

**Summary Report of Recommendations of the
Wastewater Management Planning Advisory Committee
to the
Windham Town Council
October 2, 2014**



1.0 Introduction

The Town of Windham has been analyzing groundwater models and investigating wastewater disposal alternatives for decades. The most recent analysis recommended a centralized wastewater collection system be constructed to convey wastewater from North Windham, generally following the Route 302 corridor, to an existing treatment plant in Westbrook. On November 6, 2012 the decision to move forward with funding the detailed engineering and construction of the system was defeated by Windham voters. The Town has continued to work with consultants to monitor contamination levels in the North Windham aquifer and the trends suggest that concentration levels of nitrates are elevating at an increasing rate. Levels of sodium and chloride have also been measured in the groundwater samples, and have been increasing in concentration. Simply put, the wastewater problem is not going away and it appears to be getting worse. Businesses in North Windham also continue to struggle with maintaining large, aging disposal systems or having to expand existing disposal systems when moving into a building that had a system designed for a lower-intensity use. The Town Council worked with the Windham Economic Development Corporation and Town staff to bring the discussion about wastewater management alternatives back to the table.

On December 19, 2013 the Town Council adopted Order 13-189 to form the Windham Wastewater Management Planning Advisory Committee. The purpose of the committee was to accomplish the following tasks:

- Advise the Town Council on issues related to wastewater management in the North Windham Municipal Wastewater Management Planning Area (Map is attached as Exhibit 1)
- Evaluate wastewater management options for the Planning Area using the Town's stated land-use and economic development goals in the evaluation process
- Make findings and recommendations to the Town Council regarding the most appropriate options for Windham to pursue within 6 months after the committee is formed.

The Town Council appointed the following members to serve on the committee:

Tony Plante – Town Manager
David Nadeau –Town Council Representative
Ben Smith – Director of Planning, Town Manager Appointee
Tom Bartell – WEDC Executive Director
Peter Anania – WEDC Board of Directors Appointee
Mac Richardson – Windham Resident
Dustin Roma – Windham Resident

The charge of the committee was defined as being responsible to complete the following:

- Design and conduct an evaluation process that considers various wastewater management options, the Town's desired land-use and economic development goals, and groundwater protection.
- Engage outside professional expertise as necessary.
- Design a Wastewater Management Plan for the North Windham Municipal Wastewater Management Planning Area.
- Update the Town Council as to progress of the committee on a monthly basis or more frequently, as needed.
- Make findings and recommendations to the Town Council regarding appropriate wastewater management options and the tasks required to implement said options.

Although the increased concentrations of sodium and chloride were identified as threats to groundwater quality, they come mostly from storm water and not wastewater; therefore it was not considered part of this committee's charge to advise the Council on any corrective action.

2.0 Study Area

The North Windham Municipal Wastewater Management Planning Area (Study Area) encompasses approximately 2,200 acres and generally runs along the Route 302 corridor with a southerly boundary near the intersections of Pope Road and Brookhaven Drive and a northerly limit at Enterprise Drive. The municipal zoning designation within the study area is predominantly C-1, C-2 and ED, with some smaller areas along the outskirts of the study area zoned F, FR, RL and RM. The only parcel within the study area that is in the Farm zoning district is owned by the Town and is the site of Donnabeth Lippman Park. The map of the Study Area is attached as Exhibit 1 to this report.

3.0 Estimated Wastewater Flows

The committee spent significant time reviewing previous estimates of wastewater flows, most notably those summarized in the January 2011 Wastewater Facilities Plan prepared by Woodard and Curran. Wastewater design flow capacity is clearly impacted by a number of factors including the acreage and density of the service area, the type of conveyance system to be constructed, regulations governing the use of the system, and others.

Future wastewater flows would likely increase with higher density development or if the boundaries of the service area were expanded. Although it is difficult to forecast what the change in wastewater management needs will be at any given point in the future, it is important to account for growth to align with the useful life of capital improvements. This could be accomplished by designing to a higher flow rate than what is currently observed, or to provide opportunity for increased capacity through expansion of systems that occurs as the additional capacity is needed.

