

**Minutes of the Water Quality Management Committee, July 10, 2023, 6:00pm
Falmouth Public Library, 300 Main Street, Falmouth, MA 02540**

Members present: Ken Foreman, Steve Leighton, Steve Rafferty, Ed Jalowiec, Tom Duncan, Jordan Mora. Also present: Amy Lowell, Falmouth Wastewater Superintendent; Paul Dreyer, Planning Board; Hilda Maingay and Earle Barnhart, the Green Center; Peter Hargraves, Finance Committee; numerous members of the public; Gilda Geist, Falmouth Enterprise;

1. Election of Water Quality Management Committee Chair and Vice Chair – discussion and vote

Vice Chair Rafferty opened the meeting and indicated the first order of business was the election of officers. Ken Foreman nominated Steve Rafferty as chair. Ed Jalowiec seconded. No additional nominations were made. Tom Duncan stated that because there was no contest for the seat, Rafferty was elected by acclamation. Rafferty suggested that the committee hold off electing a vice chair to allow time to adjust to the new dynamics. All agreed.

2. Next steps: Great Pond watershed – Teaticket Path / Northeast Maravista sewerage– Amy Lowell, Wastewater Superintendent

Chairman Rafferty stated the presentation to be given was to remind everyone on the committee and the community why the town is committed to going forward with sewerage in the Teaticket Path and northeastern Maravista neighborhoods.

Superintendent Lowell reviewed the nitrogen impairment to Great Pond and the required reduction in loading in both the lower and upper portion of the watershed as indicated by the Massachusetts Estuaries Project (MEP) report. She indicated that the only way to reduce the 100% nutrient reduction requirement in the lower watershed is to sewer. She also specified that the targeted sewerage in the lower watershed does not preclude alternative technologies elsewhere in the watershed. Lowell stated that alternatives can and should be used in the upper watershed to address the upper watershed nitrogen load.

Lowell reviewed the planned sewer area and briefly discussed the new Title 5 and watershed permit regulations set forth by the state and emphasized the added pressure put on the town by these regulations. She discussed current funding available to assist in the sewer project costs. Lowell reviewed a number of reasons why alternative technologies are not appropriate for the planned sewer area including limitation on lot size to install alternatives, lack of proven performance record, and willingness and consistent cooperation with users which is not realistic for high turnover properties (e.g., rentals, restaurants, elderly housing) among others.

Lowell indicated that at the Fall [2023] town meeting, the town would be requesting \$4.5 million to fund the design and permitting of the Teaticket Path and northeast Maravista portion of the sewer project. She emphasized that this project does not propose to increase discharge into West Falmouth Harbor. She also noted that while Crocker Pond is

downstream from a discharge site, it is protected from phosphorus impact because of the soil adsorption capacity between the discharge site and the pond. She also stressed that the results of the evaluation on Herring Brook indicate that Herring Brook is a salt marsh system and can handle the proposed increase of at most 5% additional nitrogen from the discharge. She also stated that the town's long-term plan is to pursue an ocean outfall to Vineyard Sound.

Lowell stated that there would be several requests at town meeting including; the \$4.5M for design and permitting the next sewer phase, a request to fund data collection and permitting of an outfall to Vineyard Sound and funding to support a urine diverting pilot project.

Chairman Rafferty opened the floor for discussion. A question was raised about whether sea level rise was being considered along with the sewer planning. Lowell commented that the current planned areas are in the northern portion of the estuary and are less likely than the rest of the watershed to be affected by sea level rise and storms. Rafferty added that there are several models on sea level rise and that on the lower end of the peninsulas there is an increased risk for how fast the sea level will rise. In addition, how the sea level rise and its impacts on flushing of embayments [and nutrient reduction] needs to be evaluated. He also commented that with sea level rise the depths to groundwater will progressively decrease and there will likely be areas that will need to be reevaluated in the future.

A question about funding options was whether those that Lowell discussed were available for septic system upgrades. Lowell responded that the funding outlined was for municipal projects. She then reviewed the main costs that would be incurred by residents who need to connect to the sewer; the betterment, sewer connection from the home to the lateral line in the street, and the sewer bill. She indicated that the current sewer rate is about twice the water rate so residents should expect their total water bill to triple to estimate sewer charge. A comment was made about the cost of installing a low pressure (grinder) pump as well.

A question was raised about whether the carbon footprint of the project had been calculated and whether there were plans for offsets. Lowell commented that it was not done as a part of the preliminary design, but that a climate impact section is included in the planning document.

Discussions continued about the proposed sand bed filtration discharge site, what construction would be required to expand beds 14 & 15 and reiteration that no additional flow is projected to go to West Falmouth Harbor.

A question was asked whether this plan would help the pollution in West Falmouth. Lowell indicated it would not. A recommendation was made to discuss the plan for the whole town instead of just this single project to put everything in perspective. Tom Duncan stated that this is the short-term plan and that if an outfall gets permitted the whole town will benefit.

