

October 11, 2017

Dear Ms. Hughes, Ms. Rasmussen and members of the Concord Envision team,

Thank you for the opportunity to submit comments to help develop Concord's next Comprehensive Long Range Plan. I am submitting these comments as a Concord resident and as a board member of OARS, the watershed organization that advocates for the three rivers that come together here in our town: the Concord, the Sudbury, and the Assabet rivers. The national significance of these three rivers has been recognized by being designated as federal Wild and Scenic Rivers. OARS is located in West Concord and has been running a river water quality monitoring program for 24 years, for which I volunteer (see: www.oars3rivers.org).

I have a lot of pride in my town – especially our support for the environment. We value recycling, sustainable energy management and preserving our historic setting (including the scenic meadows and open space.) As a town full of scientists, Concord has been open to embracing new technology, such as using the innovative CoMag system to remove phosphorus from our wastewater before we discharge it to the Concord River.

The Concord Envision project has attempted to categorize and prioritize our community's concerns. However, since Concordians generally take our clean water and careful water management for granted, environmental sustainability has been underrepresented in the methodology used by Envision. Concord depends on town wells and a pond in other towns to provide its entire water supply. We dispose of our municipal wastewater into the Concord River and into the groundwater through many individual septic systems. The connections of brooks, streams, rivers and ponds that provide the life blood of our community are obscured by culverts and bridges. Concord residents may not understand that what they do on their own property travels through this watery circulation system and affects what comes out of their faucets.

Our community cannot build new buildings unless there is adequate water for bathrooms, kitchens and commercial uses, and a septic system or sewer line to dispose of the wastewater. Roads aren't safe unless the rain, ice, and snow have a suitable place to go. It can be hard to explain to a homeowner on Old Marlborough Road why paving a larger driveway could reduce the recharge for municipal wells – but it could. The sustainability of our water resources does not appear to be high on Concord's priority list when we are forced to rank it in importance with immediate concerns like available housing, transportation, schools and rising municipal costs. But that doesn't mean that these other priorities do not depend on it.

Managing our water and open space resources is not just about "Town Character." We are a town of neon green lawns and shiny black pavement. In the summertime, we use more water per person than the state standard or than surrounding communities. We waste water with sprinklers that allow most of the water to evaporate before it can nourish the grass it was intended for. The fertilizer, chemicals and wastewater that enter our rivers compromise efforts to restore the health of the rivers, streams and ponds, reducing their recreational value, scenic beauty and on occasion even public health. We should not forget that the town of Billerica draws its sole public drinking water supply from the Concord River,

downstream of our town and all that we put into the river. Unless carefully planned, each new development reduces the open space where porous soil can absorb rain and runoff to recharge the aquifers we draw our drinking water from. And we are reducing the open space along our waterways that serves as an extended floodplain.

Our waterways, our drinking water, our open space – these are all utilities that we take for granted. But the environmental services that they provide are at risk from climate change and careless development. The Concord Comprehensive Long Range Plan needs to include the preservation and expansion of these systems if we expect Concord to grow without reducing our quality of life or ability to support our residential, commercial and institutional development. We can make our town more resilient. Concord needs to be committed to implementing climate change actions that both reduce greenhouse gas emissions and invest in long-term adaptation. As a start, Concord should take a leadership role in implementing the Climate Change Resilience Plan developed by the MAPC/MAGIC partnership with our town's input. In addition, below are elements that Concord Envision needs to add to the long range plan:

Preparing for floods:

As increasing global warming puts more and more moisture into the atmosphere, we need to be prepared for catastrophic rain events like those associated with hurricane Harvey. What would happen if 50 inches of rain fell on Concord in less than a week? Rivers and streams would overflow. Dams upstream of Concord could break, inundating us with water contaminated with toxic sediments and wastewater. Utilities would be undermined. Culverts would be blocked with debris, and water would find new routes through our town.

Protecting wetlands and open space is not just about nature and beauty; it is also about flood resilience. Open space throughout our town, whether it is playing fields, farms, cemeteries, stormwater basins or wetlands, provides a porous surface that allows floodwaters to be absorbed. Every time we pave a parking lot or build a building we reduce our resilience to a future flood. Sustainable development helps to protect us.

But regulations and bylaws are not keeping up with climate change. Concord should use its bylaws and zoning to expand its no-build zones around rivers and streams to reflect the new normal of more frequent floods caused by the steady increase in intensity of precipitation events. Our authorities should consider replacing the 100-year flood zone with the 500-year flood zone. Concord can also be more aggressive about enforcing our wetlands bylaws, and it should establish no-disturb areas around intermittent streams. We can and should manage our stormwater better through assertive application of green and grey infrastructure requirements to increase recharge. We can demand more use of porous paving surfaces and better drainage designs when we grant building permits, and do field inspections of as-built plans to ensure that stormwater is being managed as promised. We can require that any new building project use mitigation to make sure that we do not lose recharge areas.

