

Grafton Planning Commission

Regular Monthly Meeting

Tuesday, Sept 12, 7:00 PM

Grafton Town Hall 2nd Floor

<https://us06web.zoom.us/j/81340393010?pwd=TDk5Y3FDaUNYNVBHNmRRVGNwbWRiZz09>

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MINUTES

1. Meeting called to Order 7:02
2. The September agenda was approved
3. The minutes of the minutes from June 12, 2023 were approved. The minutes from May 9, 2023 will be approved at PC October meeting.
4. Wastewater discussion. Hannah Sotak of Ondine Freshwater Consulting and Dan Rendondo from Vermont Wetland Plant Supply were on Zoom to share with us what they do and educate us in our attempt to understand the pros and cons of biological wastewater treatment systems.

Hannah specializes in working on ponds and waterbody restoration. She is based in Manchester, Vt. She also works on controlling invasive species in aquatic environments. She is doing graduate work at U Florida in Hydrotechnology, which uses aquatic plants and water bodies to solve practical problems. An example is storm water treatment. She also does permitting research for Vermont.

Dan Rendondo has had a plant nursery since 2007, specializing in aquatic plants, native species. Has worked on wetland treatment systems for effluent or storm water. Specializes in selecting the right plants for the situation.

David Whitney from Ecosolutions, a design/build firm in Vt., has experience with designing and building waste water, storm water solutions. These biological systems are growing in popular in the south and southwest. So we would need weather adjustment here; some parts the system would have to be in a greenhouse.

Hannah explained how these systems work. Living Plants are use to treat wastewater in a series of basins. There are different kinds of systems and different kinds of layouts. As mentioned, there are cold weather considerations. Soil and hydrology considerations require local analysis. The biological systems all use plants to restrain excess nutrients and pollutants that would otherwise flow back into the environment. The EPA has several guiding principles around different types of systems. Hannah will share a folder of these publications that contain guiding principles and regulations for different systems. The publications can help us to discuss some questions:

Questions raised:

- How specifically will this system work for us?

- What plants are we going to use?
- What weather patterns/ temperature considerations?
- Long term management plan?
- How to keep out invasive species?
- How much does this cost ?
- How does that cost compare to other standard systems (like T&B are presenting
- Is funding available for these biological treatment systems?

The places that have used this kind of system have had much success. Much better long term solution than systems that handle active sludge systems. Exit 2 off 89, near Sharon, has a successful one. This kind of system is becoming a sought-after alternative but it does require a lot of homework.

Considerations:

- The size of the town and/or how many active households/businesses will it service (including future needs)?
- Eliminating gray water from homes? What are the contaminants? How will the gray water move from home to treatment place? That will determine a lot of the design.
- The site selection for the facility and its plants. We will need a plan designed specifically for Grafton

Q from Audience re: size of greenhouse. Hannah explained that not the whole system would need a greenhouse.

Q: Are we only talking about gray water? Solids will continue to go into the septic tanks. The gray water has to still be pumped to some place, so that is no different from the traditional system. So, the difference is in the treatment of the gray water. What are the advantages of this system?

Hannah: Cost is similar or less, depending on volume, weather. The delivery system isn't different [but location can be different so that could be a difference in cost of delivery].

Q from Audience: This seems to be an approachable method but the state doesn't seem to want to underwrite this kind of system. Why? And do you think that will change?

Hannah: she can't answer re: the state. A lot is driven by the land that you choose to use, and there is a lot of interaction with the state based on whether there is a wetland already there, is the site near to a water source, is it forested, etc.

Q from Audience: Where, if anywhere, are other biological system at work in Vermont? There is a small one in Burlington. There have been other systems proposed in Vermont but she doesn't know whether they are still in progress or have been rejected by the state.

David Whitney: speaking from Hawaii where he just installed a waste system for a distillery. The gray water and liquid contaminants get treated in a plant-based system that will be used as water to grow rye for whiskey making. David has had experience working with the state of VT with innovative systems. If we want to do something that isn't an explicitly approved solution that isn't in the rules already, we have to show the state a fallback solution in case your innovation doesn't work. There are water quality requirements in the rules. We have done several proposals for evaporation. A setup that can process 20,000 gallons per day evaporation will require

approximately a 1-acre footprint (to work during winter when there is less evaporation from atmosphere). If you have a greenhouse and you were aiming for October-like temperatures, you would need about a half an acre for evaporation. You have to look at the most cost-effective solution. We need to identify the local areas that can be considered for dispersal.

David worked with Jasper Hill to design/build a methane digester which handles cheese waste plus waste from 25 milk cows. The system de-watered the manure and mixed it with the cheese whey, and made bio-gas which was used for heating the pasteurization tank. The effluent after that removal was comparable to regular wastewater. At low flows, it's not cost-effective to use bio-gas to generate energy but you can use it to generate heat.

Q: In Grafton, we have identified a site that will take a drip system with a sand filter. How does a biological system with plants contrast with dispersal in a drip system? Also, we have a small amount of PFAS. We do have a cheese plant in town that produces whey—maybe it could be used to heat the greenhouse. .

Q: What is the difference in water purity produced in a biological system vs a more conventional system?

David: the State requirements are minimum requirements. With the plant-based system, there are ancillary benefits beyond minimal requirements that are not regulated so many people are not going after that. One example, the Sharon living machine was tested for pharmaceuticals, caffeine, and hormones and compared to Royalton's conventional system—degradation was 90% of those materials in Sharon, not in Royalton. So, big ancillary advantage there. PFAS often concentrates in the sludge. It can be run it through another filtration unit and make charcoal or biochar, and the pfas is removed in this process.