A question was asked about the current monitoring data in Great Pond since the MEP report is over 15 years old. Lowell commented that the nitrogen concentrations in the pond have not improved since the MEP. Ken Foreman commented that the study of the groundwater at

Little Pond shows rapid declines in groundwater nitrogen concentrations as a result of sewerage, but how the ecosystem responds to those reduced inputs is yet to be seen.

Chairman Rafferty closed the discussion.

3. Draft Modelling the Potential Efficacy of Urine Diverting Technologies for Nitrogen Removal – Kristen Rathjen, Science Wares, Inc.

Chairman Rafferty gave a brief background on the request from the Green Center and the premise behind the analysis.

Kristen Rathjen discussed the Green Center's request and the regulatory requirement to follow the Massachusetts Estuaries Project (MEP) values as those values have been approved by the EPA. She presented some background information on how the Linked Model from the MEP works and how the septic loading coefficient was determined for the project. Per the Green Center's request, Rathjen applied the proposed scenarios to the Bournes Pond watershed to determine what percent of the residential parcels within the watershed would need to adopt new practices to meet the TMDL after fertilizer and stormwater credits and inlet widening.

Rathjen continued the presentation with results of a literature review and census data analysis to validate whether the proposed portions of nitrogen from the Green Center scenarios were in line with the MEP wastewater values. She presented boundary conditions for the range of per capita values of nitrogen in urine to apply to Falmouth census data. The results of the analysis for the Bournes Pond watershed indicate that based on literature values 31% - 82% of the MEP wastewater nitrogen load could be attributed to urine only. She emphasized that the broad range is due to the uncertainties in the assumptions applied on a watershed scale.

Rathjen also presented results of limited data on the efficacy of urine diversion in actual urine recovery/nitrogen reduction. She stressed the minimal availability of data relevant to the goals of the analysis. Rathjen discussed two case scenarios which showed less than 100% urine recovery from utilization of urine diversion and two findings on the total nitrogen reduction from urine diversion. She concluded that by using the extremely limited data available, the most conservative range that could be used for incorporating urine diversion technology into watershed planning is a total nitrogen reduction of 13% - 56%, not the 80% proposed by the Green Center. She indicated that there is a need for a robust regional dataset in order to refine those values for planning purposes.

A member of the committee mentioned that before urine diverting toilets could be used, four issues would need to be addressed: homeowner compliance, enforcement of same, regulatory acceptance and homeowner/taxpayer acceptance.

Earle Barnhart commented on several points raised during the presentation and felt the results of the analysis underestimate the potential for urine diversion. He also emphasized the importance of having a pilot to obtain real numbers to apply in planning. Hilda Maingay questioned the applicability of several assumptions used in the analysis. She also agreed

that there needs to be a well-thought-out pilot project that has the potential to benefit the town, Cape Cod, and the world.

Peter Hargraves commented that basic science indicates that keeping any amount of urine out of the septic system will have an impact. The project's real question is getting people to participate in a urine diversion program. He commented that the data shows it is imperfect and that habits and practices have to change for urine diversion to work. Hargraves commented that sewerage is the only way to stem the disaster going on in the estuaries. He said he looked into what it would take for him to personally install a urine diverting toilet in his home and after doing his own research, doesn't think he supports the project.

Additional comments supported the idea that public acceptance is the key and that the pilot has to be designed in such a way that it is as simple as possible for an average homeowner to adopt. Additional discussions continued about what data people felt should or should not be included as part of the pilot. Several people thought there will be more public acceptance today as there is more of a sense of urgency today than there was 10 years ago at the time of the first eco-toilet demonstration project.

Chairman Rafferty spoke a little on his understanding of the role the Massachusetts Alternative Septic Systems Test Center (Test Center) would play in the pilot including collecting the urine from the pilot homes. He said that the path to get urine diversion on the MaDEP's Best Available Nitrogen Reduction Technology list, if warranted, is through the Test Center.

A question was asked about whether the town had any idea on the total cost to comply with state requirements and how it will impact the tax rate. Rafferty emphasized that the town is not planning to sewer in every estuary's watershed. He stated that at the beginning, the original plan was to sewer everything at a cost of \$600M which is about \$1 billion in 2023 dollars. Rafferty stated that there is a need to evaluate the sewer plans over the next several years to come up with a fair estimate of the total cost. He also indicated that to date, all sewer projects have been undertaken during financial windows of opportunity when old debt is retired as to not impact the tax rate. He said the state just changed many of the requirements and the town needs to reevaluate the planning and timing for all projects.

Chairman Rafferty closed discussions and due to a time constraint, tabled all remaining items for a future meeting.

4. Discussion on meeting time preferences

Chairman Rafferty tabled for a future meeting.

5. Reports of members and staff

Chairman Rafferty tabled for a future meeting.

6. Vote minutes of prior meeting (06.26.23)

Chairman Rafferty tabled for a future meeting.

7. Motion to Adjourn –8:08pm. Unanimous

Minutes submitted by Kristen Rathjen

List of Documents

- Reminder: Why we need to sewer the rest of Maravista and the Teaticket Path peninsula
- Modelling the potential efficacy of urine diverting technologies for nitrogen reduction in Falmouth, MA
- Draft minutes of the 06-26-2023 WQMC meeting