We are fortunate that Concord has numerous family farms that provide both open space to recharge our groundwater and drainage for rain events. We can provide better incentives, lower rents and cheaper utility rates to help these farms survive.

Historically, the rivers that flow through our town have been working rivers, with dams and reservoirs upstream of our town. In a flood event, we may not have control over what flows into our town, and we might be surprised to learn just how much of our town is in the path of a flooding river. Therefore, we need to work with our neighboring towns to ensure that they are practicing these same sustainability practices. Dams that once provided needed power for factories have left us with outdated impoundments with contaminated sediments. Concord could go beyond just coordinating with existing regional green infrastructure plans and instead become a leader for responsible sediment mitigation and dam removal, before a catastrophic weather event takes these options out of our hands.

Preparing for droughts:

Booming economic development has come with a price in Concord. Last year's drought highlighted how vulnerable our water supply is to climate change and to vandalism. There are two good strategies to preserve our water supply: we can reduce the wasteful uses of water, and we can provide more opportunities to recharge the water wherever we take water out of the ground.

To reduce our wasteful water use, we need to rethink grassy lawns. So much of our water is spent spraying it into the air, where much of it evaporates before it reaches the ground and a significant portion of the rest evaporates on the surface before being absorbed into the ground. Such landscape irrigation is a wastefully consumptive and non-essential water use. We need open space to recharge the water table, but that space does not need to be grass covered. Concord needs to incentivize the use of groundcovers that do not require regular (or any) watering or energy-wasting mowing. Where there are lawns that need water, like parks and playing fields, we need to encourage the use of soakers instead of sprinklers, and the use of hardy, drought resistant grasses.

Private wells are not the solution to the water-hungry lawn problem. Water taken from the ground by private wells still reduces the water supply for the rest of the town. The Town can reduce this drain on our aquifer by regulating private wells through a private well bylaw. This would help to ensure the equitable use of our limited water resources and make enforcement of water use restrictions more even-handed.

Recycling water is another way to increase water use efficiency. Water from handwashing sinks and showers can be used to flush toilets and water lawns. Concord can work with other towns to develop and support the legislative action needed to amend the state plumbing and building codes to make efficient water use, using greywater where possible, the standard for all new buildings and renovations in Concord. We can incentivize greywater use by giving utility discounts to residents and businesses that add water reuse systems to their properties.

An important principle of water management is that water should be put back into the ground near where it is taken out, not sent down a drainage pipe into a river as it flows out of town. But Concord's sewers collect water from our aquifer and send it through our wastewater treatment plant into the Concord River as it leaves town. We need to encourage people to put the water back in the ground in Concord, preferably as far upstream as possible. This should be a principle adopted by any working group or other municipal discussion of expanding our municipal wastewater system.

To recharge our aquifer, we need to carefully manage our wastewater and stormwater. Concord should develop more systems that discharge our wastewater into the ground, so that it gets another round of cleanup by filtering through the soil and subsoil before it travels to wells and waterways. Right now,

Concord has a plot of land near our wastewater treatment plant designated for this purpose. But this location is still on our border with Bedford, far from our own Town wells, where the recharge effect will not help Concordians. We need to develop more ground discharge areas in West Concord and at the upstream edges of our Town.

Concord is not going to be able to install sewer lines to every home and business, but we can encourage the use of better septic systems that incorporate secondary treatment or other alternative septic designs. Concord residents have resisted the siting of small group wastewater treatment systems in residential areas of the Town, but these kinds of shared “package” treatment systems can be required for new businesses and residential condominium complexes. We can also provide incentives for groups who band together to upgrade to shared innovative wastewater treatment systems. Taking these steps would mean that the water we discharge near our homes and businesses will be cleaner when it recharges our aquifer.

Rain and storm water are great resources to recharge our aquifer. Using principles of low impact design and green infrastructure helps in preparing for droughts just as it helps in controlling floods. These techniques will not only save money on energy and water use, but will also reduce the impervious footprint that channels water out of town where we cannot benefit from it. We should discourage impervious paved surfaces whenever possible. Where we must use an impervious surface, like on a paved highway, we need to design drainage systems that collect the water and recharge it to ground in a healthy way. Just as vegetative swales help channel away flood waters, these drainage systems would help recharge our watershed. Similarly, just as our wetlands bylaws require that any intrusions be mitigated with wetlands restoration in other areas, Concord should enforce recharge protection to all open space, so that loss of recharge areas due to new buildings can be offset with better recharge and drainage development in other locations. We cannot afford to lose another square inch of open space.