For purposes of making recommendations in accordance with the committee's charge we assumed the Study Area currently generates approximately 120,000 Gallons Per Day (GPD) of wastewater. Further analysis would be required to forecast a design flow for a future date as it relates to a desired rate of economic expansion.

4.0 Identification of Town's Desired Goals

The following specific plans, adopted by the Town Council, were used as guidance documents to identify the vision and goals to be achieved:

21st Century Downtown Plan (2013)
Windham Economic Development Strategic Plan (2013)
Windham Comprehensive Plan (2003)

The following specific objectives were quoted from the adopted plans, or inferred by the committee, as potentially being influenced by wastewater management policy.

- Establish a renewed "Sense of Place" in Windham's Commercial Center through Complete Streets, infill development, increased residential densities, vibrant public realms, mobility options and access to open space.
- Incubate a range of economic development and housing opportunities.
- Arrest and reduce nitrate concentrations in the sand and gravel aquifer underlying the study area

5.0 Supporting Technical Information

The issue of wastewater management in North Windham has been an ongoing topic of study for decades, and lots of information has been compiled over the years. In order for committee members to educate themselves, or in some cases simply refresh on the issues, we reviewed the reports and data that were assembled as part of the most recent effort in 2011 to publish the Wastewater Facilities Plan, authored by Woodard and Curran. The technical data also included groundwater modeling conducted by Bob Gerber beginning with a study in 1996 with regular updates as recently as 2013. The technical information in all these documents, coupled with our own individual experiences, provided a suitable foundation to build our recommendations.

The committee met with Bob Gerber in July to discuss and answer questions about his years of experience analyzing the North Windham aquifer, and to provide insight on some of the committee's preliminary recommendations. Committee members also performed independent research on proprietary wastewater disposal system technology, conventional wastewater disposal methods, advanced treatment of wastewater, package treatment plants, case studies of other communities, wastewater collection infrastructure options, and the chemistry of wastewater.

6.0 Wastewater Treatment Alternatives Analysis

Our understanding of the committee's charge was to investigate methods of providing wastewater treatment within the study area to achieve the Town's desired goals for growth, redevelopment and stewards of our environmental resources. Although we researched several specific proprietary wastewater treatment systems as identified in Section 5 of this report, we are not recommending any specific system brand or technology, but a preferred option to be researched further. We grouped the information based on a broad category of general technological approach to determine, in our opinion, what the opportunities and restraints of each category would be. The following is a summary of our analysis:

Option 1 – “Pipe to Westbrook”

The committee felt strongly that this approach was given due consideration in 2011 when residents overwhelmingly voted against constructing a centralized wastewater collection system that would pipe sewer to Westbrook. Due to the high initial capital cost and the limited amount of users on the system, we chose not to recommend this option be evaluated any further.

Option 2 – New Single-Site Wastewater Treatment Plant in Windham

The consensus of the committee was that introducing a new point-discharge to the Presumpscot River, Pleasant River or other surface-water body within Windham would be strongly contested by the State and Federal regulatory agencies and other non-governmental organizations, and that the chances of getting the necessary permits to construct such a system, at any cost, would be very low.

We discussed the option of either drip-irrigation or subsurface wastewater disposal, and were skeptical of the ability of a single site to handle the design flows when considerations were given to groundwater mounding and constructability. Our discussion with Bob Gerber echoed these concerns, and we have chosen not to recommend a single-site wastewater treatment plant in Windham as a viable option at this time.

Option 3 – Higher Regulation of Wastewater Disposal Fields

The primary source of high concentrations of nitrates in groundwater is wastewater disposal fields. The State regulates the construction of subsurface wastewater disposal systems through its Maine Wastewater Disposal Rules. The level of nitrates in wastewater discharged to the ground from a septic system is a function of numerous conditions, and can be greatly reduced through advanced treatment technologies. Reducing the concentration of nitrates at the source, through advanced treatment, would likely reduce the overall residual nitrate concentrations within the entire aquifer over time.

