAC plant.

GHD RECOMMENDATION

- Employ chlorination to address abnormalities during the 2018 bloom season
- For 2019 and beyond
 - Pilot GAC system
 - Do a full-scale pilot on chlorination
 - Delay commitment to implementing a GAC system until after 2018 pilot and monitoring.

NEXT STEPS

- Finalize the report
- Submit report to DOH
- Get going with jar testing
- Begin GAC on-site pilot study during the 2018 season
- GHD to submit proposed for Jar Testing and GAC RSSCT and Pilot Test for municipal board review and approval.

- Municipal Board will continue discussions at its May 22 meeting.

Meeting Dates. The May meeting will be held on May 22, 2018 at 6:00 pm.

The meeting was adjourned by acclamation at 6:40 pm.

Respectfully submitted,

Dennis Dundon, Clerk to the Boards