Hannah: In other words, you can achieve benefits that are not discussed in the regulations.

Q: how good does the water have to be for irrigation for growing human food crop?

David: Because it is a public system, someone pours anti-freeze down the drain, or someone on chemotherapy, or there are drugs in the community. In a public water system, and we are not testing for these ingredients, then best to stick to grass, landscaping use.

Hannah: for all water the State has stipulated parameters (for swimming pond, aesthetic-use pond, agricultural water, water to be returned to the environment).

David: when we've grown edible plants in our biological waste systems, when we've grown tomatoes, we're not seeing any pathogens moving into the fruiting bodies. But we're controlling what is going into the waste water. The routine testing for a public system would drive up the close. In Hawaii, where there is a lot of water re-use, the organic farms can't maintain their certification when using waste water for irrigation.

Hannah: there needs to be public education. People need to think about and have alternative drop off places, for extra cleaning fluids, paints, etc. So, in addition to maintenance, you need to have public education. That is true for any system.

David: Sharon has had their system for 18 years. The public is very excited when they visit (our waste is growing these flowers!). It raises awareness.

Q: Grafton is looking at 40K gallons per day. So, the greenhouse wouldn't have to be that big?

A: David: Out of 20K gallons per day, we will have 2K gallons of effluent that will need dispersal (not treatment)>. At Sharon, they put it in the median about 2 miles away.

Q: So, there are possibilities for us with limited space?

A: David: my experience with A&R, you put your best foot forward. There are no right answers, there are only defensible answers. We supply the supporting documentation for it. We are not

doing something crazy. This is based on sound engineering and scientific principles and we will protect public health. Then we get pushback from A&R, it doesn't fit these particular boxes, so if we agree, then we adjust and we keep talking. For example, drip irrigation has so many VT regulations but we see in Minnesota on the plains next to North Dakota, for example, that they use a lot of it for irrigation. The concerns are usually about frost, but they use drain-back lines. They are doing it other states and it works. In my opinion, sand does not help—we can do other things with clay soils. It is more favorable to A&R if a town makes this proposal rather than a corporation.

PC Comment: At the recent 60% meeting, when T&B was asked if sand filters can take PFAS out, the answer was the state doesn't require it. Well, we do not care if the state requires it. We want the PFAS out. [However, if it can be done for less money, the state will do it.]

Q: What about long-term maintenance for this kind of biological system?

A: The Sharon system has an operator who comes 3/week for about 2 hours/day. Mostly just recording data that needs to be sent to the state. The skill set may not be as complicated because we are not using chemicals to coagulate solids, for example.

Hannah: there was a study from 2016, a comparison between biological and conventional. Result: 25% less cost per year and life cycle is longer. Mitigation of pollutant loads improved, including with testing of nearby and adjacent water bodies.

Q: We have a population that swells in the summer, and we have AirBnbs, and we have a hotel that has many weddings, can the system handle that fluctuation?

A: Hannah: You can see that Sharon's system changed its amount considerable. You need to build that flexibility of size into the design. You need to think about that when you site it.

Q to Grafton: Do you have water usage data so that you can see how it changes per month? If it were all private wells, it would be a big undertaking to get that data. Do you assess that population difference with AirBnB population?

Grafton Answer: No, we do not have that data.

Q: How many towns are using plant-based systems?

A: Hannah: I do not know numbers but I can put up a national map. This is showing public systems, not farms, etc.

Q: Is it just Sharon, Burlington, and the one for Jasper Farms in VT?

A: Hannah: I do not know. This is the only map that I can find.

(Lost contact with David, he said that. We can e-mail him with questions or perhaps he can meet with us at another time.

Hannah: closing remarks systems like these biological systems are viable solutions. It is worth pursuing this possible solution.

Q: What is the relationship of Planning Committee research of these solutions with the T&B more conventional system proposals?

A: PC: Right now we are working in parallel but we need to consider these solutions together.

Q: At what point will the Select Board consider alternative solutions?

A: PC member discussion: The lack of consideration appears to be because current info is that these systems are harder to obtain government funding.

The T&B process has been focused on other solutions because lack of funding for this solution but at the most recent meeting, we did learn that the state will fund it if we go through a more complicated process of checking all the boxes with them.

Q: is the grant money restricted in such a way that we cannot use it for this kind of system?

A: We have heard two very different answers: 1) Since this is not an accepted way for treatment of wastewater, the grant can't support it. 2) We just need to convince A&R.

COMMENT: Maybe we could use the grant for the pumping and then build a different system on top.

Q: Bob Donald of the Windham Foundation: I am concerned that we get the story of this alternative out there, because T&B is going full speed down another path. WF has nearly 20 of the properties in the Village area under consideration.

Q So, this solution needs to go to the Select Board.

A: It needs to go to Montpelier. It is going to take legislative action to change A&R rules. We asked T&B over a year ago to look at this possible solution. We got nowhere.

PC: maybe we should not go to 90% with T&B, the water study will take so long.

PC: their work will be useful for any solution but we need to redirect them.

PC: so you clean the water through the greenhouse system, and now you are talking cleaner water that can be dispersed into a smaller area.

5. There was no unfinished business

6. There is a webinar re: health equity the link was in the recent email. We may need to add discussion of health equity to the town plan? Seems to be about improving public health through transportation, recreation, food. We had discussed possible addition of sidewalks
Next item:

7. No additional Public Comments after the Alternative Wastewater discussion

8. Next scheduled Meeting on Tuesday, October 10, 2023 at 7pm.

9. Meeting adjourned at 9:02