The committee also acknowledged that existing systems that were not performing as designed, and were nearing physical failure, could be major contributors to the elevated

nitrate contaminations in the aquifer. Some systems may not have a capacity failure related to their ability to infiltrate the wastewater back into the ground, but the systems are not effectively removing nitrates and are essentially “failing” even though there is no physical evidence of failure. Eventually, these systems will experience physical failures; however, they will continue to function without acceptable nitrate removal efficiency until a physical failure occurs.

Option 4 – Clustered Advanced Treatment Systems

Clustered advanced treatment systems appear to provide opportunities for a “municipal alternative” to Option 3, and could be implemented in conjunction with regulations requiring higher levels of wastewater treatment on an individual-system basis. There are many proprietary systems on the market, with varying levels of capital cost, expansion opportunities, infrastructure needs, maintenance requirements and history of performance. The committee recommends that clustered systems be pursued further based on their ability to be incorporated into an overall master plan of systems to be constructed based on the pace of development or the need to fix a problem area.

7.0 Factors to be Addressed

The Town of Windham is located within the Portland Water District’s (PWD) charter area to provide wastewater disposal. Clustered Advanced Treatment Systems may not be the preferred option of the PWD. The Town will need to make a decision to manage its wastewater disposal through assignment to PWD, a Town Department or a new quasi-municipal District. The steps required to initiate any of the aforementioned management options need further investigation.

8.0 Recommendations

The committee recommends the following steps be taken by the Town Council to further the analysis of wastewater management options within the Windham Municipal Wastewater Management Planning Area:

1. Evaluate Clustered Wastewater Disposal System Technologies,
2. Identify potential sites to locate clustered systems and collection infrastructure,
3. Research infrastructure requirements,
4. Develop costs for a “typical” clustered system and individual advanced treatment system,
5. Develop draft ordinances to require advanced treatment of wastewater,
6. Identify steps necessary to coordinate with the Portland Water District regarding its charter for wastewater management, and evaluate other management alternatives, and
7. Create a permanent Wastewater Management Planning Advisory Committee responsible for implementing the above 6 tasks.

*** DRAFT COMMITTEE CHARGE ***
WASTEWATER MANAGEMENT PLANNING ADVISORY COMMITTEE

Purpose:

The purpose of the Wastewater Management Planning Advisory Committee (WMPAC) is to:

- serve as advisors to the Windham Town Council on issues related to wastewater management in the North Windham Municipal Wastewater Planning Area,
- evaluate wastewater management options for the Planning Area using the Town's stated land-use and economic development goals in the evaluation process, and
- make recommendation(s) to the Town Council regarding the most appropriate option(s) for Windham to pursue.

Membership:

The WMPAC shall consist of seven (7) members appointed by the Town Council for their knowledge of and interest in wastewater management issues in the Town of Windham. Membership shall consist of two (2) members of the public with technical backgrounds, one (1) member of the WEDC Board of Directors, one (1) member of the Town Council, the Town Manager, one (1) Town staff member designated by the Town Manager, and the WEDC Executive Director.

The Town Manager shall provide additional support to the WMAC as necessary.

The WMAC shall serve at the pleasure of the Town Council.

Meetings and Procedures:

The Committee shall select a Chairman from its membership. The Chairman shall have the authority to convene meetings of the Committee, which shall be conducted in accordance with Maine's Freedom of Access law (1 MRSA § 401 et seq.), with due notice to the members. The Committee shall adopt such other reasonable rules of procedure as may be necessary for the efficient conduct of its business while allowing for public accountability and due process.

Charge:

It shall be the responsibility of the WMPAC to:

- Evaluate Clustered Wastewater Disposal System Technologies and research associated infrastructure requirements,
- Identify potential sites to locate clustered systems and collection infrastructure,
- Develop cost estimates for various types of clustered systems and individual advanced treatment systems
- Develop draft ordinances to require advanced treatment of wastewater
- Identify steps necessary to coordinate with the Portland Water District regarding their charter for wastewater management, and evaluate other management alternatives