Being responsible about our water supply extends to our drinking water reservoir in Littleton: Nagog Pond. We are dependent on the towns of Acton and Littleton to enforce the safety and continuity of this major source of water for our Town, in the same way that we are dependent on the towns that are upstream from our drinking water wells, and in the same way that the town of Billerica is dependent on our good actions to keep the water in the Concord River safe for them to drink. We should take responsibility to minimize the impacts of our water use on Nagog Brook, a coldwater fishery resource. The contracts and permits that regulate our watershed are not enough to keep clean water flowing for the use of wildlife and humans. Concord needs to take a leadership role in regulations and practices to protect all our drinking water supplies and water resources in general. This will need to include concrete measures to increase the town’s water use efficiency.

Keeping our water clean:

Concord does not just depend on having enough water to drink; we also depend on that water to be clean and safe to drink and to support healthy aquatic wildlife. While water filtration and sanitation can be important steps in making water clean, mother nature provides a lot of help, if we let her do her job.

Yet here again, we help ourselves by protecting open spaces, so that stormwater can be absorbed and filtered into the ground on its natural path to our wells and waterways. There are many more pollutants that can get into our water than we can realistically detect. But we can use the health of the plants and animals in our watershed to gauge the effectiveness of our efforts to clean up our water. When our

rivers and streams are flowing swiftly, with clear open water that provides oxygen and light, and vigorous populations of fish, frogs, shellfish, turtles, macroinvertebrates and birds, we can be more confident that the water is healthy and safe to drink.

I have been wading into the Assabet, Concord, and Sudbury Rivers for more than 20 years to collect water samples for OARS' water quality monitoring program. This program was originally developed to focus on the pollution coming from municipal wastewater treatment plants. We measured phosphorus and nitrogen compounds – the fertilizer-like nutrients that caused the overgrowth of plants and algae that smelled so bad and killed the aquatic life. In the last 20 years, the municipal wastewater treatment plants have reduced this pollution dramatically, and my back yard no longer smells like a swamp for half the summer.

But wastewater treatment permits only govern a small portion of the threats to the rivers. It is not prudent to trust the regulators to think of everything. Concord's wastewater treatment plant needs to stay ahead of the regulatory mandates and prepare for higher winter limits on its phosphorus discharges. We also need to test for emerging contaminants, such as estrogen mimicking chemicals, and be prepared to develop new, innovative systems to remove them from our wastewater if necessary. Above all, we need to plan to recharge any new wastewater flows. We cannot be adding more wastewater into our rivers.

Insecticides are also a threat to the health and safety of Concord's waterways. Concord is ahead of the game compared with many communities. We know that targeting mosquito larvae is more effective than killing adults, and using organic toxins is safer for the rest of us. Concord remains a member of the East Middlesex Mosquito Control Project; so we participate in mosquito surveillance, and we select particular remedies that target only the mosquito problems that actually affect human health. Concord needs to remain a strong voice for choice in mosquito control and encourage our neighboring towns to resist mandatory aerial spraying.

Mosquitos can be a sign of a healthy ecosystem. Mosquitos that carry human disease, such as Zika and Eastern Equine Encephalitis, do not actually live in the rivers. They live in the trash and incidental water basins that are part of developed neighborhoods, junkyards and open landfills. Regulations and bylaws that promote recycling of containers, old tires and other man-made catch basins reduce the populations of disease-causing mosquitos and, therefore, reduce the need for insecticides that threaten the health of our watershed.

Concord can support personal, environmentally responsible behavior by Concord residents and businesses by supporting environmental education and recreational access to the spaces along the river. Thoreau Elementary School has an outdoor classroom along the Assabet River. Concord could support the development of more of these dedicated outdoor educational spaces along the rivers. Concord Envision has already prioritized linking bike trails, walking trails, sidewalks, roadways and open spaces to encourage recreational access. These pathways should also be linked to our waterways, so that residents can enjoy the scenic vistas provided by our rivers. New construction near the water should include public access, including handicapped boat access where possible.

These ideas for building resilience into our watershed – so that we can survive periods of drought, flood and heat waves and still have a healthy environment to live in – do not fit neatly into a prioritized spreadsheet. But these ideas, if implemented, will benefit all Concordians in the long run. We need to incentivize planning for the future, not just building for today. Concord should actively support the laws, environmental policies and rules at both the federal and state level that will help us to restore the health of our rivers – in particular, the Clean Water Act – and ensure the sustainability of our water resources.

OARS has 130 members who live in Concord. We all have houses to maintain and bills to pay, children to educate and feed. But we spend our time and money supporting OARS because we know that having a healthy watershed is a priceless resource. Clean water might not show up as everyone’s first priority, but it is a priority that we all share—and it would rapidly become our first priority if it were absent. It is not enough to just say we will meet State and Federal environmental regulations. We need to plan assertively to protect Concord’s natural resources.

Please make sustainable water and open space management a high priority in the Concord Comprehensive Long Range Plan.

Thank you,

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cc: Alison Field-Juma, Executive Director, OARS, 23 Bradford St